JOBS TO MOVE AMERICA

PUBLIC GOODS FOR THE MOST PUBLIC GOOD

August 11, 2025

Re: Micron Draft EIS 2025 Comments
Attn: Micron Project
Onondaga County Industrial Development Agency (OCIDA)
CHIPS Program Office (CPO)
335 Montgomery Street, Floor 2M
Syracuse, New York 13202
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EISX-006-55-CPO-001

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INTRODUCTION

Thank you for the opportunity to comment on the July 10, 2024 Draft Environmental Impact Assessment (DEIS) for the Semiconductor Manufacturing Project in Clay, New York proposed by Micron New York Semiconductor Manufacturing LLC (Micron) (a wholly owned subsidiary of Micron Technology, Inc.) (EISX-006-55-CPO-001) (Proposed Project).[1]

Jobs to Move America (JMA) is a strategic policy center that advocates for climate policies that center worker and community voice. Public investments in green technologies and critical climate infrastructure can create millions of good jobs, particularly for workers historically excluded from quality manufacturing jobs. At JMA, we believe public dollars should fuel a clean economy centered on good jobs. The DEIS raises several concerns. Jobs to Move America calls on the Department of Commerce (DOC) and Onondaga County Industrial Development Agency (OCIDA) to minimize health, safety, and environmental harms; protect workers; and maximize equitable quality-of-life and socioeconomic benefits for communities impacted by Micron's development in Central New York (CNY).

Micron has promised investments and thousands of good jobs for CNY in its efforts to obtain a $20 billion subsidy, but to date has made no enforceable commitments to workers or communities to ensure the permanent jobs created are the quality jobs promised. In partnership with environmental, labor, and public health groups, JMA seeks to address this gap through the *Community Vision for Strong Environmental, Resident, and Worker Protections*.[2] This document was developed with local leaders and community organizations with expertise in public policy, environmental law, workforce development and safety, environmental and chemical science, energy technology and infrastructure, and housing and transportation equity.

Given the Proposed Project's scale and the range of potential impacts, we strongly urge the U.S. Department of Commerce and the Onondaga County Industrial Development Agency to extend the comment period to at least October 25, 2025, at a minimum. This request is further supported by a petition signed by over 1,500 residents of the region.[3] Despite the limited current comment period, we submit the following key environmental, social, and economic concerns, as well as mitigation recommendations, many of which are insufficiently addressed in the DEIS.

CONTRIBUTORS

This comment was drafted with legal review and input from the law firm of Rupp Pfalzgraf, LLC (Albany Practice Group) as well as technical review and input from the following experts representing local

[1] Which includes Micron's application for federal financial assistance (to Micron Technology) under the CHIPS incentives program and state financial assistance under the Green CHIPS Act.
[2] "Community Vision for Strong Environmental, Resident, & Worker Protections: Micron Environmental Review" 2025. Action Network. https://actionnetwork.org/petitions/community-vision-for-strong-environmental-resident-worker-protections-micron-environmental-review?source=direct_link&.
[3] Mooney, Natalie. 2025. "Petition delivered to 'make Micron do right' on environmental review." *Sepctrum News*, June 26. https://spectrumlocalnews.com/nys/central-ny/news/2025/06/26/advocates-deliver-petition-to--make-micron-do-right--on-environmental-review.

environmental, labor, and community organizations with key concerns surrounding Micron's Proposed Project in Clay, New York.[4]

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EXECUTIVE SUMMARY

This comment letter is submitted in relation to the Draft Environmental Impact Statement (DEIS) for the proposed Micron New York Semiconductor Manufacturing Project. Because this is a joint Federal and State DEIS, we understand that all comments submitted will be considered by both OCIDA and CPO.

[4] See Appendix A for information on the experts' backgrounds.

Micron New York Semiconductor Manufacturing LLC (Micron) is a wholly owned subsidiary of Micron Technology, Inc. This comment letter analyzes the environmental impacts and risks of the Micron project and provides a technical assessment of environmental concerns. Specifically, as set forth in greater detail in the following sections, JMA and its experts outline the following issues with the DEIS and recommendations for a Final EIS.

DEIS Issues

1. Wetlands, Wildlife, and Flooding

Wetlands Loss and Mitigation

- **Extent of Loss** - 193.38 acres of wetlands will be permanently lost on-site, plus 78.86 acres from connected actions (rail spur, childcare center, wastewater expansion).
- **Ecological Value** - Wetlands filter pollutants, store carbon, buffer floods, and host threatened species. Loss releases stored carbon and methane, contributing to climate change—yet GHG effects from wetland destruction are omitted and should be assessed.
- **Mitigation Flaws** - Proposed mitigation sites are mainly farm fields, fragmented, and decades from full ecological function. Replacement ratios (~2:1) are inadequate; 10–15:1 is recommended (as done at Seneca Meadows).
- **Regulatory Compliance Concerns**
  It is unclear whether wetland delineations follow the new NYSDEC freshwater wetland regulations. Smaller wetlands and those of "local importance" may be undercounted. The wetland inventory should be updated to reflect the latest regulations.

Wildlife Impacts

- **Endangered Bats** - Indiana bat and Northern Long-eared bat populations are already near collapse due to white-nose syndrome. Habitat loss will impact roosting/maternity colonies; off-site mitigation is unlikely to replace lost habitat.
- **Other Species** - Threatened reptiles, amphibians, and grassland birds (Northern Harrier, Short-eared Owl) face habitat loss and fragmentation. Current mitigation (3:1 grassland replacement) is insufficient; 5:1 ratio and minimum mitigation parcel of 75 acres are recommended.
- **Aquatic Life** - Wetland/stream loss alters sediment, nutrient, and organic matter flow; may harm cold-water fish and macroinvertebrates.

Flooding and Water Management

- **Runoff Increases** - Project will replace permeable wetlands with ~645 acres of impervious surfaces, increasing stormwater runoff and downstream flood risk. Rail spur, childcare center, and wastewater plant runoff not fully quantified.

- **Dewatering -** Long-term groundwater lowering during construction could drain nearby wetlands/streams.

- **Wastewater Discharge -** Full buildout will discharge ~40 MGD treated water vs. current 6 MGD, increasing downstream flooding risks.

2. Utilities, Energy, and GHG Emissions

- **Massive Resource Demands** – Micron will consume ~15,674 GWh/year (≈11% of NY's total 2023 electricity use) and 48 million gallons of water/day. New natural gas line construction and the massive increase in greenhouse gas emissions from electricity generation, induced development, and on-site emissions raise serious CLCPA compliance concerns.

- **Cost Burden Risks** – Upgrades to power, water, and wastewater systems could shift costs to ratepayers; cost responsibility remains unclear.

- **GHG Emissions** – Projected to release 881,699 metric tons CO_2e/year from process gases, plus fugitive heat transfer fluids onsite. Induced development will release considerably more offsite. Purchase of Renewable Energy Credits (RECs) is not effective mitigation for GHGs resulting from all these emissions sources, including the electricity generation necessary to supply the plant's electricity demand and . Instead, Micron must bring new renewable energy generation online.

- **Grid & Climate Goals Impact** – Load increase will slow or reverse NY's progress toward 70% renewable energy by 2030 and 100% zero-emissions by 2040. Without effective mitigation that includes construction of new renewable energy generation this load increase will cause prolonged fossil fuel dependence and could impact reliable electricity supply for the region.

- **Recommendations** – Require 24/7 matched renewable power from new generation; eliminate unbundled RECs; implement load flexibility; fully disclose cost allocations; expand local renewable generation.

3. Solid Waste, Hazardous Waste, and Hazardous Materials

- **Chemical Identification Gaps -** The DEIS lacks a comprehensive list and quantities of hazardous chemicals used by Micron. Without this, public agencies cannot assess health, safety, or environmental risks. Industry norms (e.g., NIST, CHIPS PEA) provide far more chemical detail.

- **PFAS ("Forever Chemicals") -** Micron's PFAS disclosures are incomplete, omitting most of the hundreds of PFAS types used in semiconductor manufacturing. Current regulations only cover PFOA and PFOS, which the industry no longer uses. PFAS in wastewater, even after treatment, can bioaccumulate and persist in Lake Ontario, potentially impacting drinking water.

- **Wastewater Treatment Risks -** The proposed treatment methods (reverse osmosis, nanofiltration, activated carbon, ion exchange) filter but do not destroy PFAS. Testing methods only detect ~40 PFAS types, while hundreds may be present. Non-target PFAS may exceed

known ones in concentration. Micron should use advanced treatment methods that actually destroy PFAS.

- **Off-Site Disposal Issues** - Off-site incineration risks creating toxic byproducts and often occurs in EJ (environmental justice) communities. Micron has not guaranteed destruction of PFAS and other hazardous compounds.

- **Extremely Hazardous Substances** - The DEIS names only eight regulated chemicals, omitting others like arsine and phosphine. Local emergency response capacity for these hazards is unclear. Dispersion modeling needs to be done to ensure childcare and other facilities are sufficient distances from chemical storage areas in the event of an accidental release.

- **Storage, Spill, and Transport Risks** - Over 55 million gallons of hazardous liquids and petroleum could be stored on site. Truck transport increases spill risk; rail transport should be considered.

- **Cumulative Impacts** - The DEIS does not assess combined PFAS, GHG, and hazardous substance releases from Micron and other anticipated regional industrial growth.

- **Recommendations -** Identify all hazardous substances and PFAS types/quantities; require zero PFAS discharge, using destruction technologies; increase transparency on waste destinations and treatment; include dispersion modeling for toxic gas releases; evaluate regional cumulative impacts and update the EIS periodically.

4. Human Health & Safety

- **Chemical Transparency Gaps** – No full chemical inventory; PFAS use acknowledged but not comprehensively addressed; lack of enforceable hazardous waste procedures before operations start.

- **Worker Protection Shortfalls** – No job-specific risk assessments, reproductive/developmental hazard protections, or public illness data. Disparity between detailed construction contractor EHS plans and minimal operational worker protections. Not clear if temporary workers will get the same protections.

- **Community Risk** – Limited public access to safety plans; no community hazard notification system; hazardous waste handling plans delayed and lacking public oversight.

- **Recommendations** – Require public disclosure of all chemicals and PFAS; adopt zero-PFAS release goal; produce detailed operational EHS plans; publish safety plans; provide ongoing, disaggregated exposure and health reporting.

5. Transportation & Traffic

- **Public Transit Gaps** – No current bus routes connect Syracuse's low-income neighborhoods to the Micron site; nearest Centro stop is ~4 miles away. Potential Bus Rapid Transit (BRT) expansion is described only as "potential," with no timelines or funding commitments.

- **Equity Impact** – Without reliable, affordable transit, many disadvantaged residents cannot access jobs. No modeling of commute times from low- and moderate-income neighborhoods.

- **County Plan Misalignment** – Onondaga County's comprehensive plan calls for transit-oriented development, but Micron offers no commitment to public transit expansion.

- **Recommendations** – Fund robust BRT and shuttle networks; coordinate with Centro; ensure 24/7 service for all shifts; align with county and regional sustainability goals; assess impacts of new highway interchanges.

6. Workforce & Socioeconomic Impacts

- **Job Quality Concerns** – Publicized $100k average pay obscures disparities (technicians ≈$68k; many roles below $100k); high CEO-to-worker pay ratio; limited jobs opportunity for those without advanced degrees.

- **Local Hiring Equity** – Vague commitments for permanent jobs; unclear if there is prioritization of Syracuse residents who face the highest poverty rates.

- **Training Gaps** – Apprenticeship and on-the-job training programs lack detail, targets, and enforceable inclusion for underrepresented groups. No clear advancement pathways or ongoing upskilling commitments.

- **Work Conditions** – Demanding 11.5-hour shifts with minimal fatigue management details; concerns over promotion barriers and low wage growth in comparable facilities.

- **Economic Risks** – Risk of creating many low-wage spinoff jobs in retail/hospitality; potential to exacerbate inequality.

- **Recommendations** – Enforceable local hire targets; transparent pay ranges; targeted recruitment in high-poverty census tracts; detailed training/advancement plans; quarterly workforce reporting; penalties for non-compliance; binding Community Benefits Agreement (CBA) with community oversight.

7. Housing Impacts

- **Severe Market Strain** – Micron's projected in-migration (64,000 people; 27,000+ new housing units needed) will significantly stress an already overheated housing market in Syracuse and Onondaga County. Median rents are already 40% above what typical renters can afford; home prices rose 85% from 2012–2023.

- **Underestimated & Contradictory DEIS Claims** – The DEIS claims no significant housing impact while also admitting major pressures including rent hikes, possible displacement, and market changes not seen since the 1970s.

- **Inadequate Mitigation Plans** – Current housing developments (≈5,800 units) fall far short of projected needs, with little affordable housing included. Syracuse—the highest-need area—is largely left out of development plans.

- **Equity & Infrastructure Concerns** – High poverty rates, racial segregation, and poor housing quality (lead, code violations) will worsen without targeted interventions.
- **Recommendations** – Require enforceable plans for affordable, mixed-income, climate-friendly housing; use "smart growth" principles; detail specific funding/subsidy programs; tie housing expansion to GHG reduction measures.

8. Environmental Justice

Geographic Scope and Impact Analysis

- **Flawed Study Area** - The DEIS limits Environmental Justice (EJ)/Disadvantaged Communities (DAC) analysis to a 5-mile radius, improperly excluding Syracuse neighborhoods within 10 miles that may face air, water, and economic impacts.
- **Cumulative Impact Gaps** - Does not integrate hazardous materials, PFAS, GHG emissions, or induced industrial growth effects on disadvantaged communities.

Human Health & Safety

- **Water Quality Risks** - PFAS and hazardous waste could contaminate drinking water sources affecting DACs, especially those with existing lead pipe issues.
- **Waste Disposal Risks** - Off-site disposal may shift pollution burdens to EJ communities.

Air Quality

- **Flawed Baseline** - Relies on monitoring from Rochester (70+ miles away). No plan to assess local air pollutant impacts on DACs or during upset conditions.

Inadequate Community Engagement

- **Flawed Outreach** - Minimal public meetings (two, 45 attendees total) and lack of substantive EJ-specific outreach. Engagement tied mostly to financial commitments, not environmental impacts.

Housing & Growth-Induced Effects

- **DACs Impact Omitted** - Worker in-migration may raise rents and housing costs, disproportionately impacting DACs. Mitigation relies on speculative future housing stock without guarantees of affordability.

On-Site Childcare

- **Danger from Accidental Releases** - While beneficial, its proximity to industrial hazards could pose disproportionate risks to low-income children. No modeling provided for gas release or flood-related contamination risks.

Recommendations: Expand EJ analysis radius to at least 10 miles. Require transparent environmental monitoring overseen by community boards. Develop enforceable Community Benefits Agreement including environmental and housing protections. Disclose and regulate waste destinations to avoid burdening other EJ communities.

9. Cross-Cutting Themes

- **Environmental Justice** – Low-income and marginalized communities face disproportionate risks from housing displacement, job inaccessibility, pollution, and infrastructure cost burdens.
- **GHG Impacts** – The Micron facility will generate GHGs on site and off site from many different sources, including on site combustion, on site release of organic chemicals, off-site electricity generation, wetland destruction, transportation, and induced growth. These emissions must be assessed together and mitigated so that New York's mandatory climate goals are not violated.
- **Transparency & Accountability** – Across all areas, the DEIS lacks enforceable commitments, specific timelines, and public oversight mechanisms.
- **Community Benefits Agreement** – Advocated as a central tool to make commitments binding, create measurable objectives, and ensure ongoing community and worker participation in oversight.
- **Toxic chemicals** – The release of toxic chemicals, including PFAS, could have a detrimental impact on human health, wildlife and the environment. Greater clarity must be provided on how Micron proposes to manage this issue.

Additional Legal Issues

The expert commenters have pointed to many deficiencies in the DEIS that must be addressed before it can be finalized. There are several additional issues that warrant attention.

Alternatives

The analysis of alternatives is flawed. OCIDA previously assessed the anticipated significant adverse impacts associated with use of the Project site for a similar but smaller development footprint, accepting a Final Supplemental Generic Environmental Impact Statement on July 16, 2021 (FGEIS) and the issuance of a SEQRA Findings Statement on July 27, 2021. The current DEIS did not consider alternative sites, relying instead upon the prior analysis. It also dismissed a two fab alternative, claiming that a four fab facility is economically essential for Micron.[5] This contention is undercut by Micron's approach in Boise, Idaho where it is building a two fab factory to produce advanced memory chips.[6] If a two fab facility is economic in Idaho, it should also be economic in New York. This means the analysis of alternatives is fundamentally flawed. Two two-fab facilities would create very similar economic benefits for New York

[5] DEIS at 2-46. https://ongoved.com/wp-content/uploads/2025/06/Micron-Draft-EIS.pdf
[6] Micron Press release dated June 12, 2025 *available at* https://investors.micron.com/news-releases/news-release-details/micron-and-trump-administration-announce-expanded-us-investments.

but would lower the risk of overwhelming the local housing and labor markets. A two-site approach would also be likely to have less impact on wetlands.

Micron is applying for a Section 404 wetlands permit. 218 acres of the 408 acres on the site are to be filled. All parties have acknowledged that the chip plant is not a water dependent use. Therefore, a 404 permit can only be issued if there are no alternatives and mitigation is provided. The flaw in the analysis of alternatives means that a showing of no alternatives cannot be made at this time.

Climate Leadership and Community Protection Act

This proposal also raises significant concerns about compliance with the Climate Leadership and Community Protection Act ("CLCPA"), and the Green Amendment to New York's constitution. Section 7(2) of the CLCPA requires New York State agencies to consider whether administrative decisions, such as permitting actions, are inconsistent with or interfere with the statewide greenhouse gas emission limits set by the law. If an agency's decision is inconsistent with the statewide greenhouse gas emission limits under the CLCPA, a detailed justification is required. If a justification is available, the agency must identify alternatives or greenhouse gas mitigation measures. Furthermore, section 7(3) of the CLCPA requires that decisions made by State agencies do not disproportionately burden Disadvantaged Communities ("DACS"). So far, the DEIS has placed unjustifiable reliance on purchasing Renewable Energy Credits ("RECS") but has failed to provide a valid justification of why New York should make its effort to comply with an already challenging CLPA almost impossible.

Green Amendment

Finally, the concerns regarding PFAS and hazardous chemicals may give rise to a claim under the Green Amendment as part of the SEQRA process if the lead agency does not pursue proper assessment of this issue, in which the DEIS analysis is inadequate. On November 2, 2021, New Yorkers voted in favor of an amendment to the New York State Constitution under Article 1 Section 19 "Environmental rights" (the "Green Amendment"). N.Y. Const., Art 1, §19; LON Compl. ¶¶ 129-142. Taking effect in January 2022, the State Constitution was revised to include a right to a clean and healthy environment through what has been called New York's Green Amendment. *Id.* The Green Amendment guarantees, as of January 1, 2022, that "[e]ach person shall have a right to clean air and water, and a healthful environment." *Id.* New York's Green Amendment is an affirmative right, because it is included in the State's Bill of Rights.[7]

The Green Amendment received overwhelming support by New York State voters. By passing the Green Amendment, the people of New York mandated the State government provide a clean and healthy environment to all New Yorkers and made plain that the State must go beyond existing environmental laws to vindicate the new right. *Fresh Air for the Eastside, Inc. v. The State of NY*, et al., NY Slip Op 34429(U) (Index No. E2022000699) (Sup. Ct. Cnty. of Monroe, Dec. 7, 2022). In effect, the right can be regarded as gap filling. It ensures that government entities are obliged to provide the clean and healthy environment guaranteed by the Constitution even when existing environmental laws fail to do so. Where necessary, New Yorkers can now turn to the Green Amendment to obtain such an environment.

[7] Stacy Halliday et. al., 2021. "New York Becomes the Third State to Adopt a Constitutional Green Amendment," *Bridge & Diamond*, December. 10.
https://www.bdlaw.com/publications/new-york-becomes-the-third-state-to-adopt-a-constitutional-green-amendment/

As a recently enacted Constitutional provision, the Green Amendment poses some novel legal issues, but New York Courts have already made some helpful interpretations. For example, the Green Amendment has been found to be self-executing. *Id. See also*, *People v. Carroll*, 3 N.Y.2d 686 (1958) (finding that "[t]he general rule is that constitutional provisions are presumptively self-executing."). In addition, the State has a nondiscretionary obligation to comply with the New York Constitution and, thus, the State must ensure that its citizens have the right to clean air and a healthful environment. *See Fresh Air for the Eastside* (finding that "[c]omplying with the Constitution is not optional for a state agency and is thus nondiscretionary and ministerial," that the "State must ensure that its citizens have the right to clean air and a healthful environment" and that courts are "fully entitled to compel the State to comply with the Constitution"). This finding is consistent with prior opinions finding that a government agency must comply with the Constitution as a mandatory, nondiscretionary duty. *See*, *D.J.C.V. v. United States*, 2022 WL 1912254, at 16 (S.D.N.Y., June 3, 2022); *Finn's Liquor Shop v. State Liquor Authority*, 24 N.Y.2d 647, 655 (1969).

Subsequently, in a separate case, a court noted that the Green Amendment has changed the standard of review for permitting decisions. *Marte v. City of New York*, 2023 N.Y. Slip Op 31198 (Sup. Ct. 2023). Not only must such decisions be rational, they must also comply with the requirements of the Green Amendment. *See id.* The vagueness of the current commitments regarding PFAS would raise a colorable claim under the Green Amendment.

WETLANDS & WILDLIFE

The Micron site contains 409 acres of wetlands according to federal delineation. These wetlands include high-quality red maple swamps, hemlock–hardwood swamps, floodplain forests, and dogwood and willow shrub swamps. They host abundant native species that support insects and the interconnected food web. Construction of Micron's megafab will result in the permanent loss of 193.38 acres of wetlands on the project site. An additional 78.86 acres will be lost due to the construction of the rail spur, childcare center, and wastewater treatment plant expansion.

The proposed campus poses significant ecological risks due to the permanent destruction of wetland habitat. Wetlands provide habitat for more than one-third of the country's threatened and endangered species, filter pollutants, and buffer communities from flooding. They also store large amounts of carbon, making them powerful tools in combating climate change. According to the DEIS, "Construction of the Proposed Project would result in the direct loss of wetlands and their functions and services from site development. In addition, wetland buffers (typically 100 feet from the edge of a wetland in New York State) would be lost." (p. 3-72).

To offset these adverse impacts, Micron has proposed restoring some wetlands through a mitigation plan managed by The Wetland Trust (TWT). However, there are outstanding concerns that the DEIS does not adequately address regarding potential impacts:

- Importance of the lost wetlands to the local environment;
- Potential impacts on flooding and surface flow through adjacent roadways and residential areas;
- Compliance with New York State Freshwater Regulations;

- Impacts on endangered animal populations native to White Pine Commerce Park (WPCP); and
- The need for a mitigation plan that restores degraded wetlands or creates new wetlands at a much higher ratio to compensate for all the wetland benefits lost.

Wetlands are essential to human health and the environment. They provide habitat for a significant number of threatened and endangered species, filter pollutants, and protect communities from floods. They also store large amounts of carbon—300 acres of freshwater wetlands can store approximately 305,000 metric tons of carbon dioxide, equivalent to the annual emissions of about 66,000 cars.[8]

In addition to direct wetland destruction, the proposed campus will increase impervious surfaces, which could indirectly harm wetlands and other habitats through increased stormwater runoff and reduced groundwater recharge. For example, the DEIS states that "11,600 parking spaces, four bus stops, and seven access roads would be constructed on the campus, including four 500-space surface parking lots." (Table 2.1-3, p. 2-13.).

Micron has not accounted for the loss of carbon sequestration from wetland destruction in its greenhouse gas emissions evaluation. Destroying these wetlands will release stored carbon dioxide into the atmosphere and remove future storage, further contributing to climate change.[9, 10] This release of CO_2 is not accounted for in Micron's DEIS. According to the EPA and peer-reviewed literature, drained freshwater wetlands in temperate regions can release approximately 3–10 metric tons of methane (a potent greenhouse gas) per hectare over the short term following destruction (via oxidation and disturbance).[11] The destruction of wetlands by the proposed project will further exacerbate climate change. The final EIS must include an analysis of how wetland loss will impact GHG emissions.

Wetland Mitigation Work Plan

In its mitigation plan, Section 4.1 (Selection and Design Criteria) of the DEIS, Micron claims that "Work areas contain few, if any, existing wetlands, which allows for focus on reestablishment and are near or adjacent to existing Department of Environmental Conservation (DEC) wetlands. Delineated wetlands will be subsumed into the work area and will be either registered as rehabilitation if the area is marginal, which is usually the case, or will otherwise be subtracted from the total acreage built and corresponding credits generated. The agencies decide which option is selected."

The Wetland Trust's (TWT) Mitigation Project Overview notes that wetland mitigation sites are "in active soybean production. The sites will stay in active agriculture until construction commences, which helps prevent invasive species and incompatible land uses."[12] The fact that a majority of the proposed wetland mitigation sites are currently active soybean fields means it could take decades for created wetlands in these fields to provide similar ecological services to the present wetlands. Even then, studies show that

[8] The Climate Trust, "Blue Carbon Rising," (2025): https://climatetrust.org/news/blue-carbon-rising/.
[9] A.M Nahlik & Fennessy, M.S. 2016. "Carbon storage in US wetlands." *Nature*. December 13. https://www.nature.com/articles/ncomms13835.
[10] Robert T. Watson *et al*. 2014. "Land-Use Change, and Forestry." *Cambridge University Press*. September.
[11] Scott D. Bridgham et al."The Carbon Balance of North American Wetlands." *Wetlands*. December 2006. https://repository.si.edu/server/api/core/bitstreams/c49bc76c-8dc1-4c12-aef2-db77d449d4d5/content.
[12] "Micron Central New York Semiconductor Manufacturing Complex: Overview of Stream/Wetland Mitigation Plan," The Wetland Trust, Inc., (2025): https://ongoved.com/wp-content/uploads/2025/06/Micron-Draft-EIS-Appendix_F_Vol_3.pdf.

restored wetlands rarely reach the full functional capacity of original wetlands.[13] The mitigation sites are also located closer to sources of disturbance (roads, farms, and homes) than the existing wetlands.

The mitigation sites are smaller and more isolated compared to the integrated network of forests, grasslands, and wetlands at the Micron site (Fig. F-3). The DEIS fails to account for the loss of intact wetlands that will be replaced with fragmented areas that are currently severely degraded or in agricultural use.

A large-scale meta-analysis by Moreno-Mateos et al. of 621 restored or created wetlands worldwide found that, even up to 100 years after restoration, biological structure (primarily plant communities) remained about 26% lower and biogeochemical function (driven by soil carbon storage) about 23% lower than undisturbed reference wetlands. The authors conclude that current restoration practices are often unable to fully recover the original ecosystem functions, even after a century.[14] To address these concerns, regulators should require Micron to purchase large tracts of existing wetlands (especially forest and shrublands), particularly floodplain forest along the Oneida River. These areas should be permanently protected by TWT or the CNY Land Trust.

The DEIS also notes that 78.86 acres of wetlands and surrounding rivers and streams will be impacted by future connected actions (p. 3-66). However, jurisdictional determinations have not yet been issued for most of these features, with the exception of the Clay Substation (USACE only)" (p. 3-67). The DEIS claims that "non-jurisdictional wetlands present within the LODs cannot be determined at this time because not all of the LODs have been delineated. Except as described below for the proposed Clay Substation expansion area, functional analyses of wetlands within the remaining Connected Action LODs also have not yet been conducted, for various reasons, including because field delineations have not yet been performed, wetlands have yet to be assessed by USACE or NYSDEC, or losses of jurisdictional wetlands within the remaining LODs are anticipated to be negligible." (p. F-18). All sites must be evaluated before construction begins so that impacts can be monitored over time. The final EIS should include a comprehensive analysis of the total impact on wetland function, wildlife, and plant communities over the entire construction period.

Given the direct, indirect, and cumulative impacts—such as subsidiary development predicted to occur in the watershed—it is recommended that the wetland replacement ratio be increased from approximately 2:1 to between 10:1 and 15:1, similar to the Seneca Meadows restoration project.[15] (see Seneca Meadows Wetland Restoration Design-Build Mitigation for Landfill Impacts to Wetlands).

Compliance with New York State Freshwater Wetlands Regulations

Micron is required to comply with New York State's new freshwater wetlands regulations.

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[13] David Moreno-Mateos *et al.* The Wetland Trust, Inc., "Structural and functional loss in restored wetland ecosystems." PLoS Biology, *10*(1), The Wetland Trust, Inc., (2012): https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1001247.
[14]David Moreno-Mateos *et al.* 2012.
[15]RES. N.d. "Seneca Meadows Wetland Restoration Design-Build Mitigation for Landfill Impacts to Wetlands." https://res.us/projects/seneca-meadows-wetland-restoration-design-build-mitigation-for-landfill-impacts-to-wetlands/.

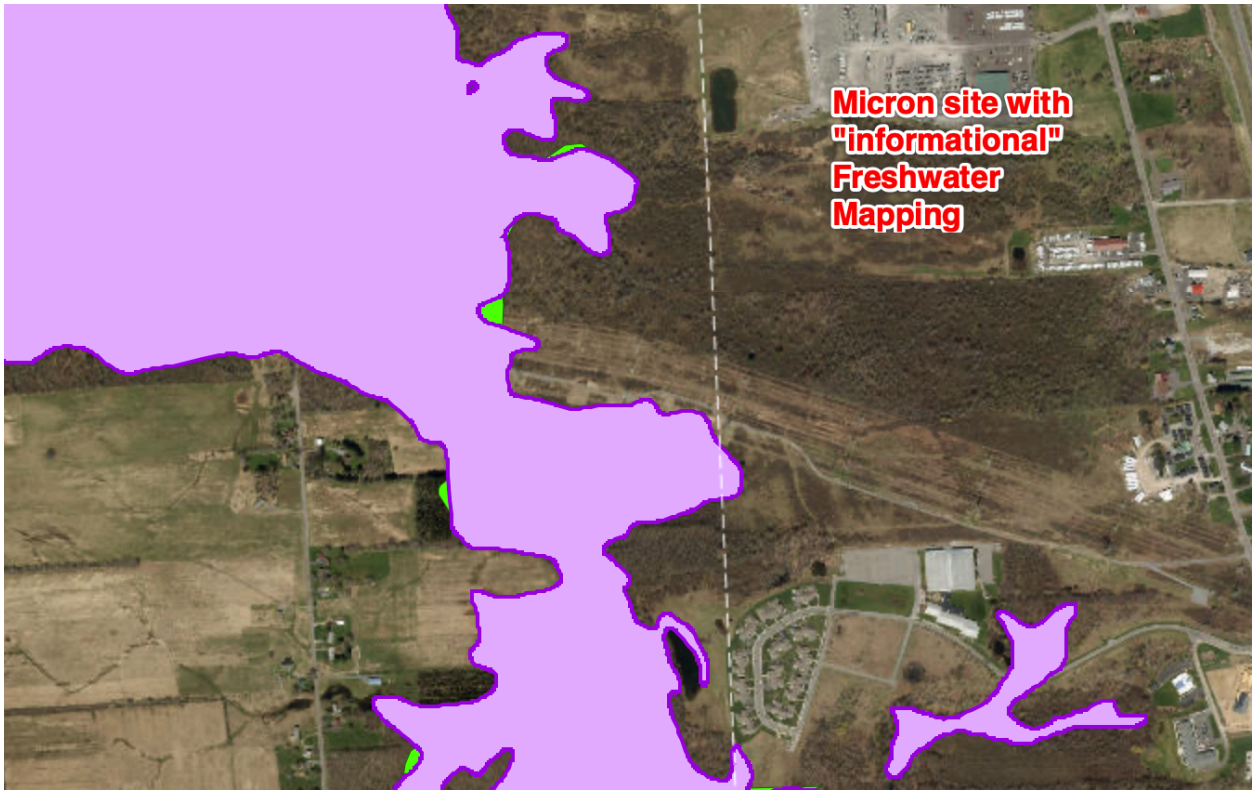
Micron's current determination of impacted New York State jurisdictional wetlands and its compliance with the new state freshwater regulations remains unclear. In 2021, Micron hired Ramboll Americas Engineering Solutions, Inc. (Ramboll) to identify wetlands types and acreages that should be included under both the U.S. Army Corps of Engineers (USACE) and New York State's permitting authority. The DEIS includes tables, charts, and maps that largely reflect information from old DEC jurisdictional paper maps confirmed through surveys and determinations issued by NYSDEC under ECL Article 24. It also includes approved jurisdictional determinations from USACE and categories of non-jurisdictional wetlands, which Ramboll describes as "definitively excluded from Federal and State jurisdiction."

The DEIS does not explain the criteria Ramboll used to exclude certain wetlands from permitting protection. While it acknowledges wetlands permitting reforms passed by the State Legislature in 2022 and the subsequent regulations for freshwater wetlands that became effective on January 1, 2025 (DEIS appendix F-2.2), it remains unclear whether Micron is applying the old or the new rules in deciding which wetlands merit protection. Under the former law, state-jurisdictional wetlands were only those shown on approved maps measuring 12.4 acres or more. If a wetland was not on a map, its destruction required no state permit. The new law requires permits for any wetland, regardless of mapping status, and covers wetlands smaller than 12.4 acres (7.4 acres after 2028) if they meet certain criteria, such as attenuating significant flooding, filtering drinking water, providing rare species habitat, or being located in an urban area.

The Generic Environmental Impact Statement (GEIS) (Appendix F V-1 P-1) notes that Micron's campus was evaluated for potential federal- and state-regulated wetlands by Ramboll biologists in the fall of 2021, summer of 2022, and the spring, summer, and fall of 2023. Site visits were also conducted in the spring, summer, and fall of 2023 and the spring of 2024 with USACE Buffalo District and NYSDEC Region 7 personnel to observe, verify, and supplement the delineations conducted by Ramboll.

It is unclear if the delineations happened before or after the legislative reforms were enacted in 2022, or if the delineations and site advisories happened, before the release of the final regulations in December 2024. It is also unclear whether the delineations meet the new law's requirements. The DEIS does not mention identifying smaller wetlands of "unusual importance" or mapping vernal pools—two critical elements under the new rules.

The GEIS indicates that certain jurisdictional determinations were signed off by DEC staff in February 2024, while others remain pending in 2025. Proceeding with a wetlands protection and mitigation plan under outdated standards would leave portions of the impacted landscape without the protections afforded by the new law. The DEIS suggests that state jurisdictional determinations were based on historic delineations shown in green on DEC Environmental tracker. It is wholly inappropriate to create a wetlands protection / mitigation plan for the entire Micron complex with some of the wetlands unprotected due to the weaknesses of the old law.



The wetlands in purple depict “informational wetlands” where DEC predictive mapping identifies potential locations for jurisdictional wetlands, beyond what was originally mapped.

Ramboll compiled lists and maps of wetlands deemed “non-jurisdictional,” likely because they were not on official maps or did not meet the federal “significant nexus” test to Waters of the United States. Without clear standards, it is uncertain whether all wetlands covered by the 2025 regulations have been identified or whether the count was constrained by outdated rules. This is a key deficiency for both the 404 permit and the DEIS.

In total, the Micron project is projected to result in the permanent loss of about 193.38 acres of federal-jurisdictional wetlands, which overlap with about 174.77 acres of state-jurisdictional wetlands. The company acknowledges about 10.5 acres of impacted non-jurisdictional wetlands and intends to compensate for their loss through mitigation, resulting in roughly 210 acres of total wetlands loss. State jurisdictional wetlands require protective 100-foot buffers, yet it is unclear whether non-jurisdictional wetlands or undercounted state wetlands will receive these higher protections or be held to outdated less protective standards.

Micron’s publicly subsidized proposal has been presented as a project that will both uplift New Yorkers and advance technology, but it cannot meet its public obligations if it avoids the full requirements of the updated environmental review process by shielding its wetlands obligations from the new law.

Micron and DEC must clarify through the EIS process that the project will not be exempt from the new freshwater regulations effective January 1, 2025.

A revised wetlands protection plan must include a clear statement that the Micron project will comply with the 2025 wetland regulations and a full analysis of all wetlands on the project site regardless of size, and consideration of all wetlands larger than 7.4 acres[16] as state-jurisdictional with associated buffers, protections, and mitigation. It should also include a review of wetlands smaller than 7.4 acres to determine if they meet "Local Importance" criteria, especially given the potential for endangered species on the Micron property.

Biological Resources – Wildlife and Endangered Species

White Pine Commerce Park (WPCP), the location chosen for Micron's megafab, is home to three federally and state-listed endangered species: the Sedge Wren, the Indiana Bat, and the Northern Long-Eared Bat. A 2023 study found that the number of Indiana bats detected on site suggests the presence of a summer maternity colony, where females give birth to and raise their young.[17] These species are protected under both the U.S. Endangered Species Act and the New York State Endangered Species Act.[18] The site also lies within the range and provides potential habitat for other endangered or threatened species, including the American Hart's-Tongue Fern, the Bog Turtle, and the Eastern Massasauga Rattlesnake.[19] Both the American Hart's-Tongue Fern and the Bog Turtle are dependent on particular types of wetlands or wet forest habitats. Even if these species are not currently present on the Micron property, construction will eliminate areas suitable for their survival, thereby shrinking their already limited habitat range.

Community members in the Syracuse area have voiced concerns that Micron's development will harm endangered bat species. Micron has stated it will delay certain construction activities until November to avoid disturbing bats during the warmer months when they roost in trees before retreating to hibernacula in caves in the fall. However, the loss of over 500 acres of trees, including nearly 100 acres of forested wetlands, will create long-term harm to these populations. While Micron plans to purchase land off-site to replace destroyed bat habitat, this measure will not undo the damage to hundreds of bats that rely on WPCP for summer roosting and especially for maternity colonies.

State and federal agencies should require stronger mitigation measures to protect these vulnerable species, along with the hundreds of other animals whose habitats include the wetlands of WPCP. [20]The final EIS must include:

- Greater consideration for reptiles and amphibians, such as provisions for road crossings and vernal pool protections in line with recent state legislation;

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[16] As of January 1, 2028, the threshold will decrease to 7.4 acres (3 hectares). NYDEC.N.d. "Freshwater Wetlands Program." https://dec.ny.gov/nature/waterbodies/wetlands/freshwater-wetlands-program.

[17]Coin, Glenn. 2024. "One more reason Micron is waiting until fall to break ground in Clay: endangered bats." *Syracuse.com*, February 27. https://www.syracuse.com/business/2024/02/endangered-bats-on-micron-site-in-clay-are-one-reason-chip-maker-aims-to-break-ground-in-november.html#:~:text=The%20presence%20of%20the%20bats,into%20hibernation%20in%20nearby%20caves.

[18] Ibid.

[19]Central New York Regional Planning and Development Board. N.d. " ON-11: White Pine Commerce Park Route 31 and Caughdenoy Road." https://www.cnyrpdb.org/programs/ecdev/SiteProfiles/v2_ON-11.pdf.

[20] Coin, Glenn. 2024.

- Wildlife corridors;
- Require conservation housing to reduce habitat loss due to subsidiary development;
- Require native plant landscaping both on the Micron site and in related developments). Native plant nurseries should be supported to counteract regional habitat loss;
- Additional protections should extend to creek habitats supporting mussels, fisheries such as sturgeon, and floodplain forest, etc.
- The plan should also incorporate native plant rescue and seed collection, including large tree relocation;
- Connected Actions - such as breeding disruption, habitat loss, carbon storage reduction, and greenhouse gas emissions—must be more thoroughly addressed.

G-3.5.1 Indiana Bat

The Indiana Bat, listed as endangered at both state and federal and state level (p. 3-123). is present on the Micron campus. The DEIS states that "The Micron Campus site and the Rail Spur Site are within 1 mile of a known Indiana bat maternity roost, within 3 miles of other known Indiana bat roost trees and capture locations, and within 14 miles of a known hibernaculum." (p.G-63). The DEIS reports severe population declines in Indiana Bat populations due to white-nose syndrome (WNS), a fungal disease first documented in the Howe Caverns in New York in 2006 (Cheng et al. 2021; Reeder and Moore, 2013)." (p. G-63). In particular, the draft states that, "In New York State, pre- and post-WNS count data on hibernating Indiana bats showed an average statewide population decline of 72 percent between 2006 and 2011 (Turner et al. 2011)." (p.G-64) and that "Declines in New York State since the introduction of WNS have been among the most severe of all monitored states and are approaching 100 percent (Cheng et al. 2021)." (pdf page 64).

G-3.5.1 The Northern Long-Eared Bat

The Micron campus is also home to the Northern Long-eared Bat, which is listed as an endangered species at both the federal and state level. Like the Indiana Bat, the Northern Long-eared Bat has experienced a steep population decline in recent years. According to the DEIS "The northern long-eared bat has experienced the steepest population decline of the six species of bats in the northeast that are affected by WNS, with numbers at monitored hibernacula in several states dropping by an average of 98 percent between 2006 and 2011 (Langwig et al.2012; Reeder and Moore, 2013; Turner et al. 2011) and approaching 100 percent in the years since (Cheng et al. 2021). Ninety percent of hibernacula where northern long-eared bats are still found contain fewer than 10 individuals (Cheng et al. 2021). In New York State, pre- and post-WNS count data from 18 northern long-eared bat hibernacula showed local population extinction at all but 4 of the sites as of 2011 and suggested an average statewide population decline of 97 percent (Turner et al. 2011). Surveys at these 18 hibernacula in New York State during the winter of 2012-2013 found only 14 Northern Long-eared bats where there had previously been more than 1,100 before WNS (Niver, 2015)." (p. G-65–66).

G-3.5.1 The Tricolored Bat

The DEIS also lists the Tricolored Bat as a species with the potential to be found on the Micron Campus and notes that the Tricolored Bat is "a species proposed to be listed as endangered under the ESA." (p. G-65). The DEIS notes that, "The tricolored bat has experienced local population declines of 90-100 percent across 59 percent of its geographic range due to WNS (Cheng et al. 2021). The range-wide population is predicted to decline by 89 percent over the next few years, resulting in a 65 percent reduction in spatial distribution (USFWS, 2021, 2022)." (p. G-66).

5.2.1 Background on Noise Sensitivity in Bats

Although the DEIS notes that research is limited in relation to noise sensitivity related to the species of concern, it is important to note that their references are from different regions. This is better than no references and this information should be considered, but it should be more clear that one is related to European *Myotis* and another in California. (p. G-157)[21] Even though the little brown bat is in the same genus (*Myotis* species) as the Indiana and Northern Long-eared bats, the impact of noise and other development to the little brown bat should not be compared to that of the federally endangered species. Little brown bats are known to be more tolerant of using anthropogenic resources and more generalist compared to Indiana and Northern Long-eared bats. (p. G-157).[22]

In sum, while the DEIS discusses noise sensitivity in bats, it draws on limited and geographically inconsistent research. References include studies of European Myotis species and California populations, which may not accurately reflect the needs of federally endangered species in New York. The little brown bat, for example, is more tolerant of human disturbance and habitat modification than the Indiana or Northern Long-Eared Bat, making it an unsuitable stand-in for assessing potential impacts.

Some of Micron's proposed mitigation measures resemble those used in Indiana Bat conservation at the Indianapolis Airport, where there has been over a decade of research that may be useful for improving the mitigation measures (p. 188). However, roost fidelity—the tendency of bats to return to the same maternity roosts—is not addressed, even though it is an important factor for endangered bats.[23] Artificial

[21] This paper should also be considered in this assessment: Li, Han, Chase Crihfield, Yashi Feng, Gabriella Gaje, Elissa Guzman, Talia Heckman, Anna Mellis, Lauren Moore, Nayma Romo Bechara, Sydney Sanchez, and et al. "The Weekend Effect on Urban Bat Activity Suggests Fine Scale Human-Induced Bat Movements" *Animals 10, no. 9*, (2020): 1636, https://doi.org/10.3390/ani10091636.

[22] See additional references: S.M Bergeson, T.C. Carter, and M.D Whitby. 2015. "Adaptive roosting gives little brown bats an advantage over endangered Indiana bats." *The American Midland Naturalist*, *174*: 321-330, https://doi.org/10.1674/0003-0031-174.2.321;
S.M Bergeson, J.B. Holmes, & J.M O'Keefe. 2019. "Indiana bat roosting behavior differs between urban and rural landscapes." *Urban Ecosyst 23* : 79–91. https://doi.org/10.1007/s11252-019-00903-4.

[23] S.E. Lewis, 1995. "Roost fidelity of bats: a review." *Journal of Mammalogy*, *76*(2): 481-496, https://doi.org/10.2307/1382357.
Gumbert, M.W., O'Keefe, J.M. and MacGregor, J.R., 2002. "Roost fidelity in Kentucky." *The Indiana bat: biology and management of an endangered species (A. Kurta and J. Kennedy, eds.). Bat Conservation International, Austin, Texas*:143-152, https://copperheadconsulting.com/wp-content/uploads/2021/01/Gumbert-et-al-2002.pdf.

roosts are included as a mitigation measure, but recent research on their effectiveness for Indiana Bats should be reviewed before implementation.[24]

The DEIS also discusses a separate project to monitor bat dispersal from the Jamesville hibernaculum. To maximize the data collected from such a disturbance, funding should cover aerial telemetry and numerous stationary antennas, as previous efforts without aerial support have had limited success.[25]

Micron's DEIS acknowledges "Impacts to population size and viability from the loss of roosting and foraging habitat on the Micron Campus would therefore be possible through potential reductions in fecundity, adult survival, or both." (p. G-151). However, given roost fidelity, bats are likely to return to their original roost sites, forcing them to find new ones at a critical time in early spring emergence. The proposed alternative roost sites are miles away, and it is uncertain whether bats are aware of these locations or if they provide suitable habitat. For the bats to find these sites requires a lot of energy and poses quite a risk.

Reptiles and Amphibians

Urban and suburban development is one of the greatest threats to reptile and amphibian populations.[26] Micron's construction is expected to cause mass mortality among these species, as they are "not mobile enough to avoid the paths of most site clearing and earthmoving activities" (p. 3-118). In addition to direct mortality, noise, artificial lighting, and changes to water balance and quality in the Youngs Creek basin could cause further harm.

Micron's mitigation plan includes stormwater Best Management Practices (BMPs), Stormwater Management Practices (SMPs), and an Erosion and Sediment Control Plan (ESCP) as measures to "minimize adverse effects" of construction on reptiles and amphibians (3-119).). While these measures may reduce some harm, the DEIS does not include a plan for rescuing or relocating affected animals. Regulators should require wildlife crossings to facilitate safe passage for turtles, salamanders, snakes, frogs, and toads, and the impact of noise and light pollution—particularly on frogs—should be evaluated. Micron should also provide case studies demonstrating the success of similar measures in minimizing harm to reptiles and amphibians in other developments.

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[24] Here are a few examples but also see additional resources from the O'Keefe lab: R.D. Crawford and J.M. O'Keefe. 2021. "Avoiding a conservation pitfall: Considering the risks of unsuitably hot bat boxes." *Conservation Science and Practice*, *3*(6): 412, https://doi.org/10.1111/csp2.412;
R. D. Crawford and J.M. O'Keefe. 2024. "Improving the science and practice of using artificial roosts for bats." *Conservation Biology*, *38*(1):14170, https://doi.org/10.1111/cobi.14170;
F.E. Tillman, G.S. Bakken and J.M. O'Keefe. 2021. "Design modifications affect bat box temperatures and suitability as maternity habitat." *Ecological Solutions and Evidence*, *2*(4) : 12112, https://doi.org/10.1002/2688-8319.12112.

[25] P.L. Roby, M.W. Gumbert and Lacki, M.J. 2019. " Nine years of Indiana bat (Myotis sodalis) spring migration behavior." *Journal of Mammalogy*, *100*(5): 1501-1511, https://copperheadconsulting.com/wp-content/uploads/2021/01/Roby-et-al.-2019-9-yrs-of-MYSO-spring-migration.pdf.

[26] U.S. National Park Service. 2010. "Reptiles and Amphibians - Threats and Concerns." https://www.nps.gov/articles/reptiles-and-amphibians-threats.htm.

To facilitate animal movement and limit road mortalities, regulators should require Micron to construct road crossings for fauna such as turtles, salamanders, snakes, frogs, and toads. The extent of the impact of noise and lighting disturbances, particularly on frogs, should also be evaluated and addressed. Lastly, Micron should provide studies of other developments where their proposed measures (BMPs, SMPs, and ESCP) were successful in minimizing adverse effects on reptiles and amphibians. Additionally, both artificial light at night (ALAN) and noise pollution affect amphibians, particularly frogs. The final EIS should also address the impact of artificial light on impacted species.

Aquatic Life

The DEIS acknowledges that filling wetlands and surface waters will reduce habitat value of the Youngs Creek wetland complex and associated aquatic features. The elimination of wetlands and headwater streams, as described in Section 3.3 (Water Resources), could permanently alter the transport of sediment, organic matter, nutrients, and macroinvertebrates that are critical to downstream physical, chemical, and biological attributes and processes, including species composition, nutrient cycling, and food web dynamics (Gomi et al. 2002, Meyer et al. 2007)."

The DEIS also makes clear that vegetation clearing and other construction activities may have detrimental impacts on nearby water bodies and sensitive species. In particular, the DEIS states that: "Vegetation clearing and other construction effects may elevate stream temperatures, which could cause temperatures to exceed the tolerance levels of sensitive species, including many cold-water fish and macroinvertebrates (Nelson and Palmer 2007). Changes in topography and soil exposure may temporarily increase soil erosion, which could increase sediment, turbidity, and nutrient loading in receiving waterbodies. This could lead to harmful algal blooms and decreased dissolved oxygen levels, which could lead to fish kills, increased establishment and spread of invasive plants, or other adverse effects on aquatic biota (Driscoll 2003, Fleming and Dibble 2015). As described in Section 3.3 (Water Resources), Micron would conduct water level and flow monitoring during construction to assess surface water and groundwater inflow and outflow in response to seasonal variations and precipitation events. In addition, Micron would implement the stormwater BMPs and SMPs and the ESCP described above to prevent discharge of sediment into wetlands and waterbodies during construction. These measures would help minimize adverse effects on the Youngs Creek complex downstream of areas of disturbance and on aquatic life in the complex." (p. 3-119)

Insufficient studies have been done to show that the measures proposed here will in fact minimize the stated effects.. The final EIS should include studies demonstrating that the proposed mitigation methods will successfully reduce the impacts on aquatic life.

Birds

Bird populations are in steep decline across North America.[27] The most recent *State of the Birds* report warns that "more than one-third of U.S. bird species are of high or moderate conservation concern."[28] Even species once considered common are experiencing sharp population declines in habitats where they

[27] Kenneth Rosenberg *et al*. 2019 "Decline of the North American Avifauna." *Science*. : https://www.science.org/doi/10.1126/science.aaw1313.

[28] "State of the Birds 2025." *US North American Bird Conservation Initiative*. https://www.stateofthebirds.org/2025/.

are known to be abundant.[29] A leading cause of these declines is habitat loss and fragmentation caused by development. Large-scale developments like the Micron project not only threaten specific groups, such as grassland birds, but also affect the broader diversity of avian species in the region. While the DEIS places emphasis on conserving grassland birds, effective mitigation strategies should address impacts across all bird species. These strategies could include creating and restoring habitat near the Micron site, as well as providing financial support to local conservation organizations such as the CNY Land Trust, Onondaga Audubon, and other environmental groups, including those promoting the use of native plants.

Open habitats in New York State are disappearing rapidly, contributing to population declines among grassland songbirds. According to the NYSDEC *Strategy for Grassland Bird Habitat Management and Conservation 2022-27*: "Current grassland habitat on State land is limited and insufficient to meet the needs of grassland birds."[30] Early successional habitats require regular natural or human disturbances, such as fire, wind, haying, or grazing, to remain viable. Two species of conservation concern in New York State - the Northern Harrier and the Short-Eared Owl - depend on large, contiguous tracts of grassland for breeding and overwintering. Many grassland songbirds are also area-sensitive, meaning they require minimum habitat thresholds to sustain viable populations. Mitigation measures must incorporate minimum thresholds suitable to conserve such species.

Both Northern Harriers and Short-Eared Owls have been observed within the proposed project site (G-3.5.5, page G-67) and are species of special concern in New York State. In the case of Northern Harriers, Ramboll staff documented a harrier egg on the ground, suggesting an attempt to nest at the site and "a short-eared owl was documented at the Micron Campus site by NYSDEC and members of the public on eBird during the winter of 2022-2023."(G-3.5.5, page G-67). The DEIS references a single Short-Eared Owl sighting, but observers have reported three individuals at the site in 2023, which may indicate a communal roosting site. This discrepancy underscores the need for more detailed information about the presence of Short-Eared Owls.

The Short-Eared Owl is particularly vulnerable to habitat destruction and fragmentation. It requires large, intact grassland areas for both breeding and wintering. Therefore, the primary threat to the Short-eared Owl is threats include habitat loss or fragmentation of habitat due to development, wetland loss, reforestation, and changing farming practices.[31, 32]

According to the Grassland Bird Trust, wintering flocks of 40 – 50 Short-eared Owls were historically easily observed in the large grassland areas that occurred across the state. Once one of the most common owls in the State, they are now listed as endangered in New York. Mitigation for any habitat with potential use as a wintering site by Short-eared Owls should be implemented. Because Northern Harriers

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[29] Johnson *et al*. 2025. "North American bird declines are greatest where species are most abundant." *Science*. May. https://www.science.org/doi/10.1126/science.adn4381.

[30] NYS DEC. NYSDEC Strategy for Grassland Bird Habitat Management and Conservation 2022-2027. https://dec.ny.gov/sites/default/files/2024-04/grasslandbirdsstrategyfinal.pdf.

[31] Corwin, Kimberly. 2012. "Species Status Assessment: Short-eared Owl." New York State Department of Environmental Conservation.

[32] Post, Tim. 2004. "State wildlife comprehensive plan- draft species group report for grassland birds." New York State Department of Environmental Conservation. Comprehensive wildlife conservation, September. https://guides.nynhp.org/northern-harrier/#:~:text=One%20of%20the%20most%20significant,1984%20cited%20in%20NatureServe%202003.

and Short-eared Owls have similar habitat requirements and are often observed in the same area, providing and managing large blocks of grasslands for mitigation will benefit both species.

Successful habitat management for Short-Eared Owls—and for Northern Harriers, which have similar habitat needs—requires conservation or restoration of large blocks of grassland exceeding 247 acres, with adequate prey populations such as small mammals. Mitigation for any habitat with potential wintering use by Short-Eared Owls should therefore be prioritized.

The DEIS requires Micron to achieve a 3:1 ratio of new or improved grassland bird habitat to habitat lost through the proposed project and connected actions. However, this ratio is not adequate (p. 3-136).

Due to the extreme amount of habitat loss expected from the Micron site development and the secondary impacts of related infrastructure and population growth, the mitigation ratio should exceed 3:1 to provide a new conservation benefit. In addition to the 1,400 acres developed for Micron's primary operations, land along Route 31 has been purchased for supply chain industries, additional parcels near the site are being sold, and large tracts will be used for road widening, new power lines, solar and wind projects, and infrastructure rights of way. Housing developments, shopping centers, entertainment venues, schools, and medical facilities are also expected to follow. Cumulatively, this will result in significant habitat loss over the next sixteen years.

Given these impacts, a habitat replacement ratio of at least 5:1 is reasonable to provide a net conservation benefit. The newly created grassland habitat is currently planned at a minimum size of 25 acres each, located in Oswego, Chenango, Yates, Cortland, Broome, Tompkins, and Tioga Counties at distances of approximately 10-60 miles from the Micron site. While this meets the NYSDEC's minimum threshold for grassland habitat parcels, it is insufficient to ensure the long-term success of grassland bird populations. *See* NYSDEC's *Strategy for Grassland Bird Habitat Management and Conservation 2022-27.* The minimum parcel size should be increased to75 acres. While the Grasshopper Sparrow has not been detected on the Micron property, they could possibly occur in the area (Table G-4). Ultimately, Grasshopper Sparrows need more habitat across New York State. Given that they are most successful in at least 75 acres of habitat, they could represent an umbrella species for grassland habitat mitigation. Mitigating habitat suitable for Grasshopper Sparrows would ultimately result in suitable habitat for most other grassland bird species that are less area sensitive.

Mitigation should prioritize fewer, larger contiguous tracts over many small parcels to reduce habitat fragmentation. The DEIS also notes that the mitigation plan will operate in five-year cycles but does not provide detailed site management plans or address long-term management responsibilities. This deficiency must be corrected.

Bird Migration

A major gap in the DEIS is the lack of consideration for migratory bird stopover use of the property. Central New York lies along the Atlantic Flyway, a critical migration corridor for numerous bird species, from small warblers to large raptors. Stopover habitat is essential for both short-distance migrants, such as sparrows traveling to Florida, and long-distance migrants, such as neotropical species, which require safe resting and feeding areas to complete their journeys.

Migratory bird surveys should be conducted during both spring and fall in addition to the breeding and wintering seasons. The majority of bird migration occurs at night, and artificial lighting can disorient or lure birds off their migration paths. To reduce this risk, construction lighting should be turned off between 11 p.m. and 6 a.m. during peak migration periods in spring and fall.

Excavation of the Site for Construction

The DEIS notes that the construction of the facility will require excavating over 1.6 million cubic yards (2.70 to 3.67 million total tons) of soil and muck from the existing wetlands and fields at the WPCP. This material is designated for "beneficial reuse" (p. 3-224 et seq). Micron should coordinate with the Wetlands Trust to see whether this material which is rich in wetland plant seeds, spores, and microorganisms could be utilized to create new wetlands as part of the wetlands mitigation plan. This would minimize long-distance transport of this huge amount of material, and could accelerate the establishment of new wetlands.

FLOODING

Loss of Water Storage & Increased Runoff

Micron's development plans will convert approximately 200 acres of wetlands and nearly 8,000 linear feet of streams into 645 acres of impervious surfaces such as asphalt and concrete, and 58 acres of semi-impervious surfaces. The company will clear 445 acres of trees and shrubs, remove 1.4 million cubic yards of soil and 978,000 cubic yards of bedrock, and import nine million cubic yards of fill to create a stable construction foundation.

In total, almost 10,000 acres of ground will be disturbed, resulting in permanent changes to how water flows through the site. Where water once pooled in wetlands, recharged into the ground, and was released gradually into streams, it will now run rapidly off pavement and rooftops toward remaining permeable land and downstream areas. This change will be especially pronounced during heavy rainstorms, which climate change is expected to make more frequent and intense. Micron's proposed wetland restoration sites are not located downstream of the campus, meaning they will not offset the loss of water storage capacity on-site.

Although Micron's Draft Environmental Impact Statement acknowledges an increase in stormwater runoff, it does not provide detailed stormwater management plans. Once complete, the project will include 66.6 acres of stormwater management areas, and Micron states it will use stormwater best management practices and adaptive management in compliance with state laws and permits. However, preliminary runoff calculations are not included in the DEIS. Using the Rational method (the standard yet simplified equation for estimating stormwater runoff) the site is expected to generate about 1,360 cubic feet per second of runoff during rainfall of two inches per hour.[33] For comparison, the Oneida River downstream of the site typically ranges from 2,000 to 8,000 cubic feet per second just downstream of the

[33] Thompson, D.B. 2006. "The rational method, Regional regression equations, and site-specific flood-frequency relations." Texas Department of Transportation Research and Technology, Report No. 0-4405-I: 78763–5080, https://library.ctr.utexas.edu/hostedpdfs/texastech/0-4405-1.pdf.

Micron site in Euclid, New York. Additionally, climate-driven increased heavy rain could further raise runoff levels, but this factor is not considered in the plan.

Stormwater quantities associated with the rail spur, childcare center, and wastewater treatment plant expansion have not been calculated, and the DEIS does not address potential water quality impacts from runoff. Without this information, it is impossible to evaluate whether the proposed 66.6 acres of stormwater management and wetland restoration can adequately mitigate the increased water quantity and quality issues resulting from site development. This omission must be remedied.

Micron's flood analysis is limited to comparing its sites to FEMA flood maps to determine whether they fall within the existing 100-year or 500-year floodplain. The DEIS acknowledges that development will increase stormwater runoff and potentially expand floodplain boundaries, stating that, "Flooding can endanger human life and damage property, particularly in floodplains where development has occurred (NYSDEC, 2024c). Changes in land use and precipitation and runoff patterns, impervious surfaces, and obstructions in floodways can alter floodplain boundaries and potentially expand floodwater footprints (Tetra Tech, 2019)." (p. F-30) But their analysis does not include any such modeling or calculations. They also acknowledge that significant growth of residential and commercial areas in the surrounding region is likely and will lead to the loss of more wetlands and streams and an increase in impervious surfaces. This will raise downstream flood and pollution risks but is not considered in the DEIS. The DEIS also fails to incorporate projected increases in heavy precipitation events caused by climate change. Instead, it concludes there is no flood risk because the site is not currently within or directly adjacent to a floodplain.

The lack of consideration of downstream flood risks means that impacts on downstream communities—particularly Phoenix and Fulton, which already face severe and extreme flood risks—are not adequately considered. Once the Micron facility is fully operational, it will discharge roughly 40 million gallons of treated industrial and sewage wastewater daily into the Oneida River, compared to the current 6 million gallons per day from the existing treatment plant. This wastewater discharge, combined with increased stormwater runoff, could exacerbate downstream flooding.

While upstream Brewerton is projected to have only moderate flood risk, downstream towns of Phoenix and Fulton have severe and extreme flood risks respectively, according to First Street Map analysis (see maps below).[34] These risks will only increase with climate change and increased impervious surfaces in the watershed.

The DEIS says the Micron development will not result in significant adverse or cumulative effects on water resources and floodplains. However, sufficient information has not been provided to take a hard look at cumulative flooding impacts or to justify that the proposed stormwater management and wetland restoration is enough mitigation to address all of these impacts and claim no significant adverse effects.

Impervious surface cover (ISC) is a strong predictor of stream degradation, with runoff doubling when ISC reaches 10–20 increasing more than fivefold at 75–100%.[35] The Micron site's conversion to a highly

[34] Brewerton, Moderate: https://firststreet.org/city/brewerton-ny/3608059_fsid/flood.
Phoenix, Severe: https://firststreet.org/city/phoenix-ny/3657661_fsid/flood.
Fulton, Extreme: https://firststreet.org/city/fulton-ny/3627815_fsid/flood.
Oswego, Moderate: https://firststreet.org/city/oswego-ny/3655574_fsid/flood.
[35] M. J. Paul and J. L. Meyer. 2001. "Streams in Urban Landscape." Annual Review of Ecology, Evolution and Systematics, Vol. 32, No. 1.

impervious surface will degrade surrounding wetlands and food webs, disrupt wildlife with noise and lights, and lead to runoff pollution that promotes invasive plant monocultures. The wetlands on site are good quality, including red maple swamps, hemlock hardwood swamps, floodplain forests, and dogwood and willow shrub swamps. These wetlands contain a high proportion of native species that benefit insect production that serve as the basis of food webs. Lowering the water table for construction over a 15-year period will further affect surrounding streamflow and aquatic ecosystems, potentially eliminating small streams and wetlands entirely. These impacts will be compounded by additional development in Clay, Cicero, and the broader Onondaga and Oswego County areas.

Given these cumulative risks, regulators should require a higher wetland replacement ratio of 10–15:1, similar to the Seneca Meadows wetlands restoration project to adequately compensate for the loss of wetland function and flood protection. [36]

Dewatering for Construction

Groundwater at the Micron site lies between 0.1 and 7.8 feet below the surface. To build the fabrication facilities and other underground infrastructure, Micron will need to pump water out of the construction area, a process known as dewatering. This will artificially lower the water table, potentially draining nearby wetlands, streams, and wells. The water will be stored and discharged, creating additional environmental considerations. Construction is expected to take 16 years, and the DEIS does not fully evaluate the environmental consequences of long-term dewatering or present a mitigation plan to protect nearby aquatic systems.

Interim Wastewater Discharge During Build-Out

Before the full wastewater treatment plant is upgraded, Micron plans to discharge water from construction, initial equipment testing, and possibly initial manufacturing in Fab 1. A temporary water treatment system will be built, consisting of biological treatment methods. By the time Fab 1 is operational in 2029, it is expected to be producing 8.7 million gallons per day of industrial wastewater. This temporary system could operate for at least four years, handling significant volumes of wastewater, yet the DEIS provides few details about how it will treat potential pollutants. Without a thorough plan, there is no assurance that this discharge will avoid significant environmental harm.

Water Contamination from Construction

Throughout the 16-year construction period, large portions of the Micron site will be cleared and excavated, exposing sediment previously stabilized by vegetation increasing erosion. The DEIS says "temporary erosion and sediment controls, stormwater management areas, and stormwater infrastructure" (p. 2-9) will be put in place. Utility installation will disturb 420 acres of land through trench excavation, pipe laying, and backfilling, or through jack-and-bore and horizontal directional drilling under streams. However, without detailed analysis of sediment transport, nutrient loading, and water quality impacts, it is unclear whether these measures will be sufficient to prevent contamination of surrounding water bodies.

[36] "Seneca Meadows Wetland Restoration Design-Build Mitigation for Landfill Impacts to Wetlands," RES, https://res.us/projects/seneca-meadows-wetland-restoration-design-build-mitigation-for-landfill-impacts-to-wetlands/.

UTILITIES AND SUPPORTING INFRASTRUCTURE

Energy Use

Micron proposes to burn 9.7 billion cubic feet of natural gas annually, primarily to incinerate process gases containing perfluorocarbons (PFCs) (p. 3-272). PFCs are powerful greenhouse gases. Micron will build a 16" diameter gas pipeline to their site, pictured in brown. Burning PFCs will create more hazardous fluorinated compounds, as discussed under Air Pollution.

To improve natural gas infrastructure the DEIS proposes upgrades to an existing facility located in Onondaga County at tax parcel 029.-01-13.1. In particular, the DEIS also proposes building a "new" natural gas line from GRS 147 to the Micron site, approximately 3 miles long (p. 2-27). The DEIS does not make clear who will pay the cost of building the new gas line. The creation of the use of a new natural gas line raises questions about the compliance with, and impacts to, CLCPA goals.

National Grid will provide power to the new Micron facility at a discounted utility rate through the Excelsior Jobs Program Rate Discounts, as part of the broader CHIPS agreement. This discount will apply to the first 10 years of the project, or Phase 1, and will amount to an estimated $244 million. In addition, National Grid will provide a $13.5 million revenue assurance contract and a $8.5 million economic development grant to Micron. The DEIS does not make clear who will cover the cost of Micron's discount. It is crucial that these discounts are not passed on to ratepayers.

Electricity Consumption

Micron will use 15,674 GWh of electricity annually, equivalent to the total power used by customers in CNY (Load Zone C) in 2023 (p. 3-269). To accommodate this enormous power demand, the DEIS calls for the expansion of the existing National Grid Clay substation by approximately 10 acres and new electric transmission lines of approximately one mile. However, it is unclear who is paying the cost of this expansion. It is also unclear how this level of electricity demand will impact the cost of electricity for CNY ratepayers and the reliability of the grid. The EIS must detail both who will bear the cost of this expansion and how this expansion along with Micron's massive electricity needs will impact the reliability of the electrical grid. The National Grid new natural gas line will not run along any property besides Micron (p. 3-8-9).

Telecommunications

The DEIS notes "the Preferred Action Alternative would not result in any significant adverse effects on broadband internet connectivity or telecommunications infrastructure, as existing systems are expected to meet both current and future Proposed Project related and regional demand" (p. 0-11). The DEIS calls for the re-routing of two fiber optics lines along Caughdenoy Road and NYS Route 31 (p. 2-42).

We urge the lead agencies to ensure these investments also benefit the local community by expanding broadband access. To do so, we recommend that the telecom improvements proposed also serve the communities surrounding the facility, as the area is predominantly rural and lacks sufficient broadband

access. This would align with the recommendations of the CEC Priorities Document, which lists expanding high-speed broadband access as one of its additional priorities to "Modernize and sustainably manage utilities and natural resources for a resilient and sustainable Central New York."[37]

Water Use

Micron's megafab is expected to use 48 million gallons of water per day (p. 2-31), and liquid waste generation per day is expected to be 8-20 million gallons, according to Micron's OCIDA application.[38] Micron will receive its water from the district's water source, which is Onondaga Lake. The water will be treated at Oak Orchard Wastewater Treatment Plant. Micron is working with the Onondaga County Water Authority to expand capacity by installing new wastewater force mains, pumping stations, and improvements to the Oak Orchard Wastewater Treatment Facility. Due to expanded capacity, a new wastewater/sewage treatment district will be created. The receiving water for this new wastewater treatment district will be the Oneida River. The DEIS also states the site will include on-site infrastructure to reuse water (2-37).

Onondaga County will plan, construct, and operate this expanded wastewater treatment plant, and Micron will pay for their services. However, Onondaga County will be responsible for removing any toxic chemicals from Micron's industrial wastewater that are not eliminated during pretreatment (see discussion of PFAS). Recent news reports indicate that Onondaga County's sewage plant on Hiawatha Boulevard was shut down due to unhealthy air quality, suggesting that the County does not have a strong track record in managing wastewater treatment plants.[39]

During the four years needed to construct this expansion, Micron will construct a temporary water treatment project for construction, initial equipment testing, and possibly initial manufacturing. The temporary plant will be responsible for treating up to 8.7 million gallons per day of industrial wastewater. However, very few details about the design, operation, or oversight of this temporary wastewater treatment are provided. The final EIS must provide more details about how both the temporary and future treatment plants will be managed to prevent adverse health and safety impacts.

According to reporting from 2023, the cost of the wastewater and water system expansion is estimated to be $625 million.[40] However, the DEIS does not confirm whether this estimate is accurate. Nor is it clear who will pay for the cost of the expansion. According to OCWA, they expect Micron to pay for the

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[37] "Harnessing Opportunity: Community Priorities for Central New York: Community Priorities Document," Central New York Community Engagement Community, 2024: 46, https://www.cnycec.org/community-priorities-document.

[38] "Micron Application: Onondaga County Industrial Development Agency Application for Financial Assistance," Onondaga County Industrial Development Agency, 2023: https://www.ongoved.com/assets/Uploads/files/projectfiles/7-20-23-Micron-Application-Website.pdf.

[39] Coin, Glenn. 2025. "The air is so toxic in Onondaga County's new $23 million sewage building that workers can't go inside." *Syracuse.com*, July 14, https://www.syracuse.com/news/2025/07/the-air-is-so-toxic-in-onondaga-countys-new-23-million-sewage-building-that-workers-cant-go-inside.html.

[40] Coin, Glenn. 2023. "It could cost $625 million to bring water from Lake Ontario to Micron. It's not clear who's paying." *Syracuse.com*, October 18. https://www.syracuse.com/business/2023/10/it-could-cost-625-million-to-bring-water-from-lake-ontario-to-micron-its-not-clear-whos-paying.html.

majority of the costs, while Micron has said they will only pay for part of the expanded water system.[41] It's critical that ratepayers do not bear the burden of Micron's massive water use and that infrastructure upgrades designed exclusively to meet Micron's needs do not come at the expense of other necessary upgrades to ensure a safe and reliable water system for the general public.

Although County water authorities have stated that ratepayers are unlikely to bear the full cost of upgrades, "OCWA reports that if its users were to bear the entire cost, the typical homeowner's bill would increase by 60%."[42] Additionally, will Micron receive any discounts from OCWA for its water use? The final EIS must clearly state whether any discounts will be provided to Micron, and if so, who will bear the cost of those discounts.

Utilities and Supporting Infrastructure Recommendations

Commit to affordability and abundance of energy & clean water for communities - Micron must ensure that their massive energy and water use does not compromise the affordability or availability of energy and clean water in Central New York or elsewhere. The costs of infrastructure upgrades and increased energy demand to benefit Micron should not be borne by ratepayers. The EIS must clearly state who will pay for the upgrades and expansion to water, electricity, energy, and telecom infrastructure. Additionally, the EIS must make clear if the cost utility tax abatements that Micron will receive will be offset onto ratepayers.

GREENHOUSE GAS EMISSIONS, CLIMATE CHANGE, AND CLIMATE RESILIENCY

Renewable Energy and Scope 2 Climate Impact

The DEIS concluded, "The GHG [greenhouse gas] emissions that would result from construction and operation of the Proposed Project are expected to be **unavoidably significant**. Even with significant avoidance and minimization efforts as well as mitigation, GHG emissions associated with operation of the Micron fabs and related facilities will represent a significant increase in overall GHG emissions in the Five County Area and New York State." (p. 5-2)

To their credit, the authors of the DEIS acknowledge that the GHG emissions will significantly contribute to climate change. However, we are shocked that more has not been done to make these emissions avoidable, especially given the urgency of local and global efforts to combat climate change.

The most significant GHG emissions from semiconductor processing, distinct from Micron's energy use, are fluorinated gases, which are extremely potent and persistent greenhouse gases. Some of these gases remain in the atmosphere for tens of thousands of years. The DEIS estimates that the project will release 881,699 metric tons CO_{2e} per year of these gases, even after on-site thermal oxidation (incineration) (p. 3-205). Furthermore, stack emissions are treated by wet scrubbing to reduce acid releases. These

[41] Ibid.
[42] Ibid.

scrubbers discharge pollutants, including PFAS, into wastewater, where they must then be removed and/or treated.

The DEIS identifies another category of processed greenhouse gas emissions, heat transfer fluids (HTFs). The DEIS projects annual fugitive HTF emissions of 199,699 metric tons/y CO_{2e} per year. While the DEIS notes that the semiconductor industry is researching ways to prevent such releases, it offers few details. For now, Micron expects to pass the environmental costs of its greenhouse gas emissions onto the public.

The DEIS claims that the company will mitigate 2.4 million tons of CO2e through the purchase of renewable electricity (p. 3-215), yet it provides no procurement guidelines and fails to acknowledge the mitigation limitations of renewable energy credits (RECs). Unless it actually creates renewable energy generation, the Micron project will cause the release of a huge amount of carbon dioxide from energy generation. Without significantly more stringent mitigation, the proposed project will have substantial negative impact on New York's renewable electricity targets, necessitating the continued operation of fossil gas power generation beyond current plans and introducing significant additional on-site gas burning as is discussed more in the section analyzing the project's impact on the state's CLCPA goals.

To reduce greenhouse gas emissions from electricity production, a huge buildout of renewable energy will be needed. Micron plans to install solar panels on a few office buildings, locomotive sheds, and parking garages, generating 4,161 MWh per year; however, this is less than .03% of Micron's electricity needs (p. 3-203). Much more must be done to meet CLCPA requirements.

Best Management Practices and Renewable Energy Credits

The DEIS asserts that "To further avoid and minimize GHG emissions and effects to climate change and climate resiliency during construction and operations, Micron would implement the best management practices (BMPs) noted within this Chapter and additionally in Table 3.7-14" (p. 0-9). In the context of addressing the significant climate impacts of this project related to its electricity consumption, Micron makes disconcerting claims.

1. Micron will "install on-site renewable energy systems and onsite battery storage systems to supplement the Proposed Project's energy supply to the extent practicable" (p. 3-215).

This represents one of several sustainability requirements set out in the New York Green CHIPS legislation.[43] However, while the claim is included several times throughout the DEIS, the scale of the project severely limits its usefulness in climate mitigation to little more than a box-ticking exercise. Table 3.7-13 reports that the 4MW solar array will mitigate a projected 457 metric tons of Scope 2 emissions per year, out of a total projected Scope 2 emissions footprint of 2,273,587 metric tons, or 0.02%.

2. "Micron also has committed to reduce its Scope 2 emissions by purchasing 100 percent carbon-free electricity utilizing power purchase agreements and renewable energy credits for the power consumption of the Micron Campus, thus avoiding up to approximately 2.4 MMT of CO2e

[43] "Micron Green CHIPS Sustainability Requirements." Empire State Development. https://esd.ny.gov/micron-green-chips-sustainability-requirements.

> (p. 3-215). "When compared to pre-mitigation GHG emissions, Micron avoids approximately 77 percent of potential GHG emissions."

Micron has committed to 100% carbon-free electricity emissions to reduce Scope 2 emissions as a result of the purchase of renewable electricity (p. 3-215), offsetting the full projected 2,394,307 metric tonnes of emissions included in table 3.7-10 (p. 3-205).

The purchase of renewable electricity represents a significant portion of its claim of mitigating 77% of potential GHG emissions - a claim which must be closely examined (p. 3-46). The DEIS states that Micron will utilize power purchase agreements and renewable energy credits, but fails to commit Micron to any specific ratio, nor does it preclude Micron from relying entirely on unbundled renewable energy credits to meet this claim.

The purchase of unbundled RECs is widely understood to be ineffectual as a strategy for reducing fossil fuel emissions. The U.S. Department of Energy, for example, has explicitly concluded that RECs are not effective in reducing GHG emissions or deploying additional renewable energy:

> Given the impacts of adding load to the grid… purchasing an Energy Attribute Certificate[44] from any low-GHG generator is not in and of itself sufficient to justify a claim of low lifecycle GHG emissions due to the presence of induced effects.[45]

The use of RECs as a best management practices (BMP) is contrary to the common usage of BMPs in other contexts, and as a practice is inappropriate to apply here. The EPA's Guidance Manual for BMPs states "Best management practices are **inherently pollution prevention practices."**[46] It has been widely and firmly established that the purchase of RECs does not prevent or reduce pollution, and as such cannot be considered a BMP.

Agencies, including the U.S. Department of Energy (DOE), has explicitly said that RECs are not effective in reducing GHG emissions (pollution) or deploying additional renewable energy. Per the DoE Assessing Lifecycle Greenhouse Gas Emissions Associated with Electricity Use for the Section 45V Clean Hydrogen Production Tax Credit.

Numerous academic studies have shown that the relatively small revenue generated from the sale of unbundled RECs, given their low per unit price, has done little to expand renewable energy capacity.[47]

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[44] EAC is another term for REC.

[45] "Assessing Lifecycle Greenhouse Gas Emissions Associated with Electricity Use for the Section 45V Clean Hydrogen Production Tax Credit," Department of Energy, 2023, 8, https://www.energy.gov/sites/default/files/2023-12/Assessing_Lifecycle_Greenhouse_Gas_Emissions_Associated_with_Electricity_Use_for_the_Section_45V_Clean_Hydrogen_Production_Tax_Credit.pdf.

[46] EPA. 2023. "Best Management Practices" November. https://www.epa.gov/watersense/best-management-practices.
"Guidance Manual for Developing Best Management Practices." Environmental Protection Agency, 1993: 4, https://19january2021snapshot.epa.gov/sites/static/files/2020-02/documents/owm0274.pdf.

[47] Holt, E., Sumner J. and L.Bird, "The Role of Renewable Energy Certificates in Developing New Renewable Energy Projects," National Renewable Energy Laboratory, (2011): https://docs.nrel.gov/docs/fy11osti/51904.pdf; M. Brander, M. Gillenwater & F. Ascui, "Creative accounting: A critical perspective on the market based method for reporting purchased electricity (scope 2) emissions," *Energy Policy, vol. 112*, (2018): 29-33. https://www.sciencedirect.com/science/article/pii/S0301421517306213.

Recent studies indicate that the purchase of unbundled RECs rarely results in the addition of renewable energy to the grid, and in fact, are significantly undermining the credibility of voluntary corporate targets under the Science Based Target initiative.[48]

As an action to effectively reduce or eliminate GHG emissions from electricity generation, the purchase of RECs is inappropriate and insufficient, and cannot be considered a BMP.

Further, neither the DEIS nor Micron's Sustainability Report provide any details to demonstrate whether the company's REC procurement practices would meet criteria for high-impact sourcing, or simply prioritize lowest-cost options. According to Micron's latest available CDP report, renewables currently accounted for 10.4% of the company's total U.S. electricity consumption in its current operations (in Idaho and Virginia), of which only 4.9% is from sources that may meet high-impact criteria, namely, those connected to local transmission and additional to the grid. To meet the company's goal of sourcing 100% renewable electricity for its U.S. demand by the end of 2025, Micron will likely be heavily reliant on REC purchases.

The DEIS acknowledges that "Scope 2 emissions from offsite fossil fuel combustion to generate electricity account for almost half of total GHG emissions from the semiconductor manufacturing sector (U.S. Department of Commerce NIST-CPO 2024)," emissions that will be merely hidden if the company pursues a low-impact sourcing approach for renewable electricity.

To accurately represent its impacts, the environmental review should clearly state the criteria by which RECs/ EACs will be sourced, and how Micron will prioritize high impact Power Purchase Agreements (PPAs) and battery storage.

In sum, contrary to the fanciful claims in the DEIS, neither the purchase of RECs nor the purchase of renewable power from generators that are already connected to the grid mitigate carbon dioxide emissions from electricity generation. Mitigation can only be done through additional renewable energy generation that is added to the grid or serves Micron directly.

Furthermore, even if Micron's renewable electricity goal is achieved, it is inaccurate to claim that purchasing renewable electricity will mitigate 100% of Micron's Scope 2 emissions.

Micron's commitment and its renewable electricity matching approach are not sufficient to mitigate its emissions, as they do not adequately reflect actual demand and induced power generation. This is because mitigation is calculated on an annual, rather than granular temporal basis (e.g. hourly or less). The annual matching model used by Micron calculates the total MWh of electricity consumed by the company over the course of a year, which it then offsets with an equivalent quantity of MWh of purchased renewable electricity. However, semiconductor fabs such as the one proposed by Micron rely on significant and relatively constant electricity supply to operate 24/7.[49] Matching annual electricity consumption with

[48] Lloyd Bjorn and Matthew Bander, Matthew, "Renewable energy certificates threaten the integrity of corporate science-based targets." Nature Climate Change, volume 12, (2022): 539–546, https://www.nature.com/articles/s41558-022-01379-5.

[49]Chen, Steven; Gautam Apoorv; and Weig Florian. 2013. "Bringing energy efficiency to the fab." McKinsey on Semiconductors. https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/operations/pdfs/bringing_fabenergyefficiency.ashx.

annual renewable electricity purchases implies that the fab is powered by solar power at night, or by wind power on still days – an inaccurate and misleading claim. This hides a significant additional fossil fuel load demand added to the grid to ensure that the fab can keep operating when renewable power sources are unavailable.

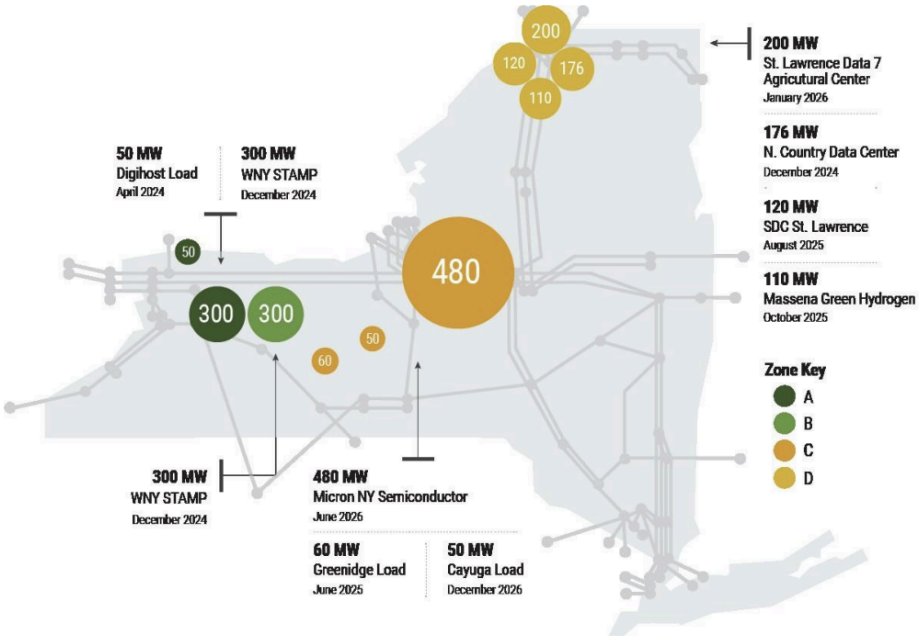
To put this in context, Google has a commitment to 24/7 carbon-free energy to power its operations. Despite having been claiming to run on 100% renewable electricity for several years prior to the announcement, when calculated on a 24/7 hourly-matching basis, Google's actual carbon-free energy ratio, accounting for grid energy, was just 66%.[50]

To deliver real Scope 2 emissions mitigation, Micron must commit to power its facilities using 24/7 hourly-matched carbon-free energy, prioritizing new renewable electricity and battery storage. This is the only approach that would meaningfully decarbonize the grid and avoid additional fossil fuel buildout.

The New York Integrated Systems Outlook already projects that fossil fuel power generation will need to remain online longer due to increased demand, including the Micron plant, which is identified as the most significant single demand source, at an additional 480MW:

[50] "Google Environmental Report." Google, 2025: 107. https://www.gstatic.com/gumdrop/sustainability/google-2025-environmental-report.pdf.

Capital Regions. Most of these new loads consist of manufacturing facilities and data centers, as well as potential hydrogen production operations. The following diagram highlights the large loads that are assumed to be connected in the Base Case:



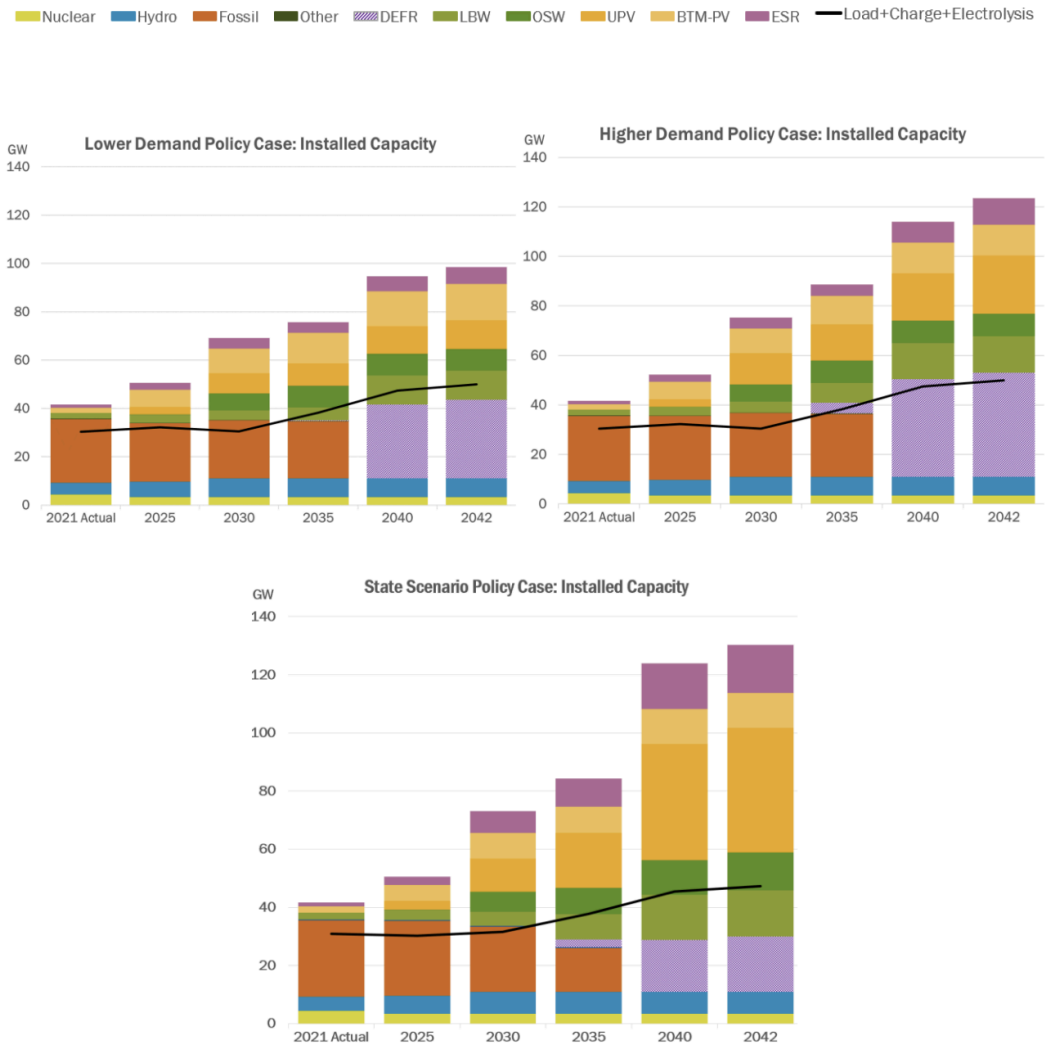
[51]

Under all growth scenarios, the NYISO expects electricity demand to grow significantly through 2042, requiring generation capacity to triple. According to the *Outlook*, since the previous forecast was published the ISO now projects a "greater need for grid energy to be supplied from dispatchable resources (e.g., fossil fuel or DEFR) compared to past evaluations," in part due to a revised forecasted hourly demand profile, likely influenced by major load sites such as the Micron fab. The tables below show fossil fuel generation (orange) and "DEFR" (purple), which includes fossil fuels, as well as new and as-yet unproven technology. If the unproven small modular reactors (SMRs) and green hydrogen do not materialize, the increased demand could be met by fossil fuels that would otherwise be slated for retirement, undermining New York's climate goals.

[51] "2023-2042 System & Resource Outlook (The Outlook)." New York Independent System Operator, 2024: https://www.nyiso.com/documents/20142/46037414/2023-2042-System-Resource-Outlook.pdf.

✓ **New York will require three times the capacity of the current New York generation fleet to meet projected future electricity demands.**

The total installed generation capacity to meet policy mandates within New York is projected to range between 100 GW and 130 GW by 2042. This conclusion is consistent with the findings from the prior Outlook. The following diagrams show the installed capacity required for each of the three Policy Case scenarios. Each color represents a different resource type as follows:



NY-ISO identifies load flexibility as a key mitigation measure for new large-load projects connecting to the grid, of which the Micron proposed project is the largest:

> "For new large load projects connecting to the New York power system, the ability to move load from times of greater system demand to times with lower system demand or higher renewable energy production, or load flexibility, should be considered. Load flexibility can significantly reduce the generation capacity requirements and, in turn, potentially reduce the generation capacity buildout needed to meet policy mandates. For every one megawatt (MW) of peak load flexibility enabled, the amount of renewable capacity required is reduced by at least one MW and potentially much more."

This technology is already available and ideally suited for large-load industrial processes such as the proposed Micron fab, presenting significant potential benefits and mitigation potential.[52] However, the DEIS fails to address the potential or importance of demand flexibility in avoiding significant spikes in fossil fuel demand.

While New York state is investing significantly in improved transmission lines and prioritizing renewable power generation to meet new demand growth and achieve renewable electricity targets, it is worth noting that the State Comptroller has identified that this build-out can negatively impact ratepayers. The costs of incentivizing renewable electricity development and transmission upgrades are borne almost entirely by New York's utility customers through a charge per kilowatt-hour of electricity consumed. New York's ratepayers already face among the highest charges on a state by state basis.[53]

While Micron's plan includes provisions to support the improvement of state transmission lines directly to the facility, further improvements required at the state level to maintain and upgrade the grid will be borne by ratepayers and other electricity consumers. Micron is proposing no more than purchasing low-cost RECs, with no obligation to contribute to state renewable generation or grid infrastructure. This is unacceptable and contrary to CLCPA requirements.

The DEIS fails to consider the project's impact on New York's attainment of its statutory renewable energy mandates, which are not advanced by Micron's proposed purchase of RECs.

Under the Climate Leadership Community Protection Act, by 2030, a minimum of 70% of the statewide electric generation secured by jurisdictional load serving entities to meet the electrical requirements of end-use customers in New York state "shall be generated by renewable energy systems,"[54] en route to achieving statewide greenhouse gas emission reductions of at least 85% below 1990 levels by 2050.[55] As discussed in the New York Public Service Commission's order on the Biennial Review of the state's Clean Energy Standard, New York has a considerable distance to go in achieving the 70% renewable

[52] Johnston Anna, Fraser Archibald, and Dan York. 2024. "Enabling Industrial Demand Flexibility: Aligning Industrial Consumer and Grid Benefits." American Council for an Energy-Efficient Economy White Paper: https://www.aceee.org/sites/default/files/pdfs/enabling_industrial_demand_flexibility-aligning_industrial_consumer_and_grid_benefits.pdf.
[53] New York State comptroller, Thomas P. DiNapoli. 2023. "Renewable Electricity in New York State: Review and Prospects." https://www.osc.ny.gov/files/reports/pdf/renewable-electricity-in-nys.pdf.
[54] P.S.L. § 66-p(2)(a).
[55] Env. Conserv. L. § 75-0107(1)(b).

energy by 2030 mandate. As of 2022, renewable and zero-emission electric generation comprised only 46.1% of statewide load.[56]

The state's ability to reach 70% renewables has been challenged by a number of factors including global interest rates, inflation, supply chain pressures, transmission system inadequacies, interconnection delays, changes to capacity accreditation at the New York Independent System Operator, changes in federal incentives, siting complexities, and growing statewide electric load.[57]

Micron represents a massive new source of electricity demand in New York State and will further impede the state's efforts to achieve 70% renewable energy by 2030. Total retail electricity sales in 2023 were 139,422 GWh,[58] meaning that Micron's 15,673 GWh would represent 11.2% of New York's total electricity consumption. Introducing a single load that increases statewide electricity consumption by more than 11% has major implications for the state's ability to meet its climate and clean energy legal mandates, an issue the DEIS fails to adequately address.

To comply with the CLCPA's 70% renewable energy mandate, the state would need to procure an additional 10,971 GWh of renewable energy—70% of Micron's anticipated demand. Yet, the DEIS does not assess the environmental impacts of this additional energy development burden.

Micron's use of fossil fuels and the expansion of a natural gas line move New York further away from the CLCPA goals of 70% renewable energy by 2030 and 100% zero-emission energy by 2040. This appears to be a violation of the CLCPA. In addition, the DEIS fails to explain why Micron is not utilizing another form of energy, preferably renewable, rather than proceeding with a new gas line to the facility.

Renewable Energy Recommendations

Generate renewable energy and minimize contributions to the global climate emergency - To meet Micron's 100% renewable energy commitment and comply with the NY State's requirement to significantly mitigate the factories' greenhouse gas emissions, the company must create a comprehensive plan to generate or purchase new renewable energy using wind, solar, and grid and storage infrastructure - without relying on the purchase of renewable energy credits.

The State of New York should incentivize the reduction of Micron's GHG process gas emissions by withholding incentives or imposing penalties for those emissions. If officials accept the project's GHG emissions are "unavoidable", Micron will effectively be granted a blank check to contribute significantly to climate change.

[56] New York State Public Service Commission. 2025. "Order Adopting Clean Energy Standard Biennial Review as Final and Making Other Findings, Case 15-E-0302," P. 7, https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BF05ED596-0000-CF2F-A3A1-391B4DA423EA%7D.
[57] *Id.* at 8.
[58] EIA. 2023. New York Electricity Profile. https://www.eia.gov/electricity/state/newyork/.

Additional Recommendations

- Require 24/7 renewable electricity that meets criteria for temporal, location and additionality-based matching, to avoid contributing to fossil fuel late retirement and to safeguard New York's climate goals.
- Incorporate load flexibility as key mitigation strategy to reduce grid strain and fossil fuel reliance.
- Eliminate the use of unbundled RECs entirely, as they do not deliver real emissions reductions or support new renewable generation.

SOLID WASTE, HAZARDOUS WASTE, AND HAZARDOUS MATERIALS

High Level Takeaway

Micron, like other semiconductor producers, has always utilized and released into the environment a wide range of hazardous substances. In fact, the industry introduces hazardous substances into wafer fabrication faster than researchers can determine their toxicity and government agencies can regulate them. The Clay environmental review provides an opportunity to address potential semiconductor pollution in advance.

Unfortunately, the draft Environmental Impact Statement (DEIS) is vague, providing the public and relevant agencies insufficient information to determine if best practices will be used to prevent human and environmental exposure to chemicals from the Micron factory.

While we understand that Micron cannot stop using hazardous substances that are intrinsic to production, the costs—health, environmental, and financial—of releases of these substances are borne by others. Micron, therefore, has an obligation to reduce the use of such substances and prevent their release into surface water, groundwater, and the atmosphere, as well as comply with state and federal regulations and statutes.

Furthermore, the sixteen-year-plus timeframe in the DEIS does not appear to provide a mandatory mechanism for updating the review, which is a material omission. The semiconductor industry is constantly upgrading its products and modifying its processes, so approval of the EIS should include a requirement for periodic updates to ensure that the potentially additional impacts from updated processes do not become significant.

Finally, the semiconductor industry, through organizations such as the Semiconductor Research Consortium, is sponsoring research with the objectives of understanding and addressing the potential environmental impacts of the use and release of PFAS "Forever Chemicals." We believe that this is because the companies expect PFAS to be both monitored and regulated. Therefore, careful review and documentation, in the final EIS, of the current state of PFAS impacts of semiconductor production is key to a thorough assessment of the issue. Such an assessment would promote better management practices as well as beneficial substitution of other substances.

Failure to identify chemicals & quantities.

The DEIS needs to include far more detail about what chemicals are being used by Micron. New York State has issued regulations specifying the content of an adequate EIS. NYCRR 617.9 (b)(1) states " An EIS must assemble relevant and material facts upon which an agency's decision is to be made. It must analyze the significant adverse impacts and evaluate all reasonable alternatives." The DEIS fails to meet this standard.

Table 3.8-9 (p. 3-242) lists various hazardous chemicals: flammable gases, pyrophoric gases, corrosives, toxic gases, oxidizers, asphyxiants, flammable liquids, and water reactive substances. (Pyrophoric chemicals spontaneously catch fire when exposed to air.) The DEIS needs to list the identity and quantities of these chemicals to properly define health and safety risks for both workers and the surrounding community. Moreover, the environmental impacts of a sudden release of hazardous chemicals can only be assessed if the identity and potential quantities are given in the EIS.

The Programmatic Environmental Impact Statement for Modernization and Expansion of Existing Semiconductor Fabrication Facilities offers an example of the level of detail needed in an EIS for a semiconductor fab, whether new or existing. Appendix D of said document has ten pages listing about 200 "representative" chemicals used by the semiconductor industry. All of these are listed under the Toxic Substances Control Act (TSCA).[59] NIST also offers specific information regarding hazardous chemicals used by the chips industry in Table 3.8-1, shown on the next page.[60]

In contrast, the DEIS (p. 3-244) lists *only* eight chemicals (ammonium hydroxide, anhydrous ammonia, hydrogen, hydrogen chloride, silane, chlorine, dichlorosilane, and HF) which meet the narrow definition of "extremely hazardous substances" above applicable threshold quantities given in 40 C.F.R. § 68.130. Fewer than ten other chemicals are mentioned on pages 3-237 and 3-239. This is completely inadequate for the agencies to analyze the significant adverse impacts. All of the chemicals used by Micron in its manufacturing process must be identified and approximate quantities provided.

Table 3.8-10 (DEIS, p.3-242) illustrates the inadequacy of the chemical information in the DEIS. This table, titled Hazardous Materials, reveals that 13.5 million gallons of "Liquid corrosives" will be stored at each fab. Critically, the type of corrosives is not identified. Sulfuric acid is a corrosive. So is ferric chloride. These pose completely different types of risk and environmental impacts. Therefore, the failure to specify the type of corrosives makes it impossible to provide a meaningful impact analysis.

This issue is repeated for all other categories of chemicals. For example, the DEIS lists 94,600 pounds of toxic gases stored at each fab but it is impossible to tell how toxic these "toxic gases" are. It is well established that the chips industry uses deadly gases like arsine, phosphine and nitrogen trifluoride (see e.g. NIST 2024, Table 3.7-1).[61] The DEIS needs to specify how much of these gases will be stored on site, and how they will be handled, to meet the requirements of NYCRR 617.9 (b)(1).

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[59]NIST. 2024. *Final Programmatic Environmental Assessment [PEA] for Modernization and Internal Expansion of Existing Semiconductor Fabrication Facilities under the CHIPS Incentives Program*, (Final PEA), CHIPS Program Office, June 28, p. C-13. https://www.nist.gov/system/files/documents/2024/06/28/Final%20PEA%20for%20Modernization%20and%20Expansion%20of%20Semiconductor%20Fabs%206-28-2024%20-%20OGC-508C.pdf

[60] NIST. 2024. *Final PEA..." p. 70.*

[61] NIST. 2024. *Final PEA..." p. 70.*

Table 3.8-2. Hazardous Process Chemicals Used in Semiconductor Manufacturing

Chemical Category	Use(s)	Process Chemical	Hazard Class
Aqueous solutions (commonly acids and bases)	To wet-etch or clean the surface of the wafer; as part of the photolithography process.	Hydrochloric acid, HF, sulfuric acid, nitric acid, ammonium hydroxide, potassium hydroxide	8 Corrosive Material
		Ammonium fluoride	6.1 Poisonous Materials
		Hydrogen peroxide	5.1 Oxidizer
Specialty gases	As precursors to deliver a substance such as arsenic or tungsten onto the wafer or into the silicon lattice (used in small quantities); to dry-etch a pattern onto the surface of the wafer.	Silane	2.1 Flammable Gas
		Ammonia, nitrogen trifluoride, sulfur hexafluoride	2.2 Non-Flammable Compressed Gas
		Ammonia, phosphine, tungsten hexafluoride, arsine, CO, fluorine, chlorine, diborane	2.3 Poisonous Gas
Organic compounds (commonly solvents)	As constituents in specialty chemicals; to clean the wafer; as part of the photolithography process.	Isopropanol, xylene, propylene glycol ethers, acetone	3 Flammable and Combustible Liquid
Metallic compounds	Applied to the wafer in specific locations to create transistors; to plate wafers to provide electrical connections.	Copper sulfate	9 Miscellaneous Hazardous Material

Sources: ISMI, 2006; 49 C.F.R. Part 172; EPA, 2022a.

The DEIS says Micron will request "detailed chemical constituent documentation from its chemical vendors, including PFAS content. Those vendors often require a non-disclosure agreements before divulging such information."[62] Here, such non-disclosure is unacceptable. The public has a right to know the identity of hazardous substances used and released in their communities. Most assuredly, Micron's competitors rely on the same chemical suppliers, so it's difficult to justify anything but full disclosure of the constituents of the industry's process and product chemicals.

Forever Chemicals

The DEIS language on per-and polyfluoroalkyl substances (PFAS) "forever chemicals" is sketchy and general, providing no information about the types of PFAS to be used and/or discharged from the facility. PFAS constitute a large class of over 12,000 fluorinated chemicals that have gained notoriety due to their

[62] *Micron Semiconductor Manufacturing Project, Clay, NY Draft Environmental Impact Statement,* (DEIS)CHIPS Program Office and Onondaga County Industrial Development Agency, June, 2025, EISX-006-55-CPO-001, p. 3-240. https://ongoved.com/wp-content/uploads/2025/06/Micron-Draft-EIS.pdf.

persistence, their ability to accumulate in the bodies of human beings and wildlife, and their toxicity. The CHIPS Program Office PEA (2024) in its *Final Programmatic Environmental Assessment for the Modernization and Expansion of Existing Semiconductor Fabrication Facilities* contains considerable detail about the use of PFAS in wafer fabrication. It reported, "Semiconductor manufacturers use PFAS as an essential material in multiple steps in the fabrication process."[63] However, the entire semiconductor industry, including Micron, has stopped using PFOA and PFOS, the only two PFAS with federal drinking water standards. Appendix C of that document includes a 10-page table listing the numerous types of PFAS used by the semiconductor industry. The DEIS must be revised to include far greater detail about the types and quantities of PFAS used in the Micron fabs to facilitate a thorough assessment of their likely impact.

Regulation of PFAS has not caught up to the reality that hundreds of types of PFAS are employed in modern chip manufacturing. Most regulations are focused on just two types of PFAS: perfluorooctanoic acid (PFOA) and perfluorooctane sulfanate (PFOS). The state of New York and USEPA have issued drinking water standards only for these two types of PFAS.[64] NY state has also issued drinking water quality guidelines for PFOA and PFOS only.[65]

However, these types of PFAS are no longer used by the chips industry. As noted in CHIPS (2024; p. C-15), "Long-chain PFAS compounds, such as PFOS, have been replaced by short-chain PFAS. Another long-chain PFAS, PFOA, was phased out in the United States by 2015 and is projected to be eliminated globally by 2025.[66]

Treatment of PFAS in wastewater

Wastewater generated at Micron's facility will be treated in a pre-treatment system on the Micron campus, and portions thereof sent to a specialized facility owned and operated by Onondaga County: "Industrial wastewater generated on the Micron Campus that is not treated at the campus for reuse would be sent as secondary residual wastewater via the wastewater conveyance to the IWWTP at the Oak Orchard Site. For compliance with ECL Article 17 (6 NYCRR Part 750), the IWWTP would be required to obtain an individual SPDES permit issued by NYSDEC to permit discharge of treated industrial wastewater into surface waters associated with the Oneida River." (DEIS, p. 3-83).

The DEIS (p. 3-83) acknowledges that the wastewater sent to the IWWTP will contain PFAS, since the "IWWTP also would include technologies specifically designed to remove emerging contaminants, such as per- and polyfluoroalkyl substances (PFAS), including reverse osmosis and nanofiltration …granular activated carbon …, ion exchange resins … and advanced oxidation processes…. To comply with its SPDES permit for the IWWTP, OCDWEP would be required to perform regular analytical testing of surface water and effluent samples collected using NYSDEC-approved methods and would be subject to ongoing sampling, monitoring, and reporting requirements."

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[63] NIST. 2024. *Final PEA..."*
[64] NYS Dept of Health. 2024. "Public Water Systems and New York State Drinking Water Standards for PFAS and Other Emerging Contaminants." Center for Environmental Health. https://www.health.ny.gov/environmental/water/drinking/docs/water_supplier_fact_sheet_new_mcls.pdf.
[65] NYS Dept of Environ. Conservation. 2023. "2023 ADDENDUM TO JUNE 1998 DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) NO. 1.1.1." https://extapps.dec.ny.gov/docs/water_pdf/togs111addendum2023.pdf
[66] EPA, 2022; WSC, 2023.

The DEIS claims that "Based on these measures, industrial wastewater discharges from operation of the IWWTP would not be anticipated to result in significant adverse effects on water resources outside the mixing zone."

This claim is false for several reasons. First, NYSDEC-approved analytical methods, namely USEPA draft Method 1633, only measures 40 types of PFAS. Research conducted at Cornell University[67] and elsewhere[68, 69] demonstrates that wastewater created by semiconductor manufacturing contains potentially hundreds of different types of PFAS. In particular, the study noted that, "Nontarget analysis revealed the presence of 41 homologous series of PFASs comprising 133 homologues." [70] Of these, a fraction can be identified using sophisticated analytical techniques. The remainder are "non-target" PFAS which can constitute a significant fraction of the total mass of PFAS in the wastewater. The same study found that concentrations of non-targeted PFAS—that is, chemicals not detected using official analytic methods—significantly exceed the concentrations of known, "targeted" compounds in chip plant effluent. Furthermore, wastewater may include transformation products not found in chemical inputs. It is important to recognize that one type of "forever chemicals" may transform into other "forever chemicals." Micron must test its wastewater using a combination of methods for the whole range of PFAS that may be present.

Second, the claim that, by treating the wastewater, that there will not be "significant adverse effects on water resources outside the mixing zone" is based on the false assumption that dilution of PFAS will eliminate their ill effects. Nothing could be further from the truth. PFAS are called "forever chemicals" because they do not break down in the environment. PFAS are known to bioaccumulate in humans, animals, and in some cases, plants. The CHIPS PEA (2024; p. C-15) states that "Wastewater discharge from semiconductor fabrication facilities presents a substantial risk for PFAS contamination of the environment."

The treated wastewater will be discharged to the Oneida River, which merges with the Seneca River to become the Oswego River, which discharges into Lake Ontario. The Onondaga County Water Authority, along with many other water suppliers around this great lake, draws its water supply from Lake Ontario. PFAS which is discharged in Micron's treated wastewater will eventually contaminate Lake Ontario and potentially the OCWA drinking water supply.

The CHIPS PEA explains that "most facilities send 100 percent of TARC [Top Anti-Reflective Coating] waste to industrial wastewater drains, unless segregated in a separate drain and collection system for disposal. TARCs currently account for over 50 percent of total PFAS used in photolithographic processes worldwide and thus contribute a large portion of the PFAS found in wastewater discharges.[71]

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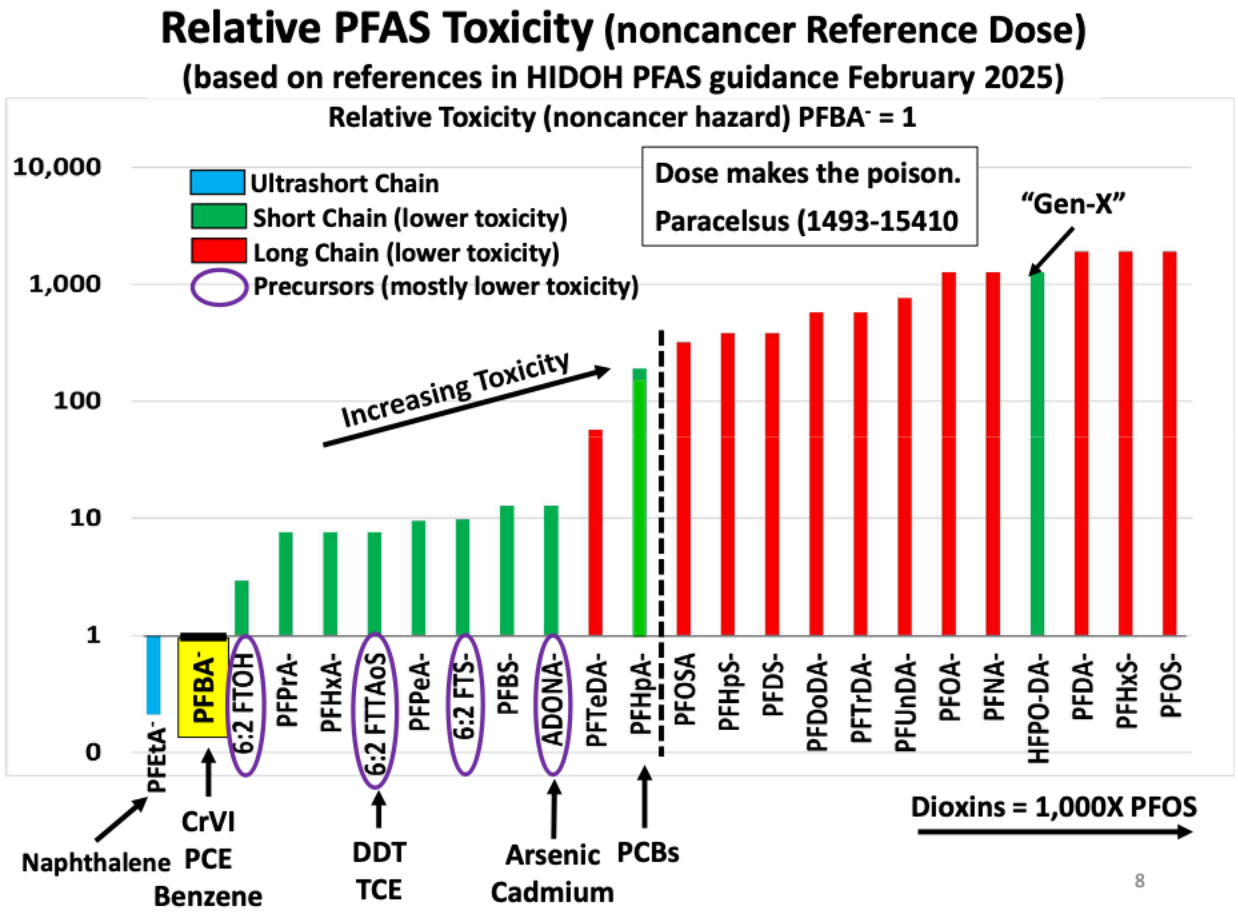
[67] Jacob et al. 2021."Target and Nontarget Analysis of Per-and Polyfluoralkyl Substances…"
[68] Biting Qiao *et al*. 2025. "Nontarget Screening and Occurrence of Emerging Per- and Polyfluoroalkyl Substances in Municipal and Semiconductor Industrial Wastewater: A Large-Scale Survey in China," *Environmental Science & Technology*. May 6, p. J. https://doi.org/10.1021/acs.est.5c02035.
[69] Roger Brewer. 2025 "Testing and Risk Assessment of Complex Mixtures of PFASs in Wastewater and Sludges." Healthy Water Solutions, May 2025. https://www.youtube.com/watch?v=AqNNY3F358o.
[70] Biting Qiao, *et al*. *Environ. Science & Technol.*
[71] NIST. 2024. *Final Programmatic Environmental Assessment.* p. C-15.

Micron's approach to PFAS treatment is also discussed on page 3-241: "Early evaluations suggest that the most effective wastewater treatment solution for the Proposed Project will involve installation of PFAS segregation technology targeted to the relevant process wastewater streams. Micron's final design will include wastewater treatment for regulated PFAS-containing wastewater that meets current regulatory requirements under New York and Federal law prior to discharge to the IWWTP."

Micron is correct to segregate process wastewater streams that contain PFAS. However, to mitigate the serious environmental harms created by discharges of PFAS via wastewater, Micron needs to do more than "meet current regulatory requirements." As explained above, current regulatory requirements are **not protective of the environment** because they do not address the hundreds of persistent and toxic PFAS found in the semiconductor industry's wastewater. Micron needs to install at its pre-treatment plant or cause to be installed at the Onondaga County plant, state-of-the art treatment technology (such as reverse osmosis, advanced oxidation, surface plasma treatment) which completely eliminates the entire range of PFAS compounds. It then needs to monitor performance of the treatment system using sophisticated analytical technologies to demonstrate its effectiveness.

The DEIS (p.3-241) states "Micron would dispose of or otherwise manage waste known to contain regulated PFAS in accordance with applicable regulations and as appropriate given its content and characteristics." Again, current regulatory requirements are not protective of the environment and mere assurances of regulatory compliance are insufficient to ensure that there will be no significant impacts



Furthermore, while the *persistence* of all forever chemicals is a given because of the strong carbon-fluorine bond, the *toxicity* of most of them varies, and for many, it is largely unknown. The state of Hawaii prepared the following chart, showing the relative non-cancer risk of several PFAS compounds. In general, it shows that short-chain PFAS—that is, where the molecules have fewer carbons than long-chain PFAS such as PFOA and PFOS—tend to be less toxic than PFOA and PFOS. However, they are still as toxic as other well-known contaminants of concern. And one PFAS found widely in the environment and chip plant wastewater, HPFO-DA (also known as Gen-X) ranks with the long-chain compounds even though it has fewer carbons per molecule. Thus, concludes Roger Brewer, to adequately assess the risk of PFAS exposure, one must measure all PFAS in mixtures, not just the top two or even EPA's target list.[72]

Supporting Brewer's findings, decades of research have shown that exposure to mixtures of different PFAS chemicals can result in cumulative adverse health effects. Even if the individual chemicals are at levels considered to be "safe," a mixture may cause significant adverse health effects. EPA recognized this in developing the Hazard Index approach to Safe Drinking Water Act limits on four PFAS, which states, "The high likelihood for different PFAS to co-occur in drinking water; the additive health concerns when present in mixtures; the diversity and sheer number of PFAS; and their general presence and persistence in the environment and the human body are reflective of the environmental and public health

[72] Roger Brewer. 2025.

challenges the American public faces with PFAS, which poses a particular threat for overburdened communities that experience disproportionate environmental impacts."[73]

The DEIS reports, "The IWWTP [Industrial Wastewater Treatment Plant] also would include technologies specifically designed to remove emerging contaminants, such as per- and polyfluoroalkyl substances (PFAS), including reverse osmosis and nanofiltration (membranes used to filter out PFAS, effectively removing them from the water), granular activated carbon (an effective method for removing PFAS through adsorption), ion exchange resins (which selectively capture and remove PFAS from wastewater)…" (p. 3-83). Including such a statement in the DEIS does not guarantee the adequacy and reliability of the treatment technologies. Their effectiveness depends upon the other constituents of the waste stream, water volume, and PFAS concentrations. There is no single best method for removal, and none of the filtration methods actually destroys PFAS.

While other factors may influence the choice of technology, the starting point should be the measurement of all PFAS in source wastewater as well as removal system effluent. The DEIS promises, "To comply with its SPDES permit for the IWWTP, OCDWEP [Onondaga County Department of Water Environment Protection] would be required to perform regular analytical testing of surface water and effluent samples collected using NYSDEC-approved methods and would be subject to ongoing sampling, monitoring, and reporting requirements." (p. 3-84). The same requirements would apply to Micron's wastewater pretreatment system, governed by an indirect discharge permit negotiated with the OCDWEP.

To measure PFAS in wastewater, Qiao *et al* recommend using the TOP [Total Oxidizable Precursor] Assay method: "The TOP assay results emphasize the importance of implementing an integrated PFAS monitoring strategy that incorporates the TOP assay, along with routine monitoring of ultrashort-chain PFAS (e.g., TFA and PFPrA)."[74] Going further, Jacob et al concluded: "However, this [the elevated levels of combined target and non-target PFAS] does reinforce the idea that PFAS monitoring should incorporate complementary target and nontarget analyses or otherwise include measures of total organic fluorine to accurately assess PFAS abundance and potential environmental impacts. These data also support the recent push by policymakers to regulate total PFASs, rather than individual compounds, underscoring the importance of total PFAS concentration monitoring."[75]

To understand how to address wastewater from the Micron Clay facility, the company and agencies need not wait for production to begin. Micron's new fab in Boise, Idaho will be using the same or similar chemicals. The New York's evaluation could and should begin with analysis of Boise effluent.[76]

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[73] U.S. Environmental Protection Agency (EPA). 2024. "Per- and polyfluoroalkyl substances (PFAS): Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS) National Primary Drinking Water Regulation Rulemaking."
EPA-HQ-OW-2022-0114. June 25.

[74] Biting Qiao, et al. 2025.

[75] Jacob, P, K. Barzen-Hanson, and D. Helbling. 2021. "Target and Nontarget Analysis of Per-and Polyfluoralkyl Substances in Wastewater from Electronics Fabrication Facilities." Environmental Science & Technology, February 16, p. 2353. https://pubs.acs.org/doi/10.1021/acs.est.0c06690p.

[76] National Institute of Standards and Technology .2024. *Draft Environmental Assessment for Micron ID1, Boise, Idaho.* NIST-CPO/EA-004, dated July 10. U.S. Department of Commerce, National Institute of Standards and Technology, CHIPS Program Office. Washington DC.

It is unclear in the DEIS why OCDWEP is taking on the difficult task of treating PFAS contaminated wastewater. As far as we are aware, OCDWEP has no existing expertise in this area while Micron operates a number of chip production facilities where it must already deal with similar wastewaters. Outsourcing the treatment responsibility leads to the danger that Micron will evade responsibility for any discharge of PFAS and be subsidized if OCDWEP fails to charge Micron the full cost of treatment. Surely a simpler and more efficient arrangement would be locating the treatment plant close to the fab and have Micron manage it? At minimum, this should have been one of the alternatives included in the analysis of alternatives.

It is problematic that a county agency is being left with the lion's share of the responsibility for a difficult, almost impossible task of sufficiently treating wastewater to avoid harmful downstream impacts from the Proposed Project's activities. Can this agency realistically be expected to maintain the level of resources and expertise over the long life of the fab to prevent significant downstream harms? Micron should be required to bear the responsibility, financially and otherwise, of ensuring fully functioning, regularly updated waste water treatment systems are in place.

The bottom line is that Micron will be using and potentially discharging a wide range of PFAS, only a few of which are identified, and none of which are currently regulated. Much more information is required to assure the public, as well as officials, that Micron will not significantly impact the environment by adding PFAS to the already PFAS-contaminated environment. Furthermore, Micron should adopt more protective PFAS management than what is promised in the draft EIS. We recommend that All PFAS discharge pathways from the Micron plant should be monitored and eliminated. The Oak Orchard plants and Micron should commit to using, and the New York State Department of Environmental Conservation should require, sampling and analysis methods that capture all PFAS in wastewater from Micron, starting with samples from the Micron Boise plant.

In addition to the removal technologies cited above, the DEIS reports:

"Micron also would segregate process solvent waste containing PFAS from facility wastewater streams to closed bulk storage systems for off-site management by licensed and permitted treatment and disposal facilities.… Micron would dispose of or otherwise manage waste known to contain regulated PFAS in accordance with applicable regulations and as appropriate given its content and characteristics." (p. 3-341). The DEIS names Veolia, all of whose disposal facilities are outside of New York State, as the primary waste disposal vendor.

Even if Micron is able to segregate a portion of its PFAS-laden wastewater, these provisions are inadequate. First, there is no assurance that the permitted treatment and disposal facilities—likely incinerators located in communities of color—would destroy the particular mixtures transferred from the Micron plant without creating toxic transformation products. In fact, mixing chipmaking wastes with other hazardous wastes would increase the likelihood that new hazardous substances would be emitted. If such off-site "disposal" is allowed, Micron should be responsible for proving that PFAS and other hazardous substances from its waste streams, such as solvents, are destroyed. It should also be required to show that thermal treatment does not create hazardous products of incomplete combustion.

The DEIS promises, “Micron would continue to review the waste and reuse facilities to which it would send hazardous waste,” (p. 3-353) but there is insufficient detail to assure the public and regulators that PFAS, PFAS-containing media, and PFAS byproducts will be destroyed safely.

Second, the promise to comply with regulations is hollow. Of course, Micron should be expected to obey the law. However, we are unaware of any regulations governing the treatment and disposal of collected PFAS wastes, particularly when they are shipped out of state.

Similarly, removal technologies such as Granular Activated Charcoal, Anion Exchange Resins, and Foam Fractionation do not destroy PFAS. In general, the filtration media and gas emissions contain essentially the same PFAS that were contained in the original liquid. The filtration media are typically sent off site for landfilling or thermal treatment, neither of which is environmentally acceptable.

Fortunately, the federal government, through the Department of Defense, has been supporting the development of new technologies that actually destroy PFAS, breaking down the otherwise persistent molecules into non-toxic substances. The DEIS actually mentions one category of these technologies, Advanced Oxidation. These technologies may either treat the wastewater directly or destroy concentrated PFAS removed from wastewater through technologies such as foam fractionation. Use of these technologies is the most protective approach to treating wastewater that contains a wide range of PFAS compounds. Again, at minimum, this approach should be included in the analysis of alternatives.

Recommendation

Micron should commit to, and NYSDEC should require that Micron evaluate available PFAS destruction technologies for use on site with the goal of implementing one or more as close to the points of use as feasible. NYS DEC should regulate these systems.

The goal of any program of removal, treatment, or destruction for PFAS should be ZERO releases, as much as practical. That is, technologies, not numerical standards—which do not exist—should be the basis of the approach to eliminating PFAS in chipmaking wastewater.

The DEIS points out that New York state has guidance values for PFOA and PFOS in “raw water.” However, there are no standards for the PFAS that Micron will actually be using. In fact, even in the best of cases there will not be standards or guidance values for the preponderance of PFAS used or released by Micron.

Yet current science demonstrates that all PFAS are toxic as well as persistent. Any release of PFAS into the environment adds to the already unacceptable load on the environment and human health.

Extremely Hazardous Substances

The DEIS states, “Pending further review based on evolving Micron Campus designs, Micron would expect the RMP [Risk Management Plan] to cover eight regulated chemicals (ammonium hydroxide, anhydrous ammonia, hydrogen, hydrogen chloride, silane, chlorine, dichlorosilane, and HF [hydrogen fluoride] and would evaluate and add additional chemicals to the RMP on a case-by-case basis.” Earlier it mentions sodium hydroxide, and it promises, “hazardous chemicals and materials would be properly stored in containers and drums in storage areas with secondary containment to provide added protection in

the event of a spill or release." (pp. 341-344). This is a good start, but insufficient. Leaks and spills may still occur during transport or use, so it's important that employees, neighbors, and government agencies be fully aware of the presence of extremely hazardous substances.

Semiconductor fabs typically also use arsine and phosphine, which are extremely toxic, even lethal, gases, and diborane, which is highly toxic and pyrophoric. Perhaps they aren't mentioned because the DEIS uses EPA's reporting thresholds, which are generally an order of magnitude less protective than California's.[77] Even in low volumes, a leak or spill of extremely toxic gases may necessitate the evacuation of buildings as well as warnings to nearby properties.

This information is important to be included in the environmental review, because local planners need to know how close sensitive uses should be located to the potential toxic release site. For example, in Mountain View, California, the city banned childcare centers in parts of town with semiconductor production.

The DEIS reports, "Clay Fire and Cicero Fire coordinate with the City of Syracuse Fire Department for responses to incidents involving potential hazardous materials, as the Syracuse Fire Department employs a specialty hazardous material response unit." (p. 560). More detail should be provided. Does the Syracuse Fire Department have the expertise to handle the emergencies associated with semiconductor manufacturing? How close, by both time and distance, are personnel and equipment from the specialty unit to the Micron campus? Will the responsible first responders be trained and equipped to respond to emergencies at Micron? We cannot meaningfully comment on this aspect of the DEIS without the answers to these questions.

Recommendations

The final Micron EIS should include a complete list of extremely hazardous substances expected to be used on the property, regardless of anticipated quantity. The public has a right to know even if the federal thresholds for storage are not exceeded.

Micron should conduct dispersion modeling for the most hazardous of the gases and include it in the final EIS, to guide decisions on the location of sensitive use. For example, would an arsine release from Micron put children at its nearby childcare center at risk?

Other Hazardous Substances

Other than the extremely hazardous substances mentioned above, the DEIS does not specifically name hazardous chemicals. The Final PEA, on the other hand, contains a short list in Section 3.8 and a longer list in Appendix D. (p. 560).

The DEIS does not address the long-standing environmental threat caused by solvents used in production. Once again, the Final PEA provided more detail: "For example, traditional solvents used in fab cleaning

[77] Compare the tables as "CalARP Program Resources," viewed July, 2025. https://calepa.ca.gov/california-accidental-release-prevention/california-accidental-release-prevention-program-resources/.

processes contain N-Methylpyrrolidone (NMP), which is known to cause harm to reproductive systems."[78] It noted that some companies—in this case a Taiwan-based producer—was using alternatives.

Catastrophic impact due to spill, leak, or equipment failure.

As noted, the DEIS includes very superficial discussion about spills, accidental releases and system upsets that can result in contamination of building interior spaces, the underlying soil, the groundwater and surface water. It is clear even from the limited information about stored chemicals given in Table 3.8-10 (DEIS, p.3-242) that large quantities of chemicals will be stored at the site. The table lists these categories of hazardous liquids (rounded to nearest 1000 gallons):

- Acidic Solutions: 172,900 gallons/fab x 4 fabs = 692,000 gal
- Caustic Solutions: 82,300 gallons/fab x 4 fabs = 329,000 gal
- "Liquid Corrosives:" 13.5 million gal/fab x 4 fabs = 52 million gal
- Flammable liquids: 121,900 gallons/fab x 4 fabs = 488,000 gal
- Peroxide: 124,000 gallons/fab x 4 fabs = 496,000 gal

In addition, the DEIS (p. 3-244) states that the "Micron Campus would have an aggregate aboveground oil or petroleum product storage capacity of approximately 1.55 million gallons, which would store diesel, gasoline, lubricating oil, hydraulic fluid, …"

Altogether, over 55 million gallons of hazardous liquid chemicals and petroleum products could be stored on site once the four fabs are completed and operational. Of course, these chemicals are not simply stored. They must be transported to the site, transferred into storage tanks, or loaded into drum storage space; distributed to manufacturing areas; and dispensed as needed. Wastes need to be collected, containerized, and properly recycled, treated, and/or shipped off-site for disposal.

The DEIS (p. 3-80) states that groundwater contamination is not an issue during construction, asserting that "Micron would implement a SWPPP and SPCC/SPR [Spill Prevention Control and Countermeasure Plan and Spill Prevention Report] to reduce the risk of accidental releases, leaks, or spills of materials such as concrete, oil, fuel, lubricants, or hydraulic fluids during construction and provide for immediate containment and cleanup of any release." The same language is applied to operations at the facility: "Micron also would be required to implement SWPPP and SPCC/SPR Plan measures to reduce the risk of accidental releases, leaks, or spills during facility operations and provide for immediate containment and cleanup of any release." DEIS (p. 3-86). But accidents and spills do not necessarily go according to plan and containment is never "immediate." To fully evaluate this issue, the EIS needs to assess the actual risk of spills, especially when chemicals are being transported to the facility, and when waste chemicals are being transported away from the facility.

The DEIS (p. 3-243) informs us that "Chemicals would be delivered to the Micron Campus by truck … using a variety of packaging and containment methods, including tanks, drums, and pallets… Micron would contract with carriers and shippers of hazardous materials that maintain 24/7 emergency response support in the event of hazardous materials spills…" Trucks will be travelling on highways, competing

[78] *Final PEA*, p. 69.

with construction vehicles, employee vehicles, delivery vehicles, and vehicles of Clay and Cicero residents. The risk of accidents on these congested roadways is relatively high. How long would it take for a national chemical carrier to respond to an accident involving a spill?

We recommend that Micron reduce the potential for vehicular accidents by shipping the bulk of its chemical supplies by rail. It does not appear that this mitigation of spill risk has been considered. Once again, study of this alternative is essential to minimize the potential environmental impacts from the Micron fab.

The DEIS recognizes the susceptibility of the local groundwater to contamination in Section 4. Cumulative Effects. On p. 4-16 it states: " It can be assumed that planned residential, industrial, and transportation development, along with the implementation of the Proposed Action and Connected Actions could reasonably …[lead to] the increased risk of groundwater exposure to pollutants from spills or leaks, or from contaminated stormwater runoff." The DEIS notes further that "surficial aquifers are *highly permeable* and could become contaminated from overlying *spills, leaks, or infiltration*, and *carbonate aquifers can transport groundwater long distances through solution openings, potentially transporting contamination on a regional scale.* Ultimately, depending on the severity of potential groundwater exposure to contaminants, *impacts could be significant and widespread.*" (emphasis added)

But the DEIS does not address, in any substantive way, the potential for spills, leaks and infiltration from the operations at the Micron facility to contaminate the local groundwater, and for that groundwater to transport contaminants long distances. Fox Professional Geology PLLC (2025) asserts in comments submitted regarding this Proposed Action that "The Micron Campus is located directly over a highly productive karst bedrock aquifer." Fox makes the comment that "The presence of karst features on, beneath, and near the Micron Campus, including closed circular depressions and solution-enlarged joints and fracture zones, requires careful and thorough consideration, evaluation, planning, and monitoring to facilitate protection of human health, built structures, water quality, and the environment." This level of analysis has been regrettably omitted from the DEIS, but it needs to be incorporated.

Recommendation

The DEIS should provide a complete list of hazardous substances used in production, their function, and possible exposure pathways. Once again, the public has a right to know which hazards are present and may be released from semiconductor production.

Cumulative Effects

The DEIS fails to assess the cumulative impacts of PFAS, industrial Greenhouse Gases, and Extremely Hazardous Substances in its Cumulative Effects analysis. The Micron project is expected to attract related activities, including research and development, chemical suppliers, and even competitors to the area. That is, other facilities may release hazardous substances to the environment, and in particular to Onondaga County's wastewater system, in addition to the PFAS discharges from other, unrelated industries.

Therefore, the DEIS should analyze and mitigate for the cumulative impacts associated with hazardous substance use, storage, and release. Without a comprehensive understanding of the types and amount of PFAS discharges on site and for anticipated sites across the region, cumulative impacts for surface water, groundwater, air emissions, and environmental justice cannot be understood.

Recommendation

The DEIS should include a comprehensive analysis of the cumulative impacts of Micron's PFAS discharges to the environment, with a focus on the releases to the Oak Orchard wastewater plants and, in turn, to surface water and wastewater biosolids. As stated earlier, Micron should commit to zero discharge of all PFAS, and its industrial pre-treatment permit should make this an enforceable requirement. Because the cumulative impacts are regional in nature, the environmental justice assessment (Section 3.16) should consider these regional impacts.

In Summary

The draft Environmental Impact Statement for Micron New York contains valuable information, but in the case of hazardous substances it does not provide enough detail to satisfy the public's right to know or to guide decisions designed to protect worker health, public health, and the environment. Furthermore, over the course of the sixteen-year the Micron project is expected to constantly update its production technology, introducing new, un-assessed, process chemicals. In addition, there will be advances in environmental analysis and treatment. Therefore, there should be a mechanism to revisit key elements of the EIS. That is, impact analysis and the protection of workers, neighbors, and the environment should keep up with the remarkable progress of semiconductor chips and their applications.

Fluoropolymers

Much of the equipment in semiconductor wafer fabrication is made from fluoropolymers, such as PFA, relatively stable but still hazardous PFAS. They represent a massive use of these persistent materials. Mark Newman, CEO of Chemours, explained:

> "You cannot make chips without a whole PFA infrastructure," he said. "We estimate that in a modern-day fab, there's a half-kilo of PFA in every square foot. So in a 400,000- to 600,000-square-foot fab, that's 200 to 300 metric tons of this stuff." It's not just valves, of course, but all types of pipes, tubes and pumps in semiconductor equipment.[79]

The article continues, "On its website, Chemours says flat-out that "without PFA, domestic semiconductor manufacturing would not be possible."

Chemours is the only domestic producer of PFA. In fact, in 2024 it announced the expansion of its notorious Washington Works plant in West Virginia to meet increased demand from the semiconductor industry.[80]

Fluoropolymers are particularly hazardous where they are manufactured, and at the end of their useful life. Lohmann *et al* concluded:

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[79] Feldman, Amy. 2023. "More Domestic Chip-Making Means More 'Forever Chemicals,'" *Forbes*, October 5. https://www.forbes.com/sites/amyfeldman/2023/10/05/more-domestic-chip-making-means-more-forever-chemicals/

[80] Samora, Sara. 2024. "Chemours expands Teflon PFA production in West Virginia." *Manufacturing Dive*, August 22. https://www.manufacturingdive.com/news/chemours-plans-teflon-pfa-forever-chemicals-plant-expansion-west-virginia/724609/.

> The evidence reviewed in this analysis does not find a scientific rationale for concluding that fluoropolymers are of low concern for environmental and human health. Given fluoropolymers' extreme persistence; emissions associated with their production, use, and disposal; and a high likelihood for human exposure to PFAS, their production and uses should be curtailed except in cases of essential uses.[81]

Furthermore, the semiconductor industry has introduced and embedded a wide variety of PFAS into semiconductor packaging and packages with no consideration of the potential environmental and worker safety risks. Chipmakers have little idea how much of which PFAS are contained in their final products. In fact, they admit that the absence of regulation is responsible for their lack of knowledge of the use of these chemicals. Chips produced at the Micron plant may end up in such packages. Since those products end up distributed in electronic equipment throughout the country and the world, there is no accounting of the environmental impacts of their disposal when no longer used. The Semiconductor Industry PFAS Consortium speculated, "it is unknown if end of life controls are necessary during the reclamation of electronic products."[82] In fact, the safe disposal of electronic equipment in general is a significant unsolved environmental problem.

Recommendations

The final EIS should contain an estimate of the quantities of fluoropolymers in each Micron fab, by category of use. It should also contain a life-cycle analysis of the environmental impacts of fluoropolymers, including:

1. Analysis of the environmental releases and occupational exposures at fluoropolymer production plants. Since Chemours uses the "essentiality" of its products to the semiconductor industry to justify continuing, indeed expanded production of PFA, chipmakers should be held accountable for those environmental impacts.

2. Analysis of any Micron on-site releases caused by the use or machining of fluoropolymers.

3. Information about the likely end-of-life impacts from the fluoropolymer-containing equipment used at the Micron plant.

4. Information about the use and release of fluoropolymers in packaging the chips produced from wafers fabricated at Micron, as well as their end-of-life environmental impacts.

[81] Lohmann, Rainer, *et al.* 2020. "Are Fluoropolymers Really of Low Concern for Human and Environmental Health and Separate from Other PFAS?" *Environmental Science & Technology*, October 12. https://dx.doi.org/10.1021/acs.est.0c03244.

[82] "PFAS-Containing Materials Used in Semiconductor Manufacturing Assembly Test Packaging and Substrate Processes." Semiconductor PFAS Consortium Assembly, Test, Packaging and Substrates Working Group, June 2, 2023. https://www.semiconductors.org/pfas-containing-materials-used-in-semiconductor-manufacturing-assembly-test-packaging-and-substrate-processes/.

Excavation of the site for construction

As discussed in the Wetlands and Wildlife section of this comment, the DEIS (pp 3-224 et seq) notes that the construction of the facility will require excavating over 1.6 million cubic yards (2.70 to 3.67 million total tons) of soil and muck from the existing wetlands and fields at the WPCP. This material is designated for "beneficial reuse."

Micron should coordinate with the Wetlands Trust to see whether this material which is rich in wetland plant seeds, spores, and microorganisms could be utilized to create new wetlands as part of the wetlands mitigation plan. This would minimize long-distance transport of this huge amount of material, and could accelerate the establishment of new wetlands.

Commercial Solid Wastes

It is anticipated that the Micron facility would generate substantial amounts of Commercial Solid Waste and wastes that could be potentially recycled. The waste quantities are summarized in Table 3.9-4, shown below:

Material	Disposal Method[82]	Fab 1	Fabs 1-2	Fabs 1-3	Fabs 1-4
Solid Waste					
Industrial waste (tpy)	Private hauler transport to private industrial waste disposal facilities	800	1,300	1,800	2,300
Commercial MSW (tpy)	Private hauler transport to municipally owned waste disposal facilities	15,800	25,000	34,300	43,500
General MSW (tpy)	Private hauler transport to municipally owned waste disposal facilities	N/A	N/A	N/A	N/A
RMW (30-gallon bins per year)[83]	Private hauler transport to RMW disposal facilities	11	22	34	45
Reusable or Recyclable Material					
Micron RRR or other recyclable material (tpy)	(See Table 3.8-5 below)	32,200	51,100	70,000	88,800

The Commercial Solid Waste is characterized as "metals, drums and cylinders, E-waste, batteries, plastic, foam, cardboard, scrap wood, office supplies, etc." (p. 3-233) The DEIS goes on to say that: "The non-RRR portions of this commercial MSW would be collected via licensed commercial haulers for transport to municipally owned waste disposal facilities within the OCRRA service area ... The commercial MSW would be transported first to the WTE Facility, capacity permitting, to maximize

energy recovery. Overflow amounts would be sent to the RCR Transfer Station, which could receive up to 800 tons per day."

According to **Table 3.8-5** Metals, drums and cylinders, E-waste, batteries, scrap wood, office supplies, plastic, foam are all designated for recycling. However, the ability to recycle plastics and foam—especially when contaminated—is limited. The Onondaga County Resource Recovery Agency currently accepts a limited selection of solid plastic items for recycling and does not accept foam or film plastics (see current guidelines at https://ocrra.org/wp-content/uploads/2024/03/Recycling_101_Web.pdf)

The DEIS needs to define more fully what is in the non-recyclable commercial waste. This is a critical question because a large portion of the commercial SW is to be burned at OCRRA's WTE plant. The semiconductor industry is highly reliant on PFTE, PFA and other fluoropolymers.[83] Fluorinated materials such as PFTE (Teflon) and PFA will not fully break down when burned, leading to emission of hazardous products of incomplete combustion, as well as hydrofluoric acid (HF), an extremely corrosive and toxic substance.

To mitigate air pollution impacts, Micron should segregate all waste materials made with fluoropolymers and not allow them to be incinerated. It would be best to find a way to recycle this material.

Wastewater sludge

The DEIS in **Table 3.8-5 Industrial and Commercial Materials for Micron RRR Program** shows that "Non-hazardous sludge from on-site wastewater treatment" will be disposed of by "Send to [a] beneficial use vendor or recycle."

What substances are anticipated to be in this sludge? Wastewater from the semiconductor manufacturing process is likely to be contaminated with a wide variety of substances, including: heavy metals, fluorides, PFAS, resins, microplastics, and polycyclic aromatic hydrocarbons.

No explanation is given as to how this sludge could be beneficially re-used or recycled. What is the feasibility of actually re-using this sludge? Where would it go? What are the environmental consequences? Will it be tested for hazardous substances to determine whether or not it should be classified as hazardous waste? If PFAS compounds are present, how will the sludge be managed so that it does not contaminate soils, surface water, plants, wildlife and groundwater with PFAS?

Appendix K-12 provides an example recycling program from the Micron facility in Boise, Idaho. That does not describe or even list a sludge re-use/recycling program.

What quantity of sludge is estimated to be generated? How much water will it contain? The environmental impacts of sludge disposal or beneficial use depend greatly on the quantity of sludge generated.

Hazardous Waste

It is reported in **Table 3.8-6** that the Micron facility would initially generate 18,300 ton/yr of hazardous waste (Fab 1 in operation), ranging up to 50,300 ton/year with four fabs in operation. The sentence at the

[83] See Feldman, 2023.

bottom of p. 2-236 states that "As shown in Table 3.8-7, hazardous waste would consist mainly of acidic and solvent waste volumes." Table 3.8-7 shows volumes of unspecified "acidic waste" and unspecified "solvent waste" generated per fab. To convert these volumes to tonnages requires the densities of the waste. Assuming a density of water (1.00 g/ml) for the acidic waste and a density of 0.785 g/ml, which is representative of acetone and isopropyl alcohol, for the solvent waste, the total amount of acidic and solvent waste generated is approximately 8,750 ton per year per fab. This accounts for less than half of the 18,300 ton/yr total waste estimated per fab in **Table 3.8-6.**

Table 3.8-8 provides a bit more detail about types of waste generated, but no quantities or specific identities are reported. The types and quantities of hazardous waste should be specified. What specific solvents are in the solvent waste? What acids are in the acidic waste? What chemical wastes account for the missing 9,500 ton/year of hazardous wastes estimated for each fab? Hazardous wastes, by their nature, pose a threat to the health and safety of workers and the surrounding community. Unintentional releases of chemical wastes can have devastating effects on the environment as well. For example, the derailment of train cars carrying vinyl chloride, phosgene, and other chemicals in Palestine, Ohio on February 3, 2023, forced the evacuation of thousands of residents and contaminated air, water and soils.

On p.3-239 the DEIS says: Micron plans to explore the distillation of isopropyl alcohol and ammonia solutions to reduce waste and to increase potential for valuable reuse off-site. Other material streams such as bulk solvent, drummed solvent, and contaminated debris would be reused or recovered through fuel blending or energy recovery at approved permitted cement kilns that allow kilns to run on waste-derived fuel. Certain waste streams such as lab waste, cylinders, expired materials, glues, resins, a subset of solvents, and certain acids would likely need to be incinerated at permitted off-site disposal facilities in other states.

Micron is to be commended for maximizing the reuse and recycling of IPA, ammonia. Greater detail about the quantities of the various waste streams slated to be incinerated by Veolia is essential to assess potential off-site impacts.

Air pollution

NAAQS and Hazardous Air Pollutants

The DEIS asserts that air pollution emissions from the construction and the operation of the Micron facility will not violate the National Ambient Air Quality Standards (NAAQS) for the study area. However, most of the monitoring data for criteria air pollutants (those with established NAAQS) on which this assessment relies comes from monitors in Rochester, NY, more than 70 miles from the project site. Only ozone and small diameter particulate matter ($PM_{2.5}$) are measured in the Syracuse area. Conditions in Rochester may be expected to be similar, but Micron should at least be required to demonstrate – with actual local monitoring data – that they are before relying on these figures to demonstrate that the facility will not have any significant environmental impacts.

In addition, in making this assessment, the DEIS does not allow for or consider the impacts of any exceedances, upsets, or violations in assessing the environmental impacts of air emissions. No equipment works perfectly. Again, based on its experience in chip manufacturing, Micron should have some sense of how often its facilities encounter upsets, exceedances, or unavoidable permit violations that may result in

excess air emissions. If Micron doesn't have that data, it could rely on industry-wide statistics. For example, the Environmental Working Group found that, as of October 25, 2024, 10% of active semiconductor manufacturing facilities had violated federal environmental laws and regulations in the last 10 years and 27% of the facilities with individual discharge permits had violated those permits.[84] Finally, assuming that the DEIS NAAQS compliance analysis is correct, modeled levels of both NO_x and $PM_{2.5}$ are very close to NAAQS limits. (see Table 3.6-10 NAAQS Results p. 3-168). Modeled results for the hazardous pollutants HF, NF_3, and total fluorides, shown in Table 3.6-11) are very close to annual guideline concentrations (AGC) established in NYSDEC Division of Air Resources guidance DAR-1.[85] Given the uncertainty inherent in modeling data, and the lack of local background monitoring data, Micron should be required to install air quality monitors for NAAQS pollutants and selected hazardous air pollutants (including HF, NF_3, and total fluorides) in the airshed directly affected by the Micron facility. The data from those monitors could be used to both check NAAQS compliance under regular operating conditions and to identify the environmental impacts of exceedances, upsets, or other unavoidable violations of air emission limits. Micron can then modify its operations or improve emission controls if the localized air monitoring shows exceedance.

Incineration of perfluorinated compounds (PFCs) and related gases

In the section on Greenhouse Gas emissions, the DEIS notes that "Semiconductor manufacturers use a variety of high GWP [global warming potential] gases to create circuitry patterns on silicon wafers along with chillers for certain process tools to prevent overheating. Examples of widely used high GWP fluorinated compounds include PFCs (e.g., CF4, C2F6, C3F8, and c-C4F8), HFCs (CHF3, CH3F and CH2F2), NF3, and SF6. Semiconductor manufacturing processes also use fluorinated heat transfer fluids and N2O." (DEIS, p.3-188)

Micron plans to incinerate its process gases: "GHGs from the Proposed Project would be emitted as a result of using fluorinated GHGs, N2O, CH4, and CO2 as raw materials in manufacturing processes, from oxidation of organic compounds in thermal oxidation systems and RCTOs, from the combustion of natural gas and diesel, and from leaks of HTF [Heat Transfer Fluid]." "Thermal oxidation systems and RCTOs would combust natural gas, and byproducts of combustion would exhaust alongside other unreacted process GHG emissions." (DEIS, p.3-188)

The problem with incineration is two-fold. First, it is not 100% effective; some compounds are only reduced by about 60%. According to the Environmental Assessment for the Micron fab in Boise, ID:[86] "Micron Boise currently estimates that its POU abatement systems achieve DRE factors between 60 and 98 percent based on the individual chemical and the ability of the POU abatement system to control each species of process gas." Thus, a significant fraction of some gases escape into the atmosphere despite

[84]Environmental Working Group. 2024. "What the Building CHIPS America Act Could Mean for Public Health and the Environment." https://www.ewg.org/news-insights/news/2024/10/what-building-chips-america-act-could-mean-public-health-and-environment.
[85] New York State Dept. of Environmental Conservation. 2025. Division of Air Resources guidance DAR-1: "Guidelines for the Evaluation and Control of Ambient Air Contaminants." Under 6 NYCRR Part 212.
[86] NIST, 2024. Final programmatic environmental assessment.

passing through thermal oxidation and wet scrubbing. This means the DEIS estimate of GHG emissions from oxidation of these wastes is much too low.

The other problem is that incineration produces toxic products of incomplete combustion, and hydrogen fluoride (HF), which is highly toxic and highly corrosive. This is discussed at length by Weitz et al (2024). The authors conclude that "Few studies have been conducted at full-scale operating facilities, and none to date have attempted to characterize possible fluorinated organic products of incomplete combustion (PICs). Further, the ability of existing air pollution control (APC) systems, designed primarily for particulate and acid gas control, to reduce PFAS air emissions has not been determined."

They recommend "Further research is needed to examine the formation and measurement of PICs in full-scale treatment facilities."

This is why the Department of Defense moved away from incinerating PFAS firefighting foam. The PICs as they are called are not regulated. They are not even monitored. So, we have the situation where toxic gases of unknown composition are being emitted into our community. What are the health effects?

The emission of products of incomplete combustion is completely overlooked in the DEIS. These hazardous chemicals are not being monitored, and are not regulated under the Clean Air Act or through NYS regulations. These air pollutants threaten the health of people and possibly wildlife who are exposed to them. The EIS needs to be revised to assess the danger these compounds pose.

Mitigation of these health risks can be accomplished in one of two ways:

1) Micron can replace these fluorinated gases with nontoxic degradable compounds; or

2) Micron can use an alternative technology to capture such gases and destroy them using a technology like wet air oxidation. Such technologies do not produce TICs, do not consume vast amounts of natural gas, and are generally less expensive to operate.

HUMAN HEALTH AND SAFETY

Occupational Health Safety

While the DEIS for Micron's proposed Clay, NY facility presents encouraging commitments to environmental stewardship and worker safety, it falls short in specificity, transparency, and accountability required to meaningfully assess and mitigate occupational health and safety risks, especially regarding hazardous materials and per- and polyfluoroalkyl substances – known as PFAS-management. Across multiple categories, Micron outlines high-level goals—such as achieving near-zero hazardous waste to landfill by 2030, conducting internal chemical hazard evaluations, and implementing continuous workplace monitoring—but provides limited detail on how these goals will be operationalized, measured, or shared with the public.

Most critically, the DEIS does not disclose a full list of chemicals that will be used at the facility, nor does it include job-specific exposure assessments or risk matrices. Key safety documents, such as hazard procedures and waste contingency plans, are referenced but remain inaccessible or incomplete. Public

comments submitted during the SEQRA process—including those from NYSDEC—raised pointed concerns about chemical use, PFAS, waste management, and exposure risks. Many of these concerns remain unanswered rendering the DEIS inadequate in its current form. For a facility of this scale and complexity, the lack of disclosure raises serious concerns. To build public trust, meet the requirements of SEQRA (and NEPA), and uphold its stated commitments, Micron must provide transparent, facility-specific data, share internal evaluations and monitoring results, and ensure that hazardous material management strategies are robust, equitable, and publicly accountable.

Key Concerns Regarding Micron's DEIS

1. PFAS Management

While the DEIS includes more information on PFAS than some environmental reviews, it falls short of offering a comprehensive PFAS management strategy. It acknowledges that some waste streams may contain PFAS including process-related wastewater (p. 3-239), that Micron will segregate PFAS-containing waste streams (p. 3-241), and that the company is evaluating emerging technologies capable of removing PFAS at parts-per-trillion levels (p. 3-241). It also includes Micron's stated intent to select wastewater treatment options that "minimize generation of PFAS-containing waste" (p. 3-241) and the company's commitment to collaborating with industry groups and regulators to improve PFAS detection and quantification (p. 3-240). However, it's unclear how Micron will define, identify, or classify PFAS within its own internal policies. In addition, the need to evaluate emerging technology illustrates a current lack of comparable PFAS removal options.

Gaps in Risk Management and Public Disclosure

In parts of the DEIS, PFAS are acknowledged as emerging contaminants of concern (p. 3-83). Yet in other sections—such as the Phase I Environmental Site Assessments (ESAs)—the third-party consultants hired by Micron classify PFAS as "non-scope" issues (Appendix K, v1, p.20 of PDF), citing their current lack of designation as hazardous substances under federal law.[87] This contradiction raises a critical question that the DEIS fails to answer: will Micron include PFAS in its hazardous waste procedures? While the DEIS references plans to develop various hazardous waste management strategies, it does not specify which chemicals these will address.

The DEIS also acknowledges that PFAS used in semiconductor manufacturing may range widely in concentration - from less than 0.1% to 100% by weight - "depending on the definition applied—with the Organization for Economic Co-operation and Development (OECD) definition encompassing more than 10,000 substances" (p. 3-240). This highlights a contradiction: Micron recognizes the scope of the threat, yet stops short of making concrete, enforceable commitments to address it.

Offsite Disposal and Destruction Technologies

The DEIS provides no commitment to manage PFAS compounds identified as hazardous by emerging science and NYSDEC but not yet assigned occupational exposure limits (OELs) or other federal

[87] Despite the current lack of federal designation of PFAS as a hazardous substance, both the EPA and DEC have recognized the potential health and safety impacts of PFAS. Therefore, the use, handling, and discharge of PFAS is within the scope of review under SEQRA and NEPA.

government regulation limits. Nor does it commit to disclosing a full inventory of PFAS used on-site, even though such disclosure would significantly improve public health tracking and environmental monitoring. Without knowing which PFAS are present, it becomes substantially more difficult for regulators and scientists to detect and monitor them in wastewater. Additionally, the DEIS is vague about how PFAS waste sent offsite—whether to incineration or landfills—will be handled, offering no assurance that destruction technologies will be used or that environmental justice impacts will be considered (p. 3-241). These omissions are unacceptable given PFAS's well-documented health risks, extreme environmental persistence, and ongoing problems with PFAS exposure that NYSDEC is working to address.

2. Occupational Health

Absence of Job-Level Detail and Chemical Risk Transparency

The DEIS includes Micron's commitment to Global Environmental Health and Safety (EHS) programs and worker protection, but it fails to provide the operational detail needed to evaluate occupational safety at scale. Approximately 9,000 permanent on-site operational jobs are projected for the Micron campus at full buildout. The DEIS only offers broad categorizations of these roles (e.g., manufacturing, IT, security, procurement, etc.) (pp 3-488- 3-489), without breakdown of tasks by job category, associated exposures, or risk levels. In both the main DEIS and Appendix L, chemical-specific hazards are not tied to department, process stage or job title. Instead, the DEIS defers to general OSHA standards and vaguely references internally developed matrices (Appendix L, p. 8)—without examples, criteria, or reporting mechanisms.

Illness Rates

While the DEIS discusses injury rates, it omits illness data (Appendix K, Vol. 2, p. 447), a major gap given that many occupational exposures, particularly to toxic chemicals, manifest as chronic illnesses rather than acute injuries. This omission limits the ability to assess long-term health risks. While injury statistics are discussed, the DEIS does not include information about illness rates (Appendix K, Vol. 2, p. 447)–chronic, chemical-related or otherwise– especially in the semiconductor sector, where long-term chemical exposures are a known concern. Micron's occupational health clinic should not only provide treatment, but also collect and publicly share de-identified illness data in a format compatible with public health tracking.

Industrial Hygiene Monitoring

Micron pledges to apply the most protective occupational exposure limits (OELs) across the facility (p. 3-258) and to revise standards within 90 days of new, more protective thresholds (p. 3-259). A faster revision time would be preferable. In addition, there is no commitment to public reporting—at minimum—summary data on its exposure sampling results (and exposures against OELs), worker health monitoring trends (with patient identities removed), or any corrective actions taken. These reports should be shared regularly with NYSDOH and made accessible to the public.

Reproductive and Developmental Hazards

The DEIS makes no reference to the potential risk that microchip manufacturing poses to reproductive and developmental health. PFAS are persistent, toxic, bioaccumulative, and ubiquitous. Well-studied PFAS have been linked to cancer, immunotoxicity, reproductive and developmental harm, and other serious health effects at extremely low exposure levels. There are several hazards used in the chip manufacturing process that have been shown to negatively impact reproductive health. Indeed, among the 460 most commonly used chemicals in electronics manufacturing 115 are reproductive toxins.[88] In a study funded by the Semiconductor Industry Association 30 years ago: researchers from UC Berkeley and UC Davis found significantly more miscarriages in women working in fabrication compared to office workers, even though fab workers were exposed to chemicals that were a tiny fraction of their OSHA Permissible Exposure Limits (PELs).[89] Worker exposure to neurotoxins can also lead to birth defects, including the birth of a child whose brain fails to develop. Micron must make clear in the DEIS how it will implement exposure limits to mitigate reproductive harm to workers.

Safety Committees and Fear of Retaliation

The DEIS mentions that Micron will establish Worker Safety Committees (WSCs) to promote hazard identification and resolution (3-256). However, it provides no detail on how these committees will be structured to protect worker voices. Key questions remain: Will employees have the right to raise concerns anonymously? Will committee participation be voluntary and protected from retaliation? Will committee proceedings be recorded or summarized for public or third-party review?

Too many communities have learned too late that internal EHS programs, however well-intentioned, can fail to catch or correct dangerous trends when there is inadequate transparency or worker empowerment. Micron should clarify how it will ensure these WSCs are structured to ensure worker empowerment, accountability, and independence from managerial suppression.

Construction vs. Operations: Asymmetry in Standards

Appendix L provides over 100 pages of detailed EHS requirements for construction contractors—including risk controls, compliance inspections, and method statements with job hazard analyses (Appendix L, pp. 10-115). However, there is no equivalent standard or plan presented for operational workers, who will face long-term exposure to hazardous chemicals and process equipment.

Many of the same protocols - critical risk checklists, PPE documentation, emergency response procedures, pre-task planning - should apply during both construction and operations. Although the DEIS mentions these elements for operations (pp.3-255 – 3-261), it does not provide an operational counterpart to the construction EHS performance standard. The DEIS should contain these procedures to provide sufficient detail and answer questions such as: Will EHS metrics for operational staff be tracked and reported, as is for contractors? Will there be a reward and recognition program for EHS participation by

[88] "California Accidental Release Prevention Program," CalEPA. N.d., https://calepa.ca.gov/california-accidental-release-prevention/california-accidental-release-prevention-program-resources/.
[89] Schenker *et al*. 1992. Epidemiologic Study of Reproductive and Other Health Effects among Workers Employed in the Manufacture of Semiconductors. Final Report to the Semiconductor Industry Association, December.

operational employees? These are foundational elements of a mature safety culture—and their absence from the DEIS is a significant omission.

In addition, the DEIS provides detailed EHS standards for construction contractors but fails to differentiate or commit to equivalent standards for temporary or third-party contract workers during operations.

Risk Management Plans and Community Access

Micron's plan to develop a Risk Management Plan (RMP) for eight regulated chemicals is a positive step (p. 3-243). The company's pledge to share the RMP with local first responders and the public is particularly encouraging. However, the DEIS does not explain how this information will be made accessible. Will the RMP be published online? Will hard copies be available through local agencies? Will updates be automatically shared or only available upon request?

It is also unclear whether PFAS or other emerging contaminants will be included in the RMP where applicable. Moreover, Micron has stated that it uses an internal chemical approval process to flag and control hazards, even those not currently regulated (Appendix K, Vol 2, p. 395), and refers to internal banned and restricted chemical lists (p. 3-258) as examples of best management practices. Consistent with a precautionary approach, Micron's RMP should include any chemicals it internally identifies as hazardous, —whether formally regulated or not – and disclose these classifications publicly.

ISO 45001

Micron's ISO 45001 certification is cited repeatedly as proof of strong health and safety practices (ex: 3-256). While ISO 45001 is a widely respected framework, the certification standard is not publicly available without purchase ($222 USD or 177 CHF). This cost barrier prevents workers, community members, and researchers from understanding the commitments behind the certification. If Micron wishes to rely on ISO 45001 to bolster public confidence, it should provide clear summaries of what the certification requires and how it is being implemented on-site.

Impact on Vulnerable Workers

The DEIS makes no reference to vulnerable worker populations—including young workers, pregnant workers, contractors, limited English proficiency workers, or those engaged in repetitive or isolated tasks. Nor does it address the potential for disparities in risk exposure based on job classification, shift assignment, or subcontractor status. This is a significant omission that must be remedied.

3. Hazardous Materials

Missing Implementation Plans, Documentation Failures and Public Access Barriers

The DEIS references a range of ambitious goals—such as achieving "near-zero hazardous waste-to-landfill" by 2030—but provides no implementation plan, timeline, or metrics for measuring progress. While the document mentions internal systems and procedures (e.g., chemical approval processes, hazardous waste reduction plans, contingency plans), many of these links are inaccessible, or behind password-protected portals in the appendices. Examples of hazardous waste procedure and

universal waste procedure are not provided in Appendix K except through links that require special logins (Appendix K, Vol. 2, p. 454). Other links, such as additional job hazard analysis information (Appendix K, Vol. 2, p. 452) lead to non-existent webpages. This lack of disclosure hampers the public's ability to comment meaningfully on Appendix K of the DEIS. These links should be fixed and the comment period should be extended thereafter.

The DEIS provides that several critical plans required by NYSDEC regulation, including the "Hazardous Waste Reduction Plan," "Hazardous Waste Contingency Plan" and "Hazardous Waste Procedure," will not be created until 6 months prior to the start of operations (p. 3-238). There is no commitment to make these plans available to the public. As a result, the public is left to guess how Micron defines "near-zero," how hazardous waste volumes will be tracked, or whether PFAS-containing waste streams will be included or excluded from these commitments. This makes meaningful comment on this aspect of the DEIS and the NYSDEC's ability to make necessary SEQRA Findings impossible.

Moreover, if Micron's waste reduction strategy relies on the offsite shipment of hazardous materials to contractors like Veolia (p. 3-237), the plan does not reduce hazardous waste—it simply displaces it, often to communities with less political and economic power. Given Veolia's documented record of environmental violations and the class action lawsuit raised against it for the Flint water crisis, community concerns about environmental justice impacts are entirely justified. In addition, if contractors plan to incinerate the hazardous materials, **incineration raises serious health risks, as incineration of hazardous materials can result in toxic air emissions and PFAS-laden ash**.[90] Waste-to-incinerator is not an acceptable substitute for meaningful landfill reduction. Once again, the lack of information in the DEIS makes it impossible to comment meaningfully on the environmental justice aspects of the waste management strategy.

Undefined Chemical Approval and Control Processes

The DEIS does not disclose details of Micron's internal programming for managing hazardous and restricted substances. Micron's Sustainability Report 2024 includes a page on hazardous and restricted substances (Appendix K, Vol 2, p. 395) which references a "rigorous review and approval process" for chemicals used at Micron facilities, but it fails to define the process, disclosure decision criteria, or identify any of the substances under review. Although the report mentions that Micron tracks its "chemical use profile" to support reduction and elimination efforts, neither the profile nor the outcomes of any of the related activities are disclosed. Micron's internal review is described as helping to prevent use of banned chemicals and ensures safe handling, recycling, and disposal. But the DEIS provides no decision criteria, no structure for oversight, no examples of restricted substances, and no indication of how workers or regulators might verify compliance. Which chemicals have been reduced? What alternatives are being considered? What is their chemical use profile? While we celebrate Micron's goal, it cannot act as a substitute for an explanation in the DEIS of the strategies and processes to attain the goal.

[90] Yoders, Jeff. 2025. "Veolia Settles With Michigan Over Flint Water Crisis for $53M." *ENR Midwest,* February 24. https://www.enr.com/articles/60332-veolia-settles-with-michigan-over-flint-water-crisis-for-53m.

The Sustainability Report further states:

> We have established a team of subject matter experts who identify emerging substances of concern and, to the extent feasible, work toward removing such chemicals and materials before they are restricted by customers or regulators. Being proactive in our regulatory monitoring, product compliance, validation and certification processes allows Micron to deliver innovative products while controlling restricted substances and conforming with applicable requirements. (Appendix K, Vol. 2, page 395)

In a regulatory landscape where science often outpaces policy, such internal hazard evaluation processes could play a critical role in protecting health and the environment. But without transparency, these efforts cannot serve as a basis for regulatory trust or community protection. If Micron has developed proactive mechanisms for identifying chemicals to restrict or eliminate, it must disclose this process in the DEIS - including criteria, oversight structures, and results.

Failure to Address Public Comments

These omissions are especially troubling given the extensive public concern around hazardous chemicals, as documented in the SEQRA comment period. NYSDEC and members of the public specifically requested chemical inventories, mitigation strategies, and clear commitments to avoid environmental harm. In many cases, the DEIS either did not respond or provided incomplete responses on the types and volumes of hazardous waste, processing chemicals, alternative substances, and regulatory oversight. For example:

- **NYSDEC Comment 23** asked for an "evaluation of processing methods and chemicals used in the manufacturing process to determine if alternative methods could reduce the generation of hazardous waste." Micron's response redirected to a previous comment about the types and handling of hazardous waste but failed to address the core issue – <u>which chemicals are used in the manufacturing process</u> and whether safer alternatives exist. (Appendix A-D, p. 67)

- **Comment 4 (Public Comment on Water Resources)** requested details on wastewater contents, treatment, and pretreatment systems. The request explicitly asked "chemicals must be identified [...] including hazardous materials, even if the weights and the volumes are not known." The response deflected, referring to general water resource comments without ever naming the specific chemicals likely to be discharged into wastewater, or how they will be monitored and controlled? (Appendix A-D, p. 79)

These are not trivial oversights—they speak to a structural unwillingness to disclose basic information about the types, volumes, and risks of chemical hazards at one of the largest proposed semiconductor facilities in the United States. This lack of transparency erodes public trust and undermines the credibility and adequacy of the DEIS as a comprehensive environmental assessment.

4. Monitoring and Reporting

Throughout the DEIS, Micron outlines plans for continuous and periodic monitoring of hazardous substances, including toxic gases, radiation, and flammable chemicals. While this monitoring is essential,

the DEIS fails to address how job-specific exposures, particularly for operational workers, will be tracked, evaluated, or addressed. This omission represents a major blind spot in occupational health protections.

The DEIS also fails to disclose a comprehensive list of chemicals to be used, stored, or produced at the facility. Without this information, it is impossible to evaluate or comment upon exposure risks or establish adequate monitoring protocols. This lack of disclosure is especially concerning given the semiconductor industry's well-documented reliance on toxic chemicals and history of worker illness tied to long-term chemical exposures.

While there is considerable reference to monitoring plans, there are no provisions for how this data will be shared with regulators or the public. Without regular, disaggregated, facility-specific reporting—on emissions, chemical use, chemical hazards, exposure incidents, and health metrics—there is no way for local agencies, health professionals, or community organizations to track risks or intervene early in the event of a problem. If Micron intends to build trust, it must commit to sharing exposure monitoring data and health trends—de-identified to protect individuals but robust enough to support early intervention and scientific study.

Health and Safety Recommendations

To meaningfully mitigate risks identified in the DEIS and address critical information gaps, we urge NYSDEC and other permitting agencies to incorporate the following recommendations as binding conditions in the final EIS and any project approvals:

1. Chemical Transparency and Hazard Disclosure

- Require Micron to publicly disclose a comprehensive inventory of all chemicals used, stored, or produced at the facility—including those used in small quantities or considered proprietary.
- Mandate that the inventory include volumes (when available), hazard classifications, associated job functions or departments, storage methods, and waste treatment or disposal pathways.
- Require Micron to disclose internal chemical review processes, including criteria for eliminating "substances of concern" and examples of chemicals already phased out.

2. PFAS-Specific Protections

- Require Micron to disclose all PFAS compounds used on-site.
- Mandate inclusion of PFAS and other emerging contaminants in plans for managing hazardous waste.
- Require Micron demonstrate destruction without toxic byproducts for disposal of PFAS waste offsite or onsite; require onsite treatment evaluations and adoption of destruction technologies where feasible.
- Set a "zero PFAS release" policy as the performance goal, rather than relying solely on limited federal thresholds.

- We also recommend Micron commit to managing all compounds of PFAS identified by scientific consensus as hazardous.

3. Job-Level Risk Assessments and Occupational Health Safeguards

- Require public release of job-specific risk matrices and exposure data by job category and function.
- Mandate that Micron collect and report de-identified exposure monitoring results, illness data, and corrective actions taken.
- Require a detailed operations-phase EHS performance plan comparable to the construction-phase EHS performance standard in Appendix L.
- Require Micron to detail the structure and protection measures of Worker Safety Committees.

4. Monitoring and Reporting Requirements

- Require facility-specific, disaggregated reporting on chemical use, emissions, worker exposures, and health monitoring results.
- Ensure all monitoring data and protocol as well as right-to-know policies for workers—including air, wastewater, worker exposure and illness results—are shared with workers, local agencies, including NYSDOH, and made accessible to the public on a regular basis. The DEIS lacks any worker-oriented or public-facing reporting portal to access monitoring data, incident summaries, or compliance records. There is also no mention of a right-to-know education or notification system for workers. Transparency and early warning are key to injury and exposure prevention. Right-to-know policies are core to chemical safety and should be operationalized through digital access to safety sheets, alerts, and risk data.

5. Public Access to Internal Safety Plans and Procedures

- Require Micron to publish its Hazardous Waste Reduction Plan, Hazardous Waste Procedure, Waste Minimization Plan, and Risk Management Plan in full, available for public review with active links, no password barriers, and ensure ease of access to the publicly available information.
- Ensure that Micron's Hazardous Waste Reduction Plan includes detailed steps of how they will implement their goal of reaching "near-zero hazardous waste-to-landfill by 2030"–including metrics, timelines, and scope of included materials.
- Make emergency response plans, prevention protocols, health and safety training materials and other chemical hazard-related designs available for public review, and ensure ease of access to the publicly available information.
- The DEIS mentions emergency response coordination but does not propose periodic simulations, joint drills with local responders, or a community hazard notification system in case of a release or spill.

- Require Micron publish the implementation details of its ISO 45001 and ISO 14001 certifications specific to the Clay facility, since the standard itself is not publicly available, and ensure ease of access to the publicly available information.

- Require Micron publish the implementation details of any SEMI standards used for the Clay facility that are not publicly available.

6. Address Unmet Public Comments and NYSDEC Concerns

- Require full and formal responses to all substantive comments submitted by NYSDEC and the public during the SEQRA scoping period—including those requesting disclosure of hazardous waste types, wastewater contents, and chemical processing methods.

- Require a formal public response with complete follow-through on previously omitted details, explaining how each comment was addressed in the final EIS.

TRANSPORTATION AND TRAFFIC

Micron must invest in and expand public transportation infrastructure to accommodate the anticipated population growth and ensure workers have reliable and affordable public transportation to the fab. This must include accessible transportation support safe, reliable, and low-emissions transportation, such as electric buses and trains, to and from their proposed factories, which is not currently accessible by public transportation–as well as service to other areas in the region which are inaccessible to impoverished populations. The projected socioeconomic benefits projected by Micron's development will not be accessible to transit-dependent people if convenient, reliable, affordable, and safe transportation is not available.

At present, the DEIS does not show comprehensive plans to expand the limited public transportation infrastructure within Syracuse and the regional study area to meet increased demand. Nor does the draft provide sufficient details surrounding the listed plans to expand public bus routes. For instance, the DEIS states that there is only a "[p]otential introduction of a new [Bus Rapid Transit (BRT)] line in Onondaga County." (Appendix Vol 1, p. 6-4). The people of Onondaga County deserve more than 'potential' plans. The EIS must detail comprehensive and clear plans for expanding BRT infrastructure, consistent with the priorities outlined by the Community Engagement Committee (CEC).

Public Transportation Infrastructure Analysis

The DEIS notes: "The Central New York Regional Transit Authority (Centro) provides public transportation services throughout Onondaga County and the surrounding regions. Eight Centro bus routes operate daily within the transportation evaluation area and are regional rather than local, resulting in widely spaced and infrequent stops" (p. 3-293). Moreover, the DEIS does not document direct collaboration or agreements with Centro to support expanded routes, new services, or integrated scheduling. While Centro is mentioned, there is no evidence of joint planning, funding commitments, or timelines for implementation.

Transportation is also an economic and racial justice issue. There is currently no Centro route that people from Syracuse can use to get to the Micron site. The nearest accessible Centro route in Southside Syracuse is about four miles from Micron, making it nearly inaccessible for future workers without vehicles. Estimated one-way travel times using ride share services can exceed 1.5 hours. Transportation issues like these pose a barrier to employment for low-and moderate-income (LMI) city residents. The DEIS does not include a model of commute times for proposed BRT routes or a simulation of how long commutes from LMI neighborhoods (e.g., Southside Syracuse) would take by bus, BRT, or shuttle under any scenario. Transit time is a key determinant of job access and is used in both equity and economic development assessments. Without this modeling, there is no meaningful way to assess transit feasibility for low-income workers.

The CEC Priorities Document includes "Sustainable and Equitable Infrastructure Development" as a core priority, with the goal of "[c]reat[ing] a sustainable and inclusive transportation network that enhances connectivity, prioritizes safety, supports economic growth, and minimizes environmental impact, [while] moderniz[ing] and sustainably manag[ing] utilities and natural resources for resiliency and sustainability."[91] The priorities document also states that when consulting with community groups about Micron's impact on public transportation "diverse groups emphasize the need for improved public transportation to access jobs, education, and healthcare"[92] Community feedback cited in the document emphasized the importance of expanding reliable and sustainable public transportation to access jobs, education, and healthcare. Despite this, the DEIS and appendices offer few substantive details beyond limited bus route expansion.

Public Transportation Proposals

Section D 3.1 of the DEIS reviews the 2050 long range transportation plan of the Syracuse Metropolitan Transportation Council (SMTC) from 2020, which was amended in 2022. Did the 2022 amendment utilize the latest Micron population and household projections that were developed by REMI Study and Micron's consultant? It is unclear whether such projections were included when SMTC amended its plan to reflect progress on the interstate 81 viaduct project. (p. 190 of the PDF or p. D-11.)

Appendix D3.2 discusses Onondaga County's Comprehensive Plan policy implications. The Plan, adopted in 2023, calls for a focus on transit-oriented development near identified centers and transit corridors. It also calls for enhancement of the bus rapid transit system to support the land use vision of the county. However, section 3.2.1 of the Plan states that the proposed Micron project would not directly advance some of the comprehensive plan's goals relating to the development of this key employment center, and that the proposed project would not include improvements to public transit, such as expansion of the bus rapid transit services. The DEIS shifts responsibility to the county, offering no commitment that the Plan's vision will be realized. The final EIS must include funded commitments and plans for transit services that will support, organize and service the growth which the Micron project will induce. Without such commitments, the environmental impact of the proposed project cannot be known. Will there be

[91] "Harnessing Opportunity: Community Priorities for Central New York: Community Priorities Document," P. 16, CNY CEC, June 2024, https://www.cnycec.org/community-priorities-document.
[92] "Community Priorities Document." P. 43, CNY CEC, June 2024.

transit service available to the visitors and employees of the Micron campus? Will induced growth, both residential and commercial, be accounted for when expanding public transit?

Under the Growth Inducing Effects section, the DEIS states that "The Comprehensive Plan includes policies to foster transit-oriented development near the centers, such as enhancing the County's BRT system. Under the Comprehensive Plan, municipalities in Onondaga County would be expected to conform to future discretionary land use and zoning actions to facilitate new housing and business development in appropriate locations with the fewest adverse effects (e.g., adverse effects on infrastructure capacity or farmland)." (p. 3-33)

The draft also notes that Micron will construct four bus stops on its campus. However, there is no detail provided about these stops (p. 2-13). The final EIS must detail what bus routes these stops will service to determine how this helps expand public transit accessibility for future Micron workers. Moreover, under Table 4.2-1, in a list of Bus Rapid Transit Routes to be created under Present and Reasonably Foreseeable Actions, the bus line distance from Micron is "Unknown" (p. 4-11). Is this because the distance has not been mapped? Or are the distances not currently planned? The final EIS must clarify whether this is due to incomplete planning or mapping omissions.

The draft is also missing an analysis of how the 'potential' expansion of Centro's bus routes will adequately meet the increased population demands, particularly for Micron workers commuting to the campus. The final EIS must include a comprehensive assessment of Centro's current bus routes including existing service issues and an analysis of ridership, including income assessments, to determine transit adequacy for LMI residents. The EIS should also include more expansive analysis of future public transportation options that can be created to meet the needs of current and future residents who rely on public transit and how these plans will ensure future Micron workers have affordable, reliable, and sustainable access to public transportation.

Public Transportation Recommendations

Invest in public transportation infrastructure to ensure Micron's facility is accessible to all CNY residents

For Micron to make an effective commitment to equitable recruitment and hiring, Micron should invest in expanding access to public transportation. Micron can work with Centro to create practical bus routes to the site in LMI neighborhoods. Rapid transit service from designated places like the transit hub in downtown Syracuse can also be an option. There are clearly alternatives that should be considered rather than just building out the full amount of parking spaces Micron is planning. These alternatives would partially decrease the footprint of the development and lower vehicle emissions. Importantly, the DEIS does not mention how public transportation service schedules will be adjusted to accommodate non-standard work shifts. Micron's fab will need to run 24/7, including night shifts, yet the DEIS does not assess whether existing or planned public transit routes will serve workers outside of peak commuting hours.

Transportation Plans Need to Align with County Plans

The EIS should make clear how plans for roads, buses, and other forms of transportation associated with Micron will support the Onondaga County Comprehensive Plan or "PlanON" for community development recommendations for future development. All regional development projects should be transit-oriented (see Greening USA "12 Traits for Sustainable Communities",[93] and CNU New Urbanism Charter[94]). The County can adopt "Eco Friendly" planning standards including sustainable public transportation as cited in the CEC Priorities Document.

Fund Syracuse Public Transit

Micron could commit to funding a robust BRT route network that services the entire City of Syracuse as well as Clay and Cicero to support reduced greenhouse gas emissions from the region, reduce traffic congestion, and increase access to public transportation for all.

Fund Free Shuttle to Micron Campus

Micron could create a free or heavily subsidized shuttle covering several highly trafficked stops to support local communities accessing the Micron campus. This may also reduce traffic congestion.

Assess Impacts of New Highway Interchanges

The Micron FEIS should include assessment of community and environmental impacts of traffic within a 10-mile wide corridor around each new proposed highway interchange.

SOCIOECONOMIC CONDITIONS

Micron's proposed Project is slated to receive upwards of $20B in public subsidies and tax credits from federal, state, and local governments. With this historic investment, the CNY community has been promised thousands of good jobs. However, Micron has made few concrete or enforceable commitments surrounding the permanent manufacturing jobs that define what constitutes a "good job" or how equitable access for these jobs will be ensured for current local residents, especially Syracusans.

This substantial public investment must result in real, quality jobs for members of the CNY community, especially those who have been historically left out of economic opportunity. A "good job" must guarantee family-sustaining wages and comprehensive benefits, safe working conditions, equitable hiring and employment practices, and access to an inclusive workforce pipeline and training opportunities. To meet this standard, Micron must provide specific details on its hiring process, compensation structures, working conditions, and training programs - and must make those commitments enforceable.

[93] "12 Traits of Sustainable Communities," Greening USA, N.d. https://greeningusa.org/2023/05/02/12-traits-ofsustainable-communities/#:~:text=Trait%205%20%E2%80%93%20Water%20Related%20Infrastructure,Engagement%20and%20participation%20by%20citizens.
[94]Congress for New Urbanism (CNU). 2024. "The Charter of the New Urbanism." Summer. https://www.cnu.org/who-we-are/charter-new-urbanism.

These issues are relevant considerations under SEQRA. The DEIS itself underscores the importance with which socioeconomic impacts must be weighed, noting that " Under SEQRA, the protection and enhancement of the environment should be given appropriate weight with social and economic considerations, and the factors should be considered together in reaching decisions on proposed activities; environmental factors are not the sole consideration in decision-making (6 NYCRR § 617.1(d))." (p. 3-465).

Worker Pay

The DEIS notes: "At full operational capacity in 2045 the Proposed Project would generate more than 9,000 permanent on-site operational jobs and spur the creation of approximately 40,000 additional jobs in the regional economy and throughout New York State, including vendor, supply chain, construction, and community jobs. Upon completion, the Proposed Project would be the largest domestic producer of DRAM chips, 9,000 high-paying jobs by 2045" (p. 0-1). Of these 9,005 jobs, Micron estimates that 90% will be in manufacturing, with the remaining 10% in supportive services, which include IT, security, quality, procurement, supply chain, smart manufacturing technology, finance, HR, and legal services (p. 3-488). Of the 90% of manufacturing roles, 10% will be in leadership roles (supervisors, managers, directors), 44% will be engineering and professional roles (e.g., equipment and process engineers), and 36% will be equipment and process technicians. However, only 669 of the jobs created within the first three years will be eligible for workers without an advanced degree (p. Q-49-50).[95]

Micron reports that employees at the Fab Complex are expected to earn an average of $100,000 in total compensation (base salary plus cash bonuses)(p. 3-489). However, it is not clear how often cash bonuses are distributed, making the actual base salary difficult to assess. The DEIS also fails to clarify the pay disparities between higher paid employees (such as engineers) and lower-paid roles (such as operators).

According to Micron's PILOT application, engineers and technicians are projected to earn $94,800 and $68,600 per year, respectively.[96] With 36 percent of operational workers serving as technicians, nearly half of Micron's operational workers will not be receiving the $100,000 salaries Micron has publicized. Furthermore, Micron exhibits one of the highest pay disparities among federal CHIPS Act recipients. In 2023, Micron CEO Sanjay Mehrotra received the highest compensation among all CHIPS recipient CEOs at $25.3 million - rising to $30 million as of 2024[97] - while half of Micron's workers earned less than $54,570 the same year.[98]

To ensure transparency and accountability, the EIS must disclose the full pay ranges associated with each position. Micron must provide clear, enforceable salary ranges for each classification, explicitly

[95] "Onondaga County Industrial Development Agency Application for Financial Assistance." Onondaga County Industrial Development Agency, July 14, 2023. https://ongoved.com/wp-content/uploads/2023/03/OCIDA-Micron-Amended-and-Restated-Financial-Assistance-Application-6-10-2024-Executed-4886-7419-5655.1.pdf.
[96] Ibid.
[97] "Highest-Paid CEOs." AFL-CIO, 2025. https://aflcio.org/paywatch/highest-paid-ceos.
[98] Mills Rodrigo, Chris. 2024. *Leveraging the CHIPS Program to Create Good Jobs for All Semiconductor Workers*. Institute for Policy Studies, August 22. https://ips-dc.org/report-leveraging-chips-program-to-create-good-jobs.

differentiating base pay from bonuses to allow accurate assessment of true economic benefit and equity across job categories.

Hiring

The DEIS outlines several construction partnerships and commitments Micron has made to ensure there is equitable and inclusive access to construction jobs including: their commitment to hire 1,500 veterans in the region over two decades via the Center for Military Recruitment Assessment and Veterans Employment with the use of the "Helmets to Hardhats program" (p. Q-53), signing onto the CHIPS Women in Construction Framework (p. Q-49), committing to work with local construction partners to establish a target percentage of construction workforce from disadvantaged populations (p. Q-49), and entering into a Project Labor Agreement with local building trades (p. Q-49).

However, while the DEIS outlines some inclusive hiring efforts for the construction phase, it provides few details and no enforceable commitments about Micron's plans to hire workers from disadvantaged communities such as disadvantaged communities with documented high rates of poverty for permanent manufacturing jobs. The EIS must clearly outline how Micron intends to recruit, train, and hire marginalized and underrepresented workers for its permanent operations positions to fully assess socioeconomic effects.

The draft states: "Given the Micron Campus' proximity to colleges and universities, the regional collaborations, and initiatives for training already in place, and with additional investments through the Green CHIPS Community Investment Framework (CIF) it is reasonable to assume that Micron could exceed the 60 to 70 percent local job recruitment rates experienced at Micron's Boise, Idaho and Manassas, Virginia facilities. For the Proposed Project, this equates to over 6,300 permanent operational high-paying jobs secured by existing local and regional study area residents, and approximately 2,700 secured by workers who would be in-migrating to the region" (3-489).

While we are pleased to see that Micron has this local hire target for its recruitment, Micron must commit to this goal in an enforceable manner for permanent production facility jobs. Additionally, the draft notes that these 6,300 permanent operational workers will come from both the local and regional study area. However, it is unclear how many of the 6,300 locally sourced positions will come from the City of Syracuse versus the broader regional study area. This distinction is critical. Syracuse has the highest child poverty rate (46%) of any U.S. city and a high overall poverty rate of 29.6% (p. Q-18-19), significantly higher than nearby areas like Cicero and Clay. It is essential that Syracuse residents, who face the greatest economic needs, are prioritized for access to these quality jobs. We should not miss a golden opportunity to improve the lives of children from low-income families.

Micron must guarantee that a meaningful percentage of new hires come from marginalized local communities, particularly within the City of Syracuse. Micron must establish a workforce development process that targets census tracts with the highest concentration of poverty in the CNY region. In addition, Micron must commit to inclusive hiring policies that remove unnecessary barriers, such as GED requirements, English language proficiency requirements, and prohibit discrimination against workers impacted by the criminal legal system.

Training

The DEIS notes that Micron's programs, developed in partnerships with regional universities, will "expand equitable access to education, increase retention and prepare all students—especially students from underrepresented groups and rural areas—for productive and fulfilling engineering careers" (Q-53). However, it is not clear how this program will specifically target underrepresented populations or which groups are included in the definition of "underrepresented" and "rural". The vagueness of this commitment means that its impact is impossible to assess. The EIS should provide details on this program, clarify the intended beneficiaries of this initiative, and provide details on outreach strategy and structural design to ensure it effectively expands access for underserved communities.

While this is a good start in ensuring equitable access to engineering jobs at Micron, the company must make enforceable commitments to equitable access to training programs for production workers entering lower-tract and non-engineer positions. This includes entry-level and mid-skill roles, which offer more accessible pathways into the workforce for individuals with fewer academic credentials, as well as on-the-job training opportunities for upward progression.

The draft notes that technicians, who will make up 36% of the manufacturing workforce, offer the greatest opportunity for an onramp for less qualified workers with the lowest certification barrier requirements: "The qualifications are an Associate of Arts or Science degree or completion of a Micron Apprenticeship Program, another approved certification, or a combination of certifications under development with Micron community college partners or equivalent training and experience." (p. Q-50) The draft also states that Micron will provide "on-the-job training for the role's function" (Q-50).

However, the DEIS fails to provide sufficient detail on either the Micron Apprenticeship Program or the nature of the on-the-job-training. The EIS should clarify the structure, content, and delivery of both training components. Specifically, it should explain how the apprenticeship program and on-the-job training differ, which workers will be eligible for each, and whether either program is offered in collaboration with labor unions, registered apprenticeship sponsors, or nonprofits organizations.

For the Micron Apprenticeship Program in particular, the EIS should detail which workers will be eligible or prioritized for enrollment, whether the program is registered with state or federal apprenticeship agencies, whether the program is delivered in partnership with community-based or labor organizations, and, whether the program will intentionally target underrepresented or marginalized workers and if so how the targeting is implemented.

In addition to workforce entry training, Micron should commit to ongoing professional development for its employees to ensure equitable access to promotion and advancement opportunities within a highly technical work environment. The DEIS does not currently outline any plans to continue upskilling or retaining of operations workers, an omission that must be addressed if Micron is to offer true long-term career pathways and inclusive economic mobility in a highly specialized sector.

Work Conditions and Opportunities for Advancement

The DEIS does not outline plans to ensure workers will have access to internal advancement opportunities within Micron. Reporting from the Institute for Policy Studies indicates that Micron workers in Manassas Virginia have experienced barriers to promotion opportunities and wage growth. In particular, multiple workers at the Manassas location have cited that internal job postings were removed before employees had the opportunity to apply. Workers have also reported being expected to work additional unpaid hours, on top of twelve hour shifts, in order to be considered for advancement. Additionally, Micron workers have noted that they have earned minimal pay increases of a dollar or two over a period of several years.

These concerns are compounded by broader issues facing semiconductor workers. Low-wages, limited advancement opportunities, workplace safety issues, and demanding schedules are pervasive issues for semiconductor workers here in the U.S.[99] The DEIS notes that "Micron would operate five (5) shifts over a 24-hour day. Day and night shifts would be utilized to sustain 24-hour manufacturing activities, as well as a Monday-Friday day shift" (p. 2-15). To maintain continuous production, the draft further states that production workers will be scheduled 11.5 hour overlapping shifts (p.2-15). Although DEIS identifies demanding 11.5 hour overlapping shifts, it does not provide clarity on how Micron plans to mitigate fatigue and related safety risks. Micron must explicitly detail measures to address potential health and safety risks associated with prolonged shifts, including rest periods, shift rotation practices and comprehensive fatigue management protocols. Working long hours and mandatory overtime are known to increase injury rates and health impacts. One large cross-industry study from the U.S. found that overtime increases the risk of workplace injury, measured as the injury hazard rate, by 61%. At least 12 hours a day was associated with 37% increases and at least 60 hours per week to 23% increases.[100]

These demanding work schedules, combined with a lack of clarity around advancement and training, raise serious concerns about job quality and long-term retention. The EIS should directly address these issues by outlining how Micron plans to provide safe working conditions, fair compensation, and transparent, equitable pathways for internal promotion and professional development.

Workforce Reporting Information Collection

To ensure that Micron achieves the goals of the CHIPS Incentives Program and Green CHIPS Act, the CHIPS Program Office (CPO) and Empire State Development (ESD) must actively monitor workforce metrics, milestones, and compliance with health and safety standards. Collecting key baseline data is essential to determine whether the Green CHIPS program is, in fact, truly delivering good manufacturing jobs accessible to all. At minimum, Micron should be required to report the following:

1. **The number and geographic location of U.S. jobs created or supported.** Given that many semiconductor roles can be performed remotely, it is important to assess whether jobs offer economic benefits in the communities where subsidies are targeted.

[99] Mills Rodrigo. 2024.
[100] A. E. Dembe, *et al*. 2005. *The Impact of Overtime and Long Work Hours on Occupational Injuries and Illnesses: New Evidence from the United States*. 588–97. Occupational & Environmental Medicine 62, no. 9, September, https://pubmed.ncbi.nlm.nih.gov/16109814/.

2. **The minimum wages and benefits for each job title.** Relying on average compensation figures obscure pay disparities. For example, while the Semiconductor Industry Association cites $170,000 as the average annual salary,[101] the U.S. Bureau of Labor Statistics reports that processing technicians earn a median hourly wage of $21.49, with the lowest 10th percentile earning just $15.92 per hour (or $44,690 and $33,120 annually, respectively).[102] Reporting minimum, not just average wages.[103]

3. **Recruitment, hiring, and training plans for marginalized and underrepresented workers in the manufacturing workforce.** Micron must describe how it will recruit workers who face barriers to employment, such as women, people of color, veterans, formerly incarcerated individuals, people who live in rural areas, residents of low-income census tracts, and workers transitioning from carbon-intensive industries.

CPO and ESD must monitor Micron to ensure these goals are achieved. According to The CHIPS & Science Act Section 105, the Government Accountability Office (GAO) requires the CPO, to the extent possible, to report on "aggregated workforce data, including data by race or ethnicity, sex, and job categories."[104]

The most effective way to ensure compliance is to mandate regular, quarterly reporting from Micron. These reports should include, among other things, total U.S. Full Time Equivalent (FTE) work performed that quarter by job type and demographics; minimum wages and benefits paid, disaggregated by job title and demographics; information on each new hire; and descriptions of workforce development, apprenticeship, and training programs.[105]

In addition, Micron should be required to report on all applicable federal or state-mandated administrative and national policy requirements. The CHIPS Incentives Program NOFO and Green CHIPS requirements lists multiple administrative requirements, including compliance with prevailing wage laws under the Davis-Bacon Act and adherence to federal employment and labor laws such as the Civil Rights Act, Fair Labor Standards Act, Occupational Safety and Health Act, and the National Labor Relations Act.[106] Required documentation, such as firm level EEO-1 Component reports and OSHA 300 logs, should be included, along with disclosures of any violations and their overall compliance status.

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[101] Semiconductor Industry Association (SIA). 2022. "The US Semiconductor Industry Workforce." Accessed August 22. https://www.semiconductors.org/wp-content/uploads/2022/02/The-US-Semiconductor-Industry-Workforce.pdf.
[102] Bureau of Labor Statistics (BLS). 2022. "Occupational Employment and Wages." May. https://www.bls.gov/oes/current/oes519141.html.
[103] Reporting minimums provides insight into what the lowest-paid workers are making, while average pay can be skewed by the highest earners – the Semiconductor Industry Association uses $170,000 annual pay as the average for the industry. Semiconductor Industry Association (SIA). 2022.
[104] Department of Commerce. 2023. CHIPS & Science Act. Division A Section §105(a)(2)(D)(iii). Pg.27; NIST. "Notice of Funding Opportunity: Commercial Fabrication Facilities."
[105] Jobs to Move America (JMA). 2020. "U.S. Employment Plan." April 10. https://jobstomoveamerica.org/resource/u-s-employment-plan-2/.
[106] Excelsior Jobs Program Regulations (updated for Green CHIPS 3/28/23). March 28, 2023. https://esd.ny.gov/sites/default/files/ExcelsiorRegs%20-2023-GC-updated-final-050123.pdf.

Lastly, to complete the foundation of strong workforce development programs, CPO, NIST, and ESD should impose penalties for non-compliance or rescind any other benefits the recipient may have earned related to these commitments. The CHIPS Incentives Program NOFO provides clawback provisions for failure to achieve construction target dates, around technology sharing with foreign entities, and recipient expansion into prohibited foreign countries.[107] Similarly, the Green CHIPS Program requires recipients to meet its targeted lower-bound net new jobs number or the lower estimate of annual net new jobs they identified in their signed agreement with ESD.[108] Both programs require recipients to comply with all reporting requirements. We urge for the implementation of similar penalties for non-compliance with workforce-related contractual commitments.[109]

The federal and state CHIPS Acts represent a historic opportunity for workers and their communities to ensure that the hundreds of thousands of construction and operations jobs created by CHIPS funding opportunities are good jobs. CPO, NIST, and ESD should institute robust and transparent reporting with the appropriate compliance mechanisms to ensure accountability.

Economic Development & Growth Inducing Effects

Economic inequality and segregation is prevalent in CNY, particularly in Syracuse. Black and Latinx individuals have significantly higher poverty rates relative to white individuals and these rates are higher in CNY. This is most keenly felt in the economic disparities between central Syracuse and areas outside of the city center like Clay. In Syracuse, 29% of the population is Black, compared to just 4.5% in Clay. Despite these realities, Micron makes no clear or enforceable commitments to alleviating poverty in Onondaga County.

The DEIS subsection, Economic Development, Labor, and Employment concludes that the impacts of operational activities on economic development, labor, and employment will not result in significant adverse effects (p. 3–490). However, given the massive scale of Micron's project, it seems preposterous that Micron's hiring will not impact labor costs or workforce availability for other businesses and manufacturers in the central New York area. The DEIS implies that surrounding employers will not see an

[107] National Institute of Standards and Technology (NIST). 2023 "Notice of Funding Opportunity: Commercial Fabrication Facilities.
[108] Excelsior Jobs Program Regulations (updated for Green CHIPS 3/28/23). March 28, 2023. https://esd.ny.gov/sites/default/files/ExcelsiorRegs%20-2023-GC-updated-final-050123.pdf.
[109] Micron has fallen well short of realizing their job creation commitments in the past. As part of its $70 million grant from the State of Virginia to support the expansion of their manufacturing facility in Manassas City Virginia, Micron committed to making $2.9 Billion in capital investments and increasing employment by 1,106 by 2027. While Micron has met overall payroll and capital investment goals, they have fallen well short of hiring commitments. As of fiscal year 2023, Micron has missed hiring targets by 73%. As of 2023, Micron had only created 150 new jobs at the Manassas plant compared to their goal of 553 by that year. Micron had been meeting their hiring commitments towards the beginning of the grant period in 2019 and 2020 but failed to meet requirements in subsequent years. In 2021, new jobs declined by 39. The company blamed the pandemic for the slowdown, but Micron only added 38 new jobs in 2022 and in 2023 new jobs again declined by 265. As of 2023, Micron had committed to 553 new jobs in Manassas but had only added 150, a shortfall of 73%. This decline coincided with a global repositioning by Micron which led to a 10% reduction in total workforce. It appears that Micron's macro business considerations trumped the commitments they made to the State of Virginia related to hiring. Micron Technology Inc. 2019 - 2023. "FY19 - FY23 Annual Progress Report Semiconductor Manufacturing Grant Program: Micron 2018 Expansion Project." (received via VFOIA request); Micron Semiconductor Manufacturing Performance Agreement Executed. 2018. (received via VFOIA request).

adverse impact in retaining or paying workers once Micron's operations begin but provides no documentation to support this counter-intuitive claim. For example, have other employers been consulted to assess potential impact?

In its discussion of construction-phase labor shortages —which is expected to last 16 years—the DEIS claims that shortages of labor are expected to be limited and short-term (p. 3-485) but fails to provide adequate documentation about how this broad conclusion was reached. The EIS should include a detailed analysis explaining how this determination was made.

Labor shortages during both construction and operational phases are significant concerns that are not completely addressed in the DEIS. While it may be true that training programs will increase the labor supply and mitigate upward pressure on labor costs, the DEIS does not offer evidence to substantiate this and details supporting these claims are lacking. The DEIS should be amended to clearly detail all intentions and projections related to labor acquisitions, training, in-migration and impacts on existing employers. Absent this detail, the public cannot meaningfully evaluate the scope and credibility of the DEIS's labor impact claim. The EIS should provide a clear, fair, unbiased, and detailed assessment of this impact.

The cumulative socioeconomic benefit from the project depends in large part on induced growth from worker spending in the regional economy. But those benefits are likely to diminish if Micron's direct and indirect new jobs are skewed toward the low end of the industry wage scale, limiting workers' disposable income to spend on locally serving businesses. This concern is especially relevant in a region where the top two industries are retail trade (21.8 %) followed by accommodation and food services (11.3%) (p. Q-38), sectors that consistently offer among the lowest wages. In Onondaga County, in particular, the DEIS notes: "approximately one-quarter of the resident labor force is employed in the retail trade sector" (p. Q-39).

Syracuse, the most populous city in Onondaga County,[110] has a poverty rate of 30.1%, nearly 20% higher than the national average,[111] and has the highest child poverty rate (48.4%) of all U.S. Cities (and overall poverty rate of 29.6%). With the project projected to create over 33,000 indirect jobs, many of these will likely be in the low-wage service sector. Within this low-wage sector, retail industry jobs pay the lowest, with most retail jobs earning less than the average private sector job. In real terms, retail wages have been in decline since the 1970s with current retail wages at just 72% of what they were in 1972. On top of low wages, retail workers rarely receive benefits or formal training.[112] Without properly accounting for the impact that Micron's arrival will have on the creation of low-wage spinoff jobs, it is possible that Micron's cumulative socioeconomic impacts will have negative impacts on the local and regional study area.

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[110] Data Commons. 2023. "Ranking by Population: All cities in Onondaga County. https://datacommons.org/ranking/Count_Person/City/geoId/36067.

[111] Misiaszek, Emma. 2023. "Syracuse ranks 2nd in economic disparity for Black residents, according to LendingTree study." CNY Central, September 6. https://cnycentral.com/news/local/syracuse-ranks-2nd-in-economic-disparity-for-black-residents-according-to-lendingtree-study.

[112] Carré, Françoise, and Chris Tilly. 2017. "A Global Look at What Makes U.S. Retail Jobs so Bad." Perspectives on Work: Retail Workers.

Additionally, knowing the earnings distribution among Micron's expanded workforce would also help refine these plans. In other centers of high-tech employment, such as Silicon Valley, growth in high-wage tech jobs has been found to increase regional employment growth overall, but at the cost of inflating housing costs and eroding real wages for workers earning less, such as retail and hospitality workers.[113] Micron's potential to widen inequality in metro Syracuse and Onondaga County and displace low-income residents must be explicitly addressed.

The DEIS' subsection on growth inducing effects (Section 3.1 5.3.2) is unclear. Here, we see recognition that there will be adverse effects on such things as housing costs, housing availability, housing affordability, etc., but section after section, the DEIS claims that these effects will be short-term. The DEIS notes that as it relates to housing disruptions the "short-term" is asserted to be four years as the market adjusts. But still, all of this is conjecture. These sections seem to overstate the proposed or intended benefits, but understate the potential for adverse impacts.

In the mitigation measures (section 3.1 5.4 p 3–503) the claim is made that Micron does not control the housing market and cannot specifically mitigate such impacts, but Micron will "continue to work with agencies and stakeholders to identify specific actionable measures to avoid or minimize the potential for short term significant adverse effects" on the local housing market. The public needs more than 'work with'" (p. 3-503). Additionally, one of the goals of Micron's Community Investment Fund is to support affordable housing in the region.[114] The public needs assurances that the inevitable housing disruptions will be mitigated. The EIS should be clearer about what specific plans Micron has to work with agencies. We propose the following mitigation measure relating to growth--inducing impacts, all of which can be incorporated through a community negotiated and enforceable Community Benefits Agreement which is discussed in more detail below:

- To ensure proper community participation is involved, we recommend the creation of a citizens conservation type management and environmental mitigation council to oversee all actions relating to the environmental impacts of the fabs as well as the induced growth and mitigation of its effects.

- Creation of an independent planning team made up of professional, certified planners to oversee, review, and manage growth--related mitigation measures.

- Adequate funding for staffing of the planning team and the citizens' council, as well as funding for incentives or subsidies needed to mitigate problems related to housing shortages, affordability, and avoidance of homelessness.

The intersection of household growth and GHG emissions is something that also deserves additional scrutiny and explanation in the EIS. This DEIS dismisses the GHG impacts of induced growth as minor compared to the fabs themselves. Perhaps this is true, but there is no assessment and no facts presented to substantiate this claim. But regardless of the relative magnitude of GHG emissions from each sector, the

[113] Dee Gill, and William Yu. 2019. "Does a Rising Tide of High-Wage Tech Jobs Really Lift All Boats?," *UCLA Anderson Review,* October 30. https://anderson-review.ucla.edu/forecast-tech-jobs/ .

[114] ESD. 2022."Memorandum of Understanding for Micron Community Investment Framework in Central New York." October 27. https://esd.ny.gov/sites/default/files/Executed-MOU-NY-CIF-with-Exhibit.pdf.

GHG emissions from induced residential and commercial (or even supply chain industries) should be accounted for and reported in the EIS.

Overall, the Growth Inducing Effects section of the DEIS does not adequately explain how the growth induced impacts of the community will be met. It praises the anticipated benefits of fab development in abstract terms while minimizing the likely adverse impacts. It fails to establish how these challenges will be met without adequate preparation, investment, and citizen oversight, particularly through a negotiated community benefits agreement (CBA), which has been notably absent from this project so far.

The DEIS admits that the region has not updated municipal plans and is unprepared to manage induced growth, which will consequently lead to adverse impacts. How can the fab development be approved without the community being prepared to deal effectively and sustainably with the recognized external socioeconomic and environmental costs and risks? Page 3-33 states:

> Although other counties and municipalities in the five-county study area have enacted comprehensive plans, there are few recent plans. The City of Syracuse Comprehensive Plan was enacted in 2012, the Oswego County Comprehensive Plan was enacted in 2008, and the Cortland County Consolidated Plan was enacted in 2002. Over time, other counties and municipalities could enact updated policies similar to the Onondaga County, Clay, and Cicero plans described above to include measures to mitigate adverse growth inducing effects from the Proposed Project, while harnessing smart growth principles, such as the goals outlined in the Onondaga County Comprehensive Plan, to realize positive benefits from induced growth in the region. In particular, future planning policies could direct development to appropriate locations with the fewest adverse effects to farmland. (p. 3-33)

That paragraph references principles set forth in the Onondaga County Comprehensive Plan, yet it offers only aspirational goals. Unless towns and cities adopt those principles into enforceable local law, these principles will have no binding impact. Moreover, even full adoption may not go far enough to mitigate the impacts which the fab developments, or induced growth, will create. Leaving induced growth, its impacts, and mitigation to "future planning policies" opens the floodgates for adverse impacts. This is unacceptable and untenable.

Approvals for the fab development must be contingent upon robust, binding mitigation commitments that ensure induced growth occurs in a way that addresses concerns including greenhouse gas emissions, costly infrastructure, traffic congestion, housing affordability, and homelessness. A binding CBA that details a mitigation plan with measurable and achievable objectives will go far in helping to offset the adverse impacts of the induced growth.

Community Investments

As part of the Green CHIPS investment, Micron has committed to invest at least $250 million, making up half of the $500 million Community Investment Fund, over 20 years into "Workforce Development and Expansion, Education, Community Assets and Organizations, and Affordable Housing," according to the

CIF Memorandum of Understanding (MOU).[115] While many of these commitments are promising, all of these commitments are made in "good faith" and are therefore not enforceable.[116] To ensure that Micron makes good on these promises, it is critical that these commitments be both enforceable, have public oversight, and be publicly reported. The DEIS fails to articulate enforceable commitments or measurable community outcomes. Micron must detail enforceable accountability measures, including milestones, public reporting mechanisms, and structured community oversight committees to ensure community investments deliver tangible, measurable benefits.

According to the MOU for Micron CIF,[117] the purpose of the MOU "is to memorialize discussions and understandings between the Parties for the CIF, which the Parties anticipate will be incorporated into an approved 'Green CHIPS Community Plan' upon formal adoption of the regulations governing the ESD Green CHIPS program."[118] The "Green CHIPS Community Plan" is not currently publicly available and despite FOIL requests we have yet to receive any documentation of this executed plan. Notably, the DEIS makes no references to the "Green CHIPS Community Plan" despite several references to the Green CHIPS Investment Fund. Without this final executed Plan it is unclear to what specific goals Micron is going to be held to account, how Micron will meet these goals, and on what Micron will publicly report.[119]

We appreciate the CPO's emphasis on building resilient local economies by requiring applicants to make community investments and identify areas within their regional economies that require investments to ultimately help strengthen the economy under the Commercial Fabrication Facilities Funding NOFO.[120]

We encourage Micron to commit to milestones, to publicly report on outcomes, to provide community benefits (such as affordable housing, public transportation, and local investments in secondary and post-secondary education), protect community health, develop renewable energy infrastructure, and provide workforce development opportunities for historically marginalized community members. Opportunities such as these can be provided and enforced through CBAs between impacted communities and CHIPS grantees. Like job creation commitments, community investment commitments whether included in a CBA or not, should be subject to monitoring and public reporting. Because they directly involve impacted communities in their negotiation and enforcement, we believe robust CBAs are the best way for companies to comply with 15 U.S. Code § 4652, which requires recipients of CHIPS and Science Act funding to invest in surrounding host communities.

As part of a CBA, Micron should establish a community monitoring committee that includes community members and worker representatives to monitor and hold Micron accountable. Public reporting should occur on a regular and recurring basis (to be determined) to confirm Micron's compliance. Reporting can be done either by Micron, or by a third-party expert selected and managed by the community monitoring

[115] ESD. 2022."Memorandum of Understanding for Micron Community Investment Framework in Central New York."
[116] Ibid.
[117] Ibid.
[118] Ibid.
[119] The MOU for the CIF states that, "Consistent with the Green CHIPS program regulations, the parties expect that progress regarding the commitments set forth in the Green CHIPS Community Plan will be subject to regular public reporting." ESD. 2022."Memorandum of Understanding for Micron Community Investment Framework in Central New York."
[120] NIST. 2023. "Notice of Funding Opportunity: Commercial Fabrication Facilities."

committee. We also recommend that Micron pay for any contracted monitoring expert. All reported information should be regularly reported and updated to the local community on a publicly accessible website that could be managed by the committee.[121]

Central New York has had too many experiences with private companies making lofty promises in exchange for hundreds of millions of taxpayer dollars, only for those promises to go unfulfilled. With one of the highest poverty rates in the country, Syracuse has perhaps the most to gain economically from Micron's investment. Central New York cannot afford another broken economic investment like Destiny USA.[122] Now must also be the time that Micron, with support from local, state, and federal public officials, makes enforceable commitments to creating good jobs for Central New York residents in exchange for this historic public investment.

Housing

The DEIS does not provide adequate plans to mitigate the impact that Micron's induced population growth can have on an already stressed housing market. In particular, the DEIS understates the potential impact that Micron could have on the rental and housing market and fails to provide adequate evidence to back up its claims in this regard. The DEIS also does not detail any specific plans that Micron has to work with the state or county to mitigate stress on the housing market or expand affordable housing. Without meaningful details, it is unclear if or how Micron and state and county government agencies intend to expand the availability of mixed income affordable, climate friendly, and safe housing.

Regional Housing Market Trends

Accessibility to affordable housing is a serious concern in the local and regional study area, particularly in Syracuse. Likely due to population growth in the Syracuse area over the last two years, the rental market in Syracuse is incredibly competitive, leading to high prices that cause low-income residents to struggle to afford housing. Syracuse was recently listed as one of the most competitive rental markets in the country according to a study by Apartment Advisor.[123] The cost of renting an apartment in the city of Syracuse rose 23% over the last two years alone.[124] The 2024 Empire State Development (ESD) study analyzing the impact that Micron will have on housing cited that median rents in Onondaga County are 40% higher than

[121] Los Angeles World Airports (LAWA) provides an example of how a CBA can incorporate both environmental and socioeconomic benefits. LAWA has a CBA with the local community that includes community benefits and impact mitigations provided by LAWA as part of the LAX Master Plan Program. Some of the environmental provisions include: three studies around the environmental impact on the community that LAWA will fund, measures to reduce emissions related to aspects of airport operations, and environmental mitigations and commitments related to airport construction. It also includes an ongoing role for the LAX Coalition to both implement and oversee these benefits and hold LAWA accountable with mitigation. Los Angeles World Airports (LAWA). N.d. "Community Benefits Agreement (CBA)." https://www.lawa.org/lawa-our-lax/community-benefits-agreement.

[122] Moriarty, Rick. 2024. "Destiny USA facing foreclosure after missing loan deadline, rating agency reports." *Syracuse.com*, September 4. https://www.syracuse.com/business/2024/08/destiny-usa-facing-foreclosure-after-missing-loan-deadline-rating-agency-reports.html.

[123] Milman, Lilly. 2024. "The Most Competitive Rental Markets Right Now." Apartment Advisor. August 8. https://www.apartmentadvisor.com/blog/post/the-most-competitive-rental-markets-right-now.

[124] Onondaga County. 2024. "Onondaga County Housing Needs Assessment." June. https://plan.ongov.net/wp-content/uploads/2024/06/OnondagaHousing_JUNE2024_FINAL.pdf.

what the standard renter can afford to pay and that median home prices in the county rose more than 85% from 2012 to 2023. Across counties in CNY, high rents are also an issue, with the ESD study citing that median rents across counties rose from 46 to 83% since 2011.[125]

Economic inequality and segregation are prevalent in Onondaga County, particularly in Syracuse. Syracuse's poverty rate is 30.1%, nearly 20% higher than the national average.[126] Onondaga County is highly segregated by income, with lower-income households concentrated in the city and higher-income households outside the city. Although Syracuse has 30% of the county's households, it only contains 20% of households with incomes above $50,000. Furthermore, Syracuse has about 47% of county households with incomes of less than $50,000, and the poverty rate inside Syracuse is four times the poverty rate in the rest of the county."[127] Forty percent of households in Syracuse are renters and the city is disproportionately made up of low-income households. Forty-six percent of Syracuse households earn less than $35,000 and pay more than 30% of their income on housing. And only four of Syracuse's twenty-eight neighborhoods scored well for exterior upkeep according to the study. [128]

Onondaga county's housing infrastructure is a major issue with extremely outdated housing infrastructure that has led to health and safety issues for residents including numerous homes detecting lead contamination.[129] The DEIS also makes references to the City of Syracuse study noting that "the Syracuse housing market was struggling with chronic maintenance issues related to extensive low demand. Market conditions had disincentivized private, unsubsidized investment into the housing stock, leading to soft sub-markets with roughly one-third of all residential properties in the city in 'visible decline'."[130] In addition to creating new housing, Micron's in-migration impacts will require the county to update existing housing infrastructure to protect the safety of current residents.

Household Growth

The DEIS states that "The household growth anticipated from Micron's worker populations at a community level would be of a scale that may be readily noticeable in terms of increased population densities, as well as increased commercial and residential activity" (p. 3-493). The estimated population growth is 64,000, with 27,000 new housing required in the 5 county study area (p. 3-491); 85% of this is estimated to be in Onondaga County and 32% of that within Syracuse. The DEIS states that this in-migration and growth would be "[l]arge enough to alter local and regional housing markets" (p. 3-493).

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[125] HRA, EDR, and Highland Planning. 2024."Building a Healthy Housing Market in Central NY A Roadmap for Regional Action Amid Historic Investment in the Semiconductor Industry." Empire State Development. December 2024. https://esd.ny.gov/sites/default/files/media/document/CNYHousingMarketStudy.pdf.
[126] Ibid.
[127] City of Syracuse by czbLLC. 2024. "Syracuse Housing Strategy." September,. P. 17. https://www.czb.org/work/syracuse-housing-strategy.
[128] Ibid.
[129] Kelly, Margie. 2024. "Syracuse Lead Levels Among the Highest Detected in Drinking Water for Decades; Higher than Flint and Newark." 2024. NRDC. October 16. https://www.nrdc.org/press-releases/syracuse-lead-levels-among-highest-detected-drinking-water-decades-higher-flint-and.
[130] Kanuss, Tim. 2023. "Study lays bare the devastating economics of Syracuse's affordable housing crisis." Syracuse.com, March 1. https://www.syracuse.com/news/2023/03/is-syracuse-too-poor-to-attract-new-housing-study-cites-obstacles-to-growth.html.

In addition, the DEIS includes conflicting information about Micron's impact on the area housing and rental market. Section 3.15.3.2 notes: "The in-migration of workers and families for construction of the Proposed Project in the local and regional study areas would not create direct or indirect effects to real property and housing within the local and regional study areas" (p. 3-482). However, when it comes to providing housing for Phase 1 construction workers the DEIS states that, "Because Micron construction would begin as soon as practicable after all applicable regulatory approvals are secured, the local study area would likely not be able to provide new housing stock necessary to accommodate a substantial number of Phase 1 construction workers and their families." (p. 3-493). Additionally, according to the DEIS, "there would be rent pressures attributable to the Proposed Project's induced growth in markets beyond the local study area"(p. 3-494) and "The Preferred Action Alternative's induced housing demand may lead to rent increases and the potential to indirectly displace residents who cannot afford rent increases" (p. 3-502).

In the Growth Inducing Effects section, the DEIS states, "The Proposed Project's induced population would be large enough to alter local and regional housing markets. . . the Project's induced growth would generate housing demand at a scale not experienced since the 1970s." The report goes on to note, "The in-migrating labor force would increase the demand for housing and exceed available vacant supplies in the local study area." (p. 3-493).

These contradictions must be clarified in the EIS. The DEIS fails to quantify the magnitude of expected impacts, raising serious questions about its claim that housing effects will be short-term. The EIS must provide further analysis and projections to support Micron's claim that the project will only have short-term impacts on housing costs.

According to the Syracuse housing strategy, "7,605 households in Syracuse received some form of assistance in 2021 to alleviate cost burdens. Existing levels of housing cost assistance would have to triple to meet the needs of the 15,258 cost-burdened renters while continuing to assist these 7,605 households."[131] This tripling isn't even accounting for the rising housing cost which Micron related in-migration will induce.

The DEIS presents no details on projected price increases or housing cost trends tied to population growth. Without such projections, how can the DEIS claim that Micron's impact on the housing market will only be 'short term?' Will there be an increasing number of unhoused residents as a result of rising housing costs? And if so, what mitigation measures will be established to avoid an adverse impact? What will be the implication for unhoused populations or residents on fixed income such as seniors? If such an assessment exists, the details should be included in the EIS. If such assessments are not available, these impacts must be estimated utilizing appropriate and best available methods and professional judgement, and disclosed as part of the EIS.

The ESD housing study determined that "Micron will require 30,000 new homes, most of them by 2038. This will require more than tripling the pace of home development in the coming years and then sustaining development at nearly 2X the current rate for at least a decade. The homes being built need to reflect what jobs pay. This will allow filtering up and down while reducing competition for existing and

[131] HRA, EDR, and Highland Planning. 2024."Building a Healthy Housing Market in Central NY A Roadmap for Regional Action Amid Historic Investment in the Semiconductor Industry." Empire State Development, December. https://esd.ny.gov/sites/default/files/media/document/CNYHousingMarketStudy.pdf.

new homes. Expected incoming residents will earn incomes across a wide spectrum generally higher than regional median income today."

The study also determined that housing impacts will begin early on in Micron's development noting that, "Job growth will lead to significant early net new housing demand, with up to 19,000 new homes needed by 2028 and up to 32,000 needed by 2038 and onward" and "Shorter-term, flexible solutions to absorb a rapid increase in housing demand will need to be accompanied by longer-term housing production at the price points affordable to incoming workers."[132]

Housing Mitigation Measures

In Section 4 (Cumulative Impacts), amongst other things listed in Table 4.2-1, *Present and Reasonably Foreseeable Actions,* are housing developments currently planned and in some stage of development. The table includes 5,852 housing units, far short of the 27,546 estimated to be required by Micron's in-migration. Further, none of the listed units have been designated as "affordable."

In Appendix Q, under the *Real Property, Housing, Relocation, and Displacement* section, it references identified housing plans that could create an estimated 4,000 new residential units in Clay and up to 6,800 new households could be introduced within the Towns of Clay and Cicero by 2041 (p. Q-29).

However, as the ESD study shows, this is: 1) not nearly enough housing to meet induced growth demands; 2) the DEIS does not include any reference to affordable housing in the listed new development plans; and, 3) these new developments are only specific to the local study area and therefore neglect Syracuse, which has the highest need for new housing development. In Syracuse, less than one in five residents could afford new and planned developments.[133] The ESD study underscores the unaffordability of new developments in the region, citing: "Fewer than half of new households will be able to afford newly built homes given current market conditions and costs. Only 1% of the estimated zoned capacity exists in strong markets, meaning the market cannot feasibly deliver homes to meet a range of needs."[134]

The *Growth Inducing Effects* section poorly explains how the growth induced impacts of the community will be met. It praises, in the abstract, the benefits that are estimated or intended to result from fab development and from rising home values but minimizes the adverse impacts which will likely arise without adequate preparation, infusion of funding and citizen oversight and engagement. See Socioeconomic impact section.

It is unclear if there has been any analysis of existing comprehensive plans and zoning to assess the feasibility of developing the additional housing units needed to reach the projected 27,000 new homes. The DEIS asserts that the Onondaga County Comprehensive plan has this all laid out, though this plan is not enforceable on the county's towns (p. 3-33). The EIS should include a table summarizing where development will or can occur to substantiate the ability for the region to accommodate in-migration. A table listing towns, status of their plans, and the estimated number of units reasonably expected to be

[132]Ibid.
[133] City of Syracuse by czbLLC. 2024. "Syracuse Housing Strategy."
[134]HRA, EDR, and Highland Planning. 2024."Building a Healthy Housing Market in Central NY
A Roadmap for Regional Action Amid Historic Investment in the Semiconductor Industry." Empire State Development. December. https://esd.ny.gov/sites/default/files/media/document/CNYHousingMarketStudy.pdf.

accommodated (given existing plans, zoning, travel patterns, etc.) would be useful to clearly see the basis for the claim that the housing market will adjust to meet demand.

In response to the project's 'short-term' impact of "rent increases and the potential to indirectly displace residents who cannot afford rent increases," the DEIS states: "potential significant adverse effect will be addressed through the provision of additional affordable housing supply facilitated by investments from the State of New York through Governor Hochul's long-term statewide housing approach and New

York Housing Compact initiatives; and local initiatives like the Onondaga County Housing Initiative Program (O-CHIP) and the OCIDA's tax exemption program for housing projects" (p. 3-502). While grant programs like these are important and are an example of the types of affordable housing subsidies needed, it is dubious that this program alone will mitigate the risk of increased housing insecurity in the region.

In the mitigation measures (section 3.15.4) the DEIS claims, "Micron does not control the housing market and cannot specifically mitigate such effects," stating only that Micron will "continue to work with agencies and stakeholders to identify specific actionable measures to avoid or minimize the potential for short term significant adverse effects [on the local housing market]." The EIS should detail Micron's specific plans to work with agencies and local stakeholders (p. 3-503). The public needs specific assurances that housing disruptions will be mitigated and needs more than a hopeful and non-committal 'work with.' As is discussed more below, we need specific and measurable objectives to which Micron must be held accountable.

To ensure these solutions are set into motion, the ESD study recommends that decision-makers must take advantage of what they call "Housing Opportunity Areas" or "places that have room to grow while also minimizing the costly impacts of sprawl and maximizing the revitalization potential of new housing." This must utilize "smart growth alignment," or solutions that take into consideration factors such as location, infrastructure, population density, natural resources, among other considerations. The DEIS makes a few references to smart growth alignment strategies but does not go into detail on how they expect to execute these plans.

In particular, in the *Funding for Local Governments and Taxing Districts* section, the DEIS states, "Many municipalities are planning for growth or have plans already in place to manage growth by applying smart growth principles" (p. 3-499).

As noted, the DEIS states that Micron will need to "work with local agencies and local stakeholders to identify specific actionable measures to avoid or minimize the potential for this short-term significant adverse effect on the local housing market." (p. 3-213) Has Micron set in motion these plans to start working with agencies and local stakeholders yet? The ESD housing study makes clear the urgency of developing these plans, stating: "Growth related to Micron will require 30,000 new homes, most of them by 2038. This will require more than tripling the pace of home development in the coming years and then sustaining development at nearly 2X the current rate for at least a decade."[135]

[135]HRA, EDR, and Highland Planning. 2024.

Notably, the ESD study states that due to job growth the region will need up to 19,000 homes by 2028, but the DEIS only makes note of the need for 32,000 by 2038.[136] The study highlights the need for policy intervention to mitigate the risks of undue stress on an already stressed housing market and warns that without regulatory action the risk of displacement to low-income residents becomes higher. The study recommends regulatory interventions such as creating more diversified housing and sustainable housing types by allowing for denser and smaller homes.

The study also emphasized the need for public subsidies by emphasizing, "Notably, about half of the rental demand is likely infeasible without subsidy." However, it is unclear if there will be any additional public subsidies planned outside of the existing O-CHIP program or the Syracuse Choice Neighborhood. To meet demand for low-income housing, Micron and local agencies should invest in programs that will further subsidize affordable housing for low-income residents. The EIS should make clear if any additional subsidy programs are being planned and whether these are part of the municipal plans mentioned or Micron's collaboration with local agencies and stakeholders. Furthermore, the EIS should clearly detail what, if anything, Micron will contribute to these programs.[137]

It is crucial that Micron create and implement plans to work with local agencies and stakeholders, including developing municipal smart growth plans, in order to prepare the region and ensure that low-income residents do not continue to bear the burden of adverse impacts. State and municipal agencies, alongside Micron, should work with local communities to build and inform these plans.

Household Growth and Environmental Analysis

Minimizing the carbon footprint of the induced household growth should be required in order to offset the emissions associated with Micron's Clay, NY fabs, costs which Micron should be required to fund. Financial requirements to fund off-site mitigation measures should be imposed on Micron to offset fab-related GHG emissions that they claim are otherwise impossible to eliminate. Micron can take concrete steps by funding projects that could reduce the GHG emissions associated with induced residential and commercial growth. For example, Micron could contribute to financing renewable energy projects, offsetting the cost of higher standard energy codes for new development, incentivizing transit-oriented and walkable communities, encouraging commuting via transit, and supporting the construction of affordable and green housing. The costs of eliminating these GHG/climate-related impacts should be covered by Micron as a condition of approving the fab development project, binding mitigation measures, including a publicly reported mitigation plan with measurable objectives, must be established to offset the adverse impacts of the induced growth.

Micron will have a significant impact on housing needs as the number of employees grows. Therefore, a cooperative effort between Micron and state and county government agencies is needed to expand the availability of mixed income, affordable, climate friendly, and safe housing. This includes the protection of existing affordable housing, expanding code enforcement to protect tenants, and ensuring appropriate capital maintenance upgrades. Affordable housing must include state-of-the-art, climate-friendly designs that rely on renewable energy and provide low-cost energy access. Without strong commitments from Micron to protect and expand safe and affordable housing in CNY, and particularly within the city of

[136] Ibid.
[137] Ibid.

Syracuse, the project will only exacerbate the problems in an already inequitable and strained housing market.

ENVIRONMENTAL JUSTICE

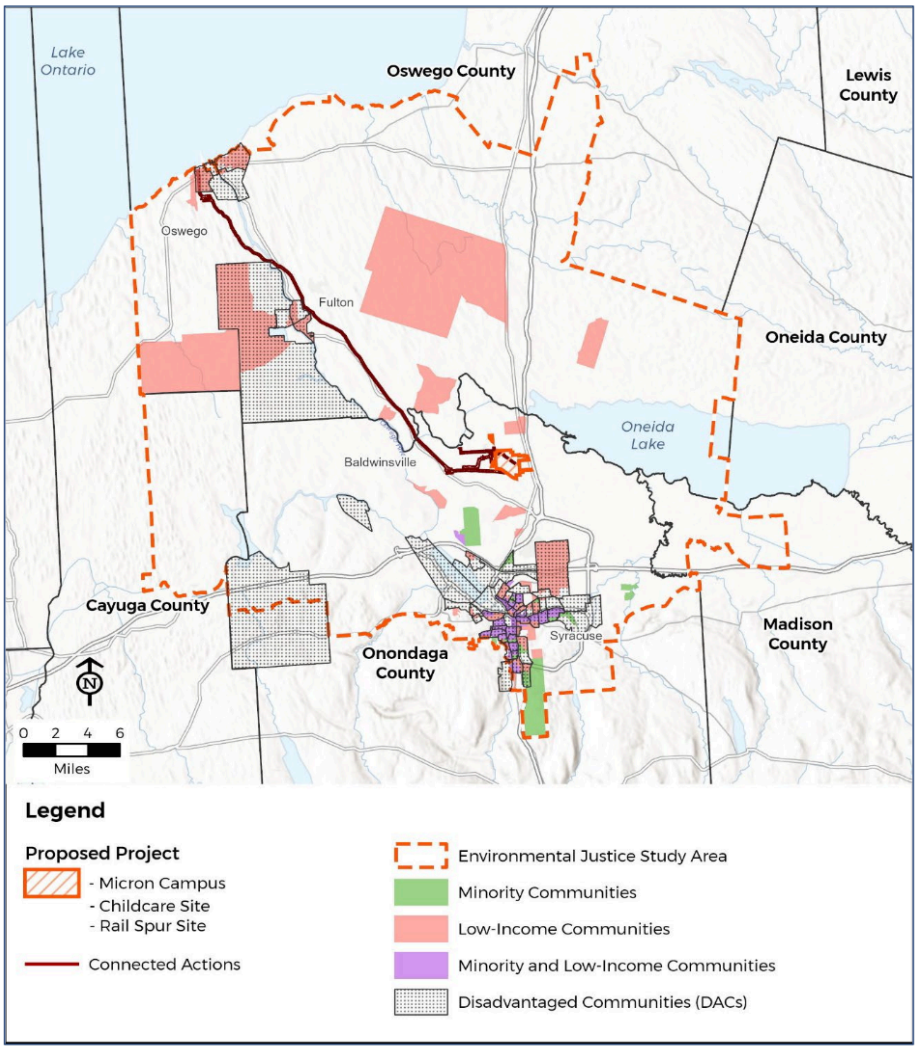
Disadvantaged Communities in Local and Regional Study Area

Micron megafab has the potential to create significant environmental impacts to the local and regional study area. This is particularly concerning given the prevalence of racial and economic inequality in CNY and the megafab's proximity to disadvantaged communities like those in Syracuse.

One area of concern is that the DEIS fails to justify its decision to only include Disadvantaged Communities (DACs) within the five mile radius area. While the DEIS notes, "DACs have been designated within the study area, which largely overlap with the identified minority and low-income communities discussed above (see Figure 3.16-2). Within the study area, DACs were identified primarily in the City of Syracuse, Village of Baldwinsville, City of Fulton, and City of Oswego" (p. 3-511). The DEIS concludes that there are no environmental justice impacts and the Micron fab will not adversely impact DACs: "Because the closest DAC to the Proposed Project is five miles south in the North Syracuse area, the Proposed Project is not likely to disproportionately burden or otherwise impact a DAC and is therefore not subject to the requirements of policy DEP 24-1" (p. 3-511).

The draft's reasoning for limiting the radius to 5-miles is not clear, especially given the potential for impacts on DACs within a 10-mile radius that are not properly evaluated (more below). The DEIS claims, "Although an expansive study area was selected to be inclusive and to include study areas from other technical analysis, the potential adverse effects from construction and operation of the Preferred Action Alternative on DACs and minority or low-income communities are expected to be limited to within an approximately 5-mile radius around the Proposed Project sites, and a ½ mile of the Connected Actions." (p. 3-511-512). How can the impact be considered limited to 5-miles when the DEIS noted instances in which the project will affect DACs within a ten-mile radius through socioeconomic impacts from induced growth, and when it fails to comprehensively analyze potential impacts from air and water pollution caused by hazardous substances, flooding from increased impervious surfaces, health and safety risks from toxic chemicals, and occupational health safety risks to DAC workers handling these chemicals? The five mile limitation is a major flaw in the environmental justice analysis that must be rectified.

Figure 3.16-2 DACs and Minority or Low-Income Communities in Study Area



Sources: World Street Map: Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS

Human Health and Safety Impacts

The DEIS does not adequately incorporate analyses from other sections (e.g. GHG emissions, water pollution, and toxic waste disposal). In general, policymakers and customers have been shown to downplay the ecological footprint of semiconductor manufacturing in favor of prioritizing supply security.[138] Due to the huge quantities of raw material and waste produced during the fabrication process,[139] toxicity concerns will likely be more significant than stated in the DEIS.

[138] "Chip Production's Ecological Footprint: Mapping Climate and Environmental Impact." n.d. Accessed July 22, 2025. https://www.interface-eu.org/publications/chip-productions-ecological-footprint#conclusion.
[139] Ruberti, Marcello. 2023. "The Chip Manufacturing Industry: Environmental Impacts and Eco-Efficiency Analysis." *Science of The Total Environment* 85, February:159873. https://doi.org/10.1016/j.scitotenv.2022.159873.

With this in mind, the DEIS does not properly address the Onondaga Nation's water quality concerns as stated in comment a comment letter dated March 26, 2024 (p. 3-519), especially regarding toxic water pollution (including PFAS forever chemicals), siphoning from Lake Ontario, and dumping into Lake Ontario and the Oswego river. The DEIS is also unacceptably vague in its description of water quality concerns (specifically toxic chemicals including PFAS) in and around the Oswego pumping station, as well as wastewater release into the Oswego River, which flows out of the ½ mile radius from connected actions and intersects several DACs near Himmansville.

As discussed in the Human Health and Safety and Solid Waste, Hazardous Waste, and Hazardous Materials sections of this comment, the DEIS fails to assess the cumulative impacts of PFAS, industrial Greenhouse Gases, and Extremely Hazardous Substances in its Cumulative Effects analysis. The final EIS should clearly assess the cumulative impacts on DACs in the region of potential drinking water contamination. If chemicals released in wastewater affect the safety of drinking water for the entire region, DACs and low income communities that suffer from pre-existing water contamination issues (e.g. from lead pipes) stand to be harmed most of all. This assessment should include the potential cumulative impacts of direct supply chain companies that the project is expected to attract to the area, including related activities, such as research and development, chemical suppliers, and even competitors. These facilities may also release hazardous substances into Onondaga County's wastewater system.

Without a comprehensive understanding of the types and amount of PFAS discharges on site and for anticipated sites across the region, cumulative impacts for surface water, groundwater, air emissions, and environmental justice cannot be understood.

As discussed further in the Human Health and Safety Section of this comment, the draft is vague about how PFAS waste will be handled offsite, offering no assurance that destruction technologies will be used or that environmental justice impacts will be avoided (p. 3-241). These gaps are unacceptable given the well-documented health risks and extreme environmental persistence of PFAS. The DEIS identifies several contractors for handling Micron's hazardous waste (p. 3-224). Hazardous waste generators in the study area typically contracted with private haulers authorized by NYSDEC and other out-of-state agencies to transport hazardous waste to permitted hazardous waste treatment, storage, and disposal facilities. Some types of hazardous waste may be transported to out-of-state facilities for reuse and recovery, such as fuel blending and energy recovery facilities with approved cement kilns, including Veolia in Middlesex, New Jersey; Green America in Hannibal, Missouri; and Systech in Fredonia, Kansas.

As noted, relying on offsite shipment of hazardous materials to third-party contractors does not eliminate hazardous waste—it simply displaces it, often to communities with less political and economic power. Moreover, if third-party contractors plan to incinerate the hazardous materials, this process produces an even more concerning environmental impact in the form of toxic air emissions and PFAS-laden ash.

Waste Destination Safeguards Recommendations

- Require Micron to disclose where all offsite hazardous waste—including PFAS-containing waste—will be sent for treatment or disposal.
- Prohibit shipment to facilities with poor environmental records or those located in environmental justice communities without prior public engagement and review.

- Conduct an environmental justice impact assessment for all offsite waste management strategies.

Air Quality

The DEIS splits analysis between Disadvantaged Communities, Minority Communities, and Low-Income Communities – and is inconsistent in addressing all three in terms of impacts from Greenhouse Gases, changes in Air Quality, and other sections (p. 3-522).

As noted in the Solid Waste, Hazardous Waste, And Hazardous Materials Section of this comment, most of the monitoring data for criteria air pollutants (those with established NAAQS) on which this assessment relies comes from monitors in Rochester, NY, more than 70 miles from the project site. Only ozone and small diameter particulate matter ($PM_{2.5}$) are measured in the Syracuse area. Conditions in Rochester may be expected to be similar, but Micron should at least be required to demonstrate – with actual local monitoring data – that the facility will not have any significant environmental impacts. In particular, the DEIS ought to address how its own air pollutant emissions may exacerbate pre-existing air quality concerns in DACS. In addition, the DEIS does not allow for or consider the impacts of any exceedances, upsets, or violations in assessing the environmental impacts of air emissions. Consequently, this analysis lacks how issues related to air quality could impact DACs especially within the larger 10-mile radius.

Health Monitoring and Transparency Recommendations

The DEIS mentions air and water quality monitoring, but it lacks detail on how data will be shared with the public and how health outcomes will be tracked over time. We recommend establishing a community advisory board to oversee environmental monitoring and ensure transparency must be considered.

Community Engagement

For community feedback on their proposal, Micron only lists two meetings with a total of 45 people. Micron mentions a consulting Community Engagement Committee, but this consultation only related to Micron's financial commitments, not environmental or community impacts. Micron unreasonably claims its contribution to climate change is a global and regional issue, and therefore not a local environmental justice issue.

While public hearings and translation services are a good start, many residents in EJ communities may still face barriers to participation, including digital access, transportation, and language. The project sponsors should consider proactive outreach, including door-to-door engagement, community liaisons, and partnerships with trusted local organizations.

Lastly, the CEC Priorities Document[140] outlines several community priorities that are not actualized in Micron's plans as detailed in the DEIS. These missing priorities are discussed in further detail under the Transportation & Traffic and the Housing sections of this comment. Comprehensive engagement and enforcement of community priorities particularly around issues that already impact DACs like rent

[140] CNY CEC. 2024. "Harnessing Opportunity: Community Priorities for Central New York: Community Priorities Document." June. https://www.cnycec.org/community-priorities-document.

burdens, inequitable transportation, and the adverse impacts of adverse growth on low-income communities are a key aspect of reducing environmental justice impacts.

As discussed in the Socioeconomics section of this comment, Micron should establish a community monitoring committee that includes community members and worker representatives to monitor and hold Micron accountable to community priorities.

Equity in Benefits Recommendations

As stated in the Socioeconomic section of this comment, the commitments outlined in Micron's Community Investment Framework must be enforceable, as well as publicly overseen and reported, to ensure EJ communities have equitable access to tangible, measurable benefits. A robust Community Benefits Agreement (CBA) is the optimal vehicle to deliver both economic prosperity and environmental protection for those most deeply impacted by development projects.

To give an example of how this has been successfully executed in the past, Los Angeles World Airports (LAWA) has a CBA with the local community that includes community benefits and impact mitigations as part of the LAX Master Plan Program.[141] Some of the environmental provisions include: three studies around the environmental impact on the community that LAWA will fund, measures to reduce emissions related to aspects of airport operations, and environmental mitigations and commitments related to airport construction. It also includes an ongoing role for the LAX Coalition to both implement and oversee these benefits and hold LAWA accountable with mitigation.

Housing

The draft DEIS notes that for DAC and low-income communities Micron would not "cause or increase a disproportionate burden within those communities, except a potential temporary adverse impact on housing and rent pricing" (page 3-529). This adverse impact is the result of in-migration of workers and families to work at Micron, with potential to increase rental rates and housing demands. The DEIS claims this will be mitigated over the long-term through creation of new housing stock in the surrounding region (e.g., page 3-518 - 3-519). However, there is no guarantee that this stock will mean affordable options for residents of low-income and DAC communities. The DEIS also suggests that this can be mitigated by the identification of federal, state and local initiatives to support affordable housing within the local and regional study areas, and that Micron "will continue to work with agencies and local stakeholders to identify specific actionable measures to avoid or minimize the potential for this short-term significant adverse effect on the local housing market" (page 3-527). As noted in the Housing section of this comment, the public needs assurances that housing disruptions will be mitigated, especially for DAC communities who already bear the burden of an inequitable housing market. The EIS must be more clear about what specific plans Micron has to work with agencies, and should not be contingent upon hypothetical policy actions or funding allocations by public bodies that may or may not materialize. At best this approach is hopeful, at worst it is an attempt to shift the burden of mitigating housing impacts to public agencies.

[141] Los Angeles World Airports (LAWA). N.d.

Housing Recommendation

The final EIS must provide further analysis of how projected price increases in rental or housing costs tied to population will impact existing DACs or create new DACs. The final EIS should also include an analysis of actional alternatives that can adequately mitigate these adverse impacts on DACs. As noted in the Housing section of this comment, the final EIS must also detail Micron's plans to create and implement plans to work with local agencies and stakeholders, including developing municipal smart growth plans, in order to prepare the region and ensure that DACs do not continue to bear the burden of adverse impacts. Mitigating measures relating to growth-inducing impacts can be incorporated through a community negotiated and enforceable community benefits agreement (CBA).

On-Site Childcare

Micron plans to provide on-site childcare for its workers. While this can be very beneficial to disadvantaged workers, especially in reducing gender gaps in the workforce, childcare proximity to industrial manufacturing poses several concerning health risks for the children and workers at the childcare center. Syracuse has the highest child poverty rate (46%) of any U.S. city and a high overall poverty rate of 29.6% (p. Q-18-19). Assuming affordable childcare alternatives are not available to low-income workers, then low-income children may be disproportionately represented at the on-site childcare center, and therefore disproportionately impacted by environmental hazards. If the proximity of the childcare center to industrial manufacturing is determined to pose a significant health risk to children and workers, then the EIS must account for the impact that children from DACs will face at the childcare center.

Children are particularly vulnerable to health risks associated with environmental and industrial contamination, and childcare facilities are important sites of potential exposure that can have cumulative effects across a lifetime.[142] Micron's planned childcare center is located downstream of its main campus, close to the existing Oneida River floodplains. Aside from noting that the childcare center will be "located outside of special flood hazard areas (SFHAs) and 500-year floodplains" (p. 3-70), the company does not seem to consider the impact of water pollution from their main campus potentially reaching the childcare center during a spill event. Additionally, the DEIS does not explicitly describe the impact of air pollution on the childcare center. As we note in the section on Solid Waste, Hazardous Waste, and Hazardous Materials, in order to ensure a release of toxic gas would not put children at its childcare center at risk, Micron or DEC should conduct dispersion modeling for the most hazardous gases such as arsine.

As noted in the Flooding section of this comment, the DEIS provides little evaluation of how the Oneida floodplain will change near the childcare site from the increased stormwater runoff from their main campus. In particular, stormwater quantities associated with the Rail Spur, Childcare Center, and the Wastewater Treatment Plant expansion have not been quantified. Water quality impacts of this stormwater are not addressed.

[142] Tollefson, Jonathan, Scott Frickel, Summer Gonsalves, Thomas Marlow, Robert Sucsy, Michael Byrns, and Melissa Orpen-Tuz. 2023. "Early Childcare and Education in a Post-Industrial Landscape: Inequalities in Proximity to Active and Relic Manufacturing in Metropolitan Providence, Rhode Island." *Environmental Justice (Print)* 16 (4): 309–20. https://doi.org/10.1089/env.2021.0121.

Childcare Recommendation

The Final EIS should a) rigorously evaluate the range of potential impacts on children and childcare workers at the childcare site from exposure to toxic air emissions, wastewater runoff, flooding potentially involving toxic waste water, and groundwater and soil contamination; b) assess all possible measures that can be taken to mitigate exposure risks including the consideration of re-siting the childcare center.

Socioeconomic Impacts on DACs from Growth Inducing Effects

The DEIS notes that "it can be reasonably concluded that many of the DACs and minority or low-income communities within the study area would be unaffected by the Preferred Action Alternative (aside from growth inducing effects, which are discussed qualitatively under "Growth Inducing Effects," below)" (p.3-511).

As noted in the Socioeconomics section of this comment, economic inequality and segregation is prevalent in CNY, particularly in Syracuse. Syracuse, the most populous city in Onondaga County,[143] has a poverty rate of 29.6%, nearly 20% higher than the national average (p. Q-18-19).[144] In fact, using NYSDEC's Disadvantaged Communities Assessment Tool (DACAT) Micron's environmental justice study noted: "At least 52.42 percent of the population in an urban area reported themselves to be members of minority groups (NYSDEC's CP-29 defines minority population as a population that is identified or recognized by the U.S. Census Bureau as Hispanic, African-American or Black, Asian and Pacific Islander or American Indian (i.e., Indigenous Nations populations); or At least 26.28 percent of the population in a rural area reported themselves to be members of minority groups; or At least 22.82 percent of the population in an urban or rural area had household incomes below the federal poverty level (NYSDEC, n.d.-e)" (p. 3-508). As such the study area clearly identifies DACs, notably concentrated in Syracuse and Baldwinsville. And Syracuse in particular encompasses both DACs, minority and low-income communities, and minority communities (see table 3.15-2 below, p. 3-509).

However, as noted above, the limited 5-mile radius excludes many of these portions of Syracuse who will still be impacted by Micron's project in numerous ways. In particular, the induced impacts of the project may exacerbate income inequality in the region if Micron's direct and indirect new jobs are skewed toward the low end of the industry wage scale, limiting workers' disposable income to spend on locally serving businesses. As cited in the Socioeconomics section, this concern is especially relevant in a region where the top two industries are retail trade (21.8 %) followed by accommodation and food services (11.3%) (p. Q-38), sectors that consistently offer among the lowest wages. In Onondaga County, in particular, the DEIS notes: "approximately one-quarter of the resident labor force is employed in the retail trade sector" (p. Q-39).

With the projected creation of over 33,000 indirect jobs, many of these will likely be in the low-wage service sector. Within this low-wage sector, retail industry jobs pay the lowest, with most retail jobs

[143] Data Commons. 2023. "Ranking by Population: All cities in Onondaga County. https://datacommons.org/ranking/Count_Person/City/geoId/36067.
[144] Misiaszek, Emma. 2023. "Syracuse ranks 2nd in economic disparity for Black residents, according to LendingTree study." CNY Central, September 6. https://cnycentral.com/news/local/syracuse-ranks-2nd-in-economic-disparity-for-black-residents-according-to-lendingtree-study.

earning less than the average private sector job. In real terms, retail wages have been in decline since the 1970s with current retail wages at just 72% of what they were in 1972. On top of low wages, retail workers rarely receive benefits or formal training.[145] Without properly accounting for the impact that Micron's arrival will have on the creation of low-wage spinoff jobs, it is possible that Micron's cumulative socioeconomic impacts will have negative effects on the local and regional study area and DACs in particular. This must be evaluated and recognized, not dismissed as insignificant as the DEIS attempts to do.

Socioeconomic Impacts on DACs Recommendations

As recommended in the Socioeconomics section of this comment, to mitigate adverse growth inducing effects, we recommend the creation of a community advisory committee established under a CBA to oversee all actions relating to the induced growth and mitigation of its effects on DACS. Additionally, we recommend the creation of an independent planning team made up of professional, certified planners established under a CBA to oversee, review, and manage growth--related mitigation measures. These recommendations require adequate funding for staffing of the planning team and the advisory committee, as well as funding for incentives or subsidies needed to mitigate problems related to growth inducing impacts.

APPENDIX A. CONTRIBUTORS

[145] Carré, Françoise, and Chris Tilly. 2017. "A Global Look at What Makes U.S. Retail Jobs so Bad." Perspectives on Work: Retail Workers.

KATHERINE COHN

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EDUCATION

University of California, Berkeley, Goldman School of Public Policy, M.P.P. Sept 2020 - May 2024
Relevant Coursework: Econometrics, Policy Analysis, Critical Race Theory, Public Management and Policy Implementation, Program Evaluation. Berkeley Public Policy Journal. *Nominated for Smolensky Prize for Outstanding Policy Analysis (for capstone).*

Columbia University, Graduate School of Arts and Sciences, M.A. in Art History Sept 2014 - May 2017
Program: Modern Critical and Curatorial Studies, produced 9 publications.

Oberlin College, B.A. in East Asian Studies. *Received Freeman Research Grant.* Sept 2002 - May 2006

SELECT PROFESSIONAL EXPERIENCE

CHIPS Communities United (remote) Jan 2024 – Present *Policy Analyst*

• Research & analyze policy on chemical safety, worker health, and environmental justice in the semiconductor industry. • Design & apply strategic advocacy research, e.g. DELPHI panels, best practice frameworks, campaign materials, etc. *Policy Consultant*

• Assess risk of toxic exposure to workers & fence-line communities of semiconductor manufacturing. • Needs assessment: fed & state regulation scans, archival research, info interviews, BLS & CHNA data analysis.

UCSF Benioff Children's Hospital of Oakland, Oakland, CA (hybrid) Sept 2022 – Jan 2023 *Student Analyst*

• Analysis of hospital's policies with goal of improving local hiring, workforce development and impact purchasing. • Quantitative and qualitative research and analysis including multiple surveys, facilitate stakeholder meetings.

UC Berkeley School of Law Policy Advocacy Clinic (PAC), Berkeley, CA (hybrid) Sept 2021 – Nov 2022 *Policy Student Researcher*

• Quantitative and qualitative research and analysis; drafted bill, fiscal memo for bill sponsor, testimony prep. • Research and identify stakeholders; facilitate stakeholder meetings, campaign strategy sessions.

Mason Tillman Associates, Oakland, CA (remote work) May 2021 – Aug 2021 *Policy Analysis Intern*

• For a firm specializing in disparity studies, produced literature reviews, quantitative (Excel) and qualitative analysis. • Reviewed disparity study drafts, identified missing/misrepresented data, edited structure, drafted additional content.

Mission Economic Development Agency (MEDA), San Francisco Jan 2021 – June 2021 *Graduate Consultant*

• Collected and analyzed data on the impact of the SF eviction moratorium on low-income residents of color. • Produced literature review, designed and implemented data analysis, final report and presentation to leadership.

Tapp's Arts Center, Columbia, SC (remote work) Jun 2018 – Aug 2020 *Freelance Grants Writer*

• Prepared and managed grant proposals for program developing an economically self-sustaining creative sector in Columbia. • Ran multiple RFP processes simultaneously; won largest 2019 NEA grant in South Carolina.

Public Defender's Office, Richland County, SC Jul 2017 - Aug 2017 *Intern for Assistant Public Defender Constantine Pournaras*

• Copyedited drafts for motions/complaints, reviewed investigations, performed prelim research with nonprofit Appleseed.

DONALD J. HUGHES, P.E., PH.D.

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EXPERIENCE

Hughes Environmental Consulting Services (Syracuse, N.Y.) June 1992 - present: *Independent Consultant*

Self-employed, offering environmental consulting to government, industry, non-profit agencies and citizens. Projects have included:

- Provided technical assistance to citizen groups at the Former Marble Quarry Landfill site in Tuckahoe, NY; Onondaga Lake Superfund site in Syracuse, New York, and Kalamazoo River Superfund site in eastern Michigan,
- Technical review of industrial pretreatment study and VOC fate study in sewage treatment
- Technical review of former industrial waste site in metro-NYC area.
- Estimated contaminant losses during remediation of PCB-contaminated sediments
- Designed biological treatment system for contaminated sediments and prepared guidance document for remediation of contaminated sediments
- Set-up and managed data collection systems at an industrial landfill

LeMoyne College, Department of Chemistry

August 2011 – present: Laboratory Coordinator (since January 2017); Adjunct Professor Coordinator of chemistry lab written materials, chemicals, and chemistry department equipment. Lecture courses taught: Environmental Chemistry (3 semesters); Energy & the Environment Laboratory Courses taught: Physical Chemistry (6 semesters), General Physics (2 semesters) and Freshman Chemistry (7 semesters)

Certified Environmental Services, Inc.

May 2012 – March 2015: Assistant QA Officer; Environmental Engineer Laboratory: Performed daily QC review of data from metals lab; conducted a complete internal lab audit; revised/updated over 50 Standard Operating Procedures. Performed some bench work—sample prep, analysis, and calibration of equipment.

Engineering: Prepared environmental reports for investigations, remediation, and Phase I assessments.

SUNY Cortland, Department of Chemistry

August 2010 – May 2012: Adjunct Professor

Courses taught: General Chemistry, Analytical Chemistry, and Chemistry & the Environment.

Onondaga Environmental Institute (Syracuse, N.Y.)

August 2005 - January 2010: Senior Scientist

- Compiled and analyzed water quality data for the Onondaga Creek watershed, and produced a corresponding series of Fact Sheets for public and governmental use.
- Prepared a 700-page report cataloguing aquatic impairments in the Onondaga Lake watershed, based on a 37-year record of investigations of surface waters, sediments, fish tissue, macroinvertebrates, biotic communities, and habitat (co-author D. Gefell).
- Led an investigation of fish tissue contamination (metals & organics) and benthic communities in the Onondaga Lake watershed
- Led a comprehensive study of bacterial contamination in local urban waterways, focused on locating and evaluating dry-weather sources; coordinated field and laboratory work; prepared reports; and presented the study's findings to policy makers and at scientific meetings.

Atlantic States Legal Foundation (Syracuse, N.Y.)

August 1990 - May 1992: Technical Writer; Staff Engineer

Prepared a citizen's guide to Lake Michigan Lakewide Management Plan. Provided technical support for negotiations and environmental projects. Reviewed documents related to the investigation and remediation of Onondaga Lake.

Blasland & Bouck Engineers, P.C. (Syracuse, N.Y.)

November 1985 - June 1990: Sr. Project Engineer

Prepared plans, specifications, reports and cost estimates; supervised other personnel; performed process design, data analysis, laboratory oversight, and literature review. Past projects included RI/FS and related reports for both Superfund and non-Superfund sites, water treatment plant upgrade, industrial wastewater pre-treatment, permit development, pilot studies, groundwater treatment, and research on numerous environmental issues. Focused on sites contaminated with PCBs. Clients included many Fortune-500 companies.

EDUCATION

Ph.D. in Chemistry (2005)

College of Environmental Science and Forestry, Syracuse, NY

Dissertation: An Evaluation of XAD Resins for Sampling of Trace Organic Compounds in Natural Waters. Advisor: John P. Hassett, Ph.D., Chemistry Department Chair

M.S. in Environmental Engineering (1986)

Cornell University, Ithaca, N.Y.

Thesis Title: The effect of pH on kinetics in a methanogenic acetate-enrichment culture.
Advisor: James M. Gossett, Ph.D., Professor of Environmental Engineering

B.S. in Chemical Engineering (1981)

State University of New York at Buffalo, Buffalo, N.Y.

CERTIFICATION / LICENCES

Registered Professional Engineer (064393) in New York State

AWARDS

Received six graduate student awards while attending SUNY-ESF, with combined value of $ 5,150.

COMMUNITY SERVICE

1. Syracuse Track Club: Board of Directors, 2006 – present

2. Sierra Club, Atlantic Chapter: Executive Committee, 2007 - present

3. Onondaga County Resource Recovery Agency (OCRRA): Board of Directors, 2004 – 2009. 4. Syracuse Cooperative Federal Credit Union. Board of Directors, 1995 – 1998.

PUBLICATIONS AND PRESENTATIONS

A complete list is available as an Appendix. It includes: 8 publications, 11 oral presentations, and 12 posters.

RACHEL KITCHIN

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CAREER HIGHLIGHTS

STAND.EARTH - Senior Corporate Climate Campaigner May 2022-present
Lead campaigner for Stand.earth's Fashion and IT campaigns, developing research-driven and impact focused campaigns to shift the global supply chains of major fashion and IT companies off fossil fuels and catalyzing a shift towards renewable energy. Has worked with major corporations including H&M, Inditex and Apple to achieve stronger climate targets and greater accountability. Leads the research and development of major campaign publications including the *Fossil Free Fashion Scorecard*, and *Supply Change* reports; corporate engagement; media relations and campaign strategy.

Science Based Targets Initiative (SBTi) - Scope 2 Expert Working Group member - May 2025 - present

Part of expert working group consulting on changes to SBTi Scope 2 target setting guidelines.

ENVIRONMENTAL DEFENCE CANADA (EDC)
Senior Engagement Manager August 2020 – May 2022
Led all strategic public campaigns and communications on EDC's fast-moving Ontario Climate and Environment programs. Acted as campaign adviser to a large network of community and grassroots organizations across the province. Responsible for execution of major organizational initiatives that promote political advocacy, increase voter turnout and encourage members to take bold action on climate.

Communications Manager May 2018 – July 2019
Led the development and launch of a new national program area including developing brand, messaging, strategic direction, media relations and all public communications. Responsible for developing and maintaining the tone and message consistency of all communications across public, government and corporate relations.

Digital Engagement Manager November 2017—May 2018
Developed and project managed a major social media, digital, and thought-leader engagement campaign to increase public awareness

FRIENDS OF THE EARTH, London, UK
Press Officer February 2020 – August 2020

GUIDE DOGS UK, London, UK
Guide Dogs UK is a national charity supporting blind and partially sighted people to live independently through campaigning and support services.

Campaigns Officer November 2014 —June 2017
Responsible for the planning, delivery, and evaluation of policy campaigns targeting government and corporations, and managed supporter and public engagement through email, social media and print communications.

EDUCATION

School of Oriental and African Studies (SOAS), University of London, UK
MA Pacific Asian Studies – September 2013 - September 2014

University of Edinburgh, UK
MA (Hons) History – September 2008 - July 2012

CATHERINE L LANDIS

Science Advisor, Center for Native Peoples and the Environment

241 Illick Hall, 1 Forestry Drive

State University of New York - College of Environmental Science and Forestry (SUNY-ESF)

Syracuse, New York 13210

ph: (315) 558-8667 cell; email: cllandis@syr.edu

EDUCATION

Ph.D., Ecology, August 2018. Dissertation: "Heart of the Country: Historical Ecology of Onondaga Lake."

M.S., Environmental and Forest Biology, December 2008, SUNY-ESF. Thesis: "Natural Plant Establishment along an Urban Stream, Onondaga Creek, Syracuse, NY."

B.A., English (Honors Program), August 1981, University of Michigan, Ann Arbor.

EMPLOYMENT

Science Advisor, Center for Native Peoples and the Environment, SUNY ESF, Aug 2023 – present.

Post-doctoral Associate, Center for Native Peoples and the Environment, SUNY-ESF, Aug 2018- Aug 2023.

Research Associate, Center for Native Peoples and the Environment, SUNY-ESF, Jan 2017 – present, and Feb 2012 – Dec 2014.

Graduate Teaching Assistant, Urban Ecology. SUNY-ESF. August 2012 – Dec 2012.

Field Biologist, Central New York Land Trust, May – Sept 2012.

Graduate Research Assistant, Onondaga Lake Ecocultural History Project, May – Dec 2011.

Graduate Teaching Assistant, Perspectives of Interpretive Design. SUNY-ESF. January-May 2011.

Graduate Teaching Assistant, Principles of Environmental Interpretation. SUNY-ESF. August-December 2010.

National Science Foundation Graduate K-12 Teaching Fellow, SUNY-ESF. July 2008-June 2010; December 2010-May 2011.

Graduate Teaching Assistant, Flora of Central New York, and Comparative Vertebrate Anatomy. SUNY-ESF. August 2007-May 2008.

Research Assistant in field botany and ornithology, riparian zone ash (*Fraxinus*) research project, May-August 2007.

Graduate Research Assistant, Onondaga Creek urban riparian corridor project, Faculty of Environmental and Forest Biology, SUNY-ESF. May 2005 – 2007.

Meditation Instructor, Healthy Monday Meditation, Syracuse University. March 2007-March 2020.

Field Biologist, Manti-LaSal National Forest, 1991-1995.

PROFESSIONAL AND COMMUNITY AFFILIATIONS

Ecological Society of America

American Society of Environmental History

New York State Flora Association

Central New York Land Trust – Member, Stewardship Committee (current); and Member, Board of Directors from 2014-2021; Member, Indigenous Lands Working Group (ILWG; statewide collaborative focused on Land Trust relationships with Native nations in NYS)

Wild Ones – Habitat Landscaping of CNY

Blomidon Naturalists Society (Wolfville, NS)

Zen Center of Syracuse

AWARDS

Alumni Fellowship Award, 2008.

Edna Bailey Sussman Foundation internship grants, 2007 and 2011.

President's Award for Community Service, SUNY-ESF, December 2006.

New York Flora Association Plant Conservationist of the Year Award, 2021.

Central New York Land Trust Conservationist of the Year Award, 2021.

PUBLICATIONS

McMullen, J., M. Hough, M. Young, and C. Landis. 2021. Discovery of *Spiranthes odorata* (Nutt.) Lindl. (fragrant ladies'-tresses) in Central New York. Native Orchid Conference, volume 18.2.

Landis, C.L. 2017. The ecology and history of Onondaga Lake: exploring Haudenosaunee and scientific perspectives. Curriculum for high school students based on Haudenosaunee Thanksgiving Address, developed with input from ESF and Syracuse University faculty. http://sustainability.syr.edu/academics/exploring-haudenosaunee-and-scientific-perspectives/high-school-curriculum-resources/

Landis, C. L., & Leopold, D. J. 2014. Natural plant establishment along an urban stream, Onondaga Creek, New York. Northeastern Naturalist, 21:303-322.

Historical ecosystems of Onondaga Lake. 2010. Fact sheet for public distribution; prepared by staff at Onondaga Environmental Institute based on my research.

Beal, R., H. Busa, G. Lim, C. Landis, C. Deary-Petrocci, D. Leopold, and K.B. Sobering. 2007. Conservation and use of native plants: supplemental curriculum materials for secondary teachers and students in science, social studies, English, and technology. SUNY-ESF Outreach.

PROFESSIONAL PRESENTATIONS & POSTERS

Landis, C.L. Of canoes and canals: Indigenous river science in the Oswego River watershed. Poster for American Society of Environmental History national conference, 2022, Eugene, OR.

Landis, C. L., R.W. Kimmerer, and D.J. Leopold. 2017. Historical ecology of Onondaga Lake. Presentation at Ecological Society of America conference, Portland, OR, August 4.

Landis, C. L., R.W. Kimmerer, and D.J. Leopold. 2015. Pursh's plants of Onondaga. Presentation at New England Botanical Club conference, Smith College, Northampton, MA, June 4.

Landis, C.L., R.W. Kimmerer, and D.J. Leopold. 2014. Historical ecological of a major superfund site, Onondaga Lake, NY. Society for Ethnobiology Conference, Cherokee, NC. May 14.

Landis, C.L., R.W. Kimmerer, and D.J. Leopold. 2011. Lost and found in Onondaga: historical ecology of a polluted lake. Oral presentation at conference "Creating the Natural," Cornell University, January 20-21.

Limburg, K. and C.L. Landis. 2008. Restoring American eel (*Anguilla rostrata*) to the Onondaga Lake watershed. Poster presented at Northeast Natural History Conference, Albany, NY (was among 10 finalists selected for Best Student Poster).

Fierke, M., R. Germain, C. Landis, M. O'Brien, J. Riddle, and N. Werner. 2008. Ecological and economic impacts of emerald ash borer (*Agrilus planipennis*) and *Sirex noctilio*. 2008. Oral presentation at Graduate Invasive Species Conference, National Center for Ecological Analysis and Synthesis (NCEAS). Santa Barbara, CA, February 4-8.

TEACHING AND CAMPUS ACTIVITIES (AT SUNY ESF)

Teaching

EFB 202. Ecological monitoring and biodiversity assessment. Taught plant ecology section of summer field course at Cranberry Lake Biological Station, 2013 and 2015.

Edible Wild Plants, EFB 796, 1 credit. Summer session class in wild edible plant field identification, harvest, preparation and other issues and topics related to foraging. Summer 2019.

Biocultural Restoration, EFB 797, 3 credits. Graduate level class in combining biological and cultural elements for ecological restoration and land healing. Co-instructor 2020, 2022.

Native Peoples, Lands, and Cultures, EST 140, 3 credits. Undergraduate level class introducing students to Native cultures and relationship to land, with emphasis on Haudenosaunee people and lands. Co-instructor 2019-2022.

Plants of CNY. Fall 2024. Instructor for plant biology field course.

Onondaga Land Rights and Our Common Future. Spring 2025. Co-Instructor along with representatives from Onondaga Nation, graduate seminar.

Campus activities

Bee Campus Committee, 2021 to present. This Committee provides input regarding campus plantings and how they relate to educational programming, ecological function, and student experience.

Botany Club. Working with graduate students, we established this club in 2019 to fill a perceived gap around field botany skills; and, to counteract the epidemic of plant blindness. Role: Co-Advisor, along with Donald Leopold.

Student advising. Informal role advising students regarding their research in the field and otherwise, often related to bio-cultural topics; steering committee member.

COMMUNITY SERVICE AND EDUCATION

Service and education 2006:

2006-2008. Onondaga Creek Working Group member. This group met monthly to take field outings, conduct public input meetings, and learn about various facets of Onondaga Creek biology and history in order to produce a Management Plan (June 2008, through Onondaga Environmental Institute; EPA funded project).

September 2005-June 2006. Onondaga Creek Kids, effort to introduce home-school children to basic stream ecology including water dynamics, plants, animals, human impacts. Teaching via field trips and library sessions, development of skits, etc.

April 29. Onondaga Creek interpretive walk with Rapha Community Church.

May 7. Nature poetry reading, Sterling Nature Center, Sterling, NY.

May 13. Onondaga Creek for spring resident and migrant birds. Half day field trip for Onondaga Audubon Society (mostly within city of Syracuse, demonstrating value of urban wildlife habitat).

May 20. Onondaga Creek Community Forum, Petit Branch Library. "Onondaga Creek: Ten Things You Need to Know" (power point presentation).

June 11. "Nature of the Creek" interpretive walk, co-lead with Amy Samuels of Cornell Cooperative Extension, as part of Honoring Water event at Onondaga Lake Inner Harbor.

June 27. Trees and shrubs for the landscape. Co-lead all-day field trip as part of Northeast Symposium on Native Plant Education, Conservation, Gardening. Mexico, NY.

July 11. Served as co-moderator for presentation by Joe Heath and Dr. Lawrence Hauptman, "The Onondaga Nation and the US Courts," part of the collaborative educational series, Onondaga Land Rights and our Common Future.

August 11. "Plants for the Watershed." Tour of plant research plots along Onondaga Creek, as well as demonstration rain garden at Zen Center, with Syracuse's South Side garden group.

August 29. "This is Your Watershed," display at New York State fair highlighting Onondaga Creek and SUNY-ESF's habitat restoration project.

September 10. Onondaga Creek Nature Walk for New Environment Association.

October 17. "Lost Waters of the Onondaga Valley." Presentation for all day Teach-in event, Onondaga Lands Rights & our Common Future, SUNY-ESF.

2007

Spring 2007. Assisting with planning and conducting Onondaga Creek program for first graders, Ed Smith school.

April 28. Instructor for one-day Teacher's Workshop on Onondaga Creek, held at Clary Middle School.

April 23. Invited speaker on ecospirituality panel for Women Transcending Boundaries, local inter-religious group.

Jan – May 2007. Helped plan panel discussion on Onondaga Creek for Forty Below Summit conference to be held at Oncenter on June 1, 2007. Appeared on panel and co-lead field trip also.

June 10. "Birds along the Creek." Led half day field trip for Onondaga Audubon Society focusing on Onondaga Creek avifauna.

2008

June 7. "Birds of Onondaga Creek" half-day field trip for Onondaga Audubon Society.

2009

May 17. "Healing and Sustaining Mother Earth" presentation for Women Transcending Boundaries.

June 18 & 20. "Gulls, Flycatchers, Cuckoos and Rails: Birds of Central NY" program for Naturally New York, a naturalist training program for community members, held at SUNY-ESF. Taught indoor session and led field trip.

Onondaga Nation Youth Summer Program. Taught plant ID and other natural history; helped plan & lead canoe trip down Onondaga Creek.

August 17. Native Youth Camp, Cranberry Lake Biological Station, Adirondack Park, NYS. "The Singing Birds" and "Birdsong Jeopardy."

2010

June 17 &19. "Gulls, Flycatchers, Cuckoos and Rails: Birds of Central NY" program for

Naturally New York. Indoor session and half day field trip.

August 19. Native Youth Camp, Cranberry Lake Biological Station, Adirondack Park, NYS. “The Singing Birds” and “Birdsong Jeopardy.”

Invasive Plants Workshop for state employees (DEC, DOT, others). Co-led this ½ day training at October 7. SUNY-ESF and Clark Reservation State Park.

Urban Forest Restoration Initiative. Planned agroforestry project in 2 acres of woodland along Onondaga Creek. Worked with volunteers and local native plant growers to remove invasives, and then plant 60 native trees and shrubs in this urban woodland.

2011

August 18. Native Youth Camp, Cranberry Lake Biological Station, Adirondack Park, NYS. “The Singing Birds” and “Birdsong Jeopardy.”

2018

“Historical Ecology of Onondaga Lake,” presentation at Skä•noñh Great Law of Peace Center, Oct 2018.

2021

“Trees of Beaver Lake Nature Center” recorded instructional walk through BLNC arboretum; presented via Facebook, due to Covid restrictions. April 22, 2021.

“Indigenous Tenure and Access: Land Justice for NY Land Trusts,” May 2021, annual meeting plenary presentation with Neil Patterson, Curtis Berkey, Alex Page, for Land Conservation Conference, NYS program meeting.

2022

“Becoming allies: historical ecological at the Central Fire,” presentation for Hubbard Brook Research Foundation, Jan 6, 2022.

Winter Botany workshop, Akwesasne Mohawk Nation, with Neil Patterson. Feb 21-22, 2023.

“Know Your Trees: Beaver Lake Nature Center,” April 11, 2022, Earth Week walk.

Village of Fayetteville street tree walk, as part of Manlius Green Days, April 16, 2022.

“Haudenosaunee Plantways, Past & Present,” presentation for Finger Lakes Native Plant Society, with Neil Patterson, April 19, 2022.

"From fairy slipper to death camas: secrets of the lost cedars," historical ecology public presentation at Everson Museum of Art, Nov 17, 2022.

2023

"Know Your Neighbors: Onondaga Nation," presentation for Syracuse Garden Club, Jan 23, 2023.

"Indigenous river science in the Oswego River Watershed: a historical perspective," presentation at NY Federation of Lake Associations conference. May 4, 2023.

"Gardening for Nature," presentation at Climate Justice Weekend, UU Church, Canton, NY, Oct 14, 2023.

"Onondaga Plants, Land, People" for Onondaga Hill Historical Society, Nov 15, 2023. With Jeanne Shenandoah from Onondaga Nation.

MADELINE NYBLADE

madelinenyblade.com; mlnyblad@esf.edu; (315) 470-6887

Assistant Professor, Department of Environmental Studies

Faculty Co-Director, Center for Native Peoples and the Environment

State University of New York, College of Environmental Science and Forestry

235 Marshall Hall, 1 Forestry Drive, Syracuse NY 13210

EDUCATION

2019 – 2023 Ph.D. Earth and Environmental Sciences

Graduate minor in American Indian and Indigenous Studies

The University of Minnesota – Twin Cities (UMN)

Kawe Gidaa-naanaagadawendaamin Manoomin Research Collaborative

Thesis: *Hydrologic Impacts of Climate and Land Use Change on Manoomin/Psiη (Wild Rice) Ecosystems: Outcomes from a Tribal-University Research Partnership*

Focus: Tribal-university research methodologies, interdisciplinary environmental science, hydrology, ecology, limnology

Advisors: Dr. Crystal Ng and Dr. Michael Dockry

2014 – 2018 B.S. Geoscience, *summa cum laude*

The Pennsylvania State University (PSU), Schreyer Honors College

Honors in geoscience, mathematics, and community development

Thesis: *Numerical Modeling of the Hydrologic-Agricultural-Economic System in Punjab, India: An Analysis and Reflection on Interdisciplinary Modeling for Sustainability*

Advisors: Dr. Tess Russo, Dr. Kate Zipp, and Dr. Ludmil Zikatanov

WORK EXPERIENCE

2024 –	Assistant Professor, Department of Environmental Studies, State University of New York, College of Science and Forestry (SUNY ESF)
2024 –	Co-Faculty Director, Center for Native Peoples and the Environment, SUNY ESF
2023	Interim Project Coordinator, Kawe Gidaa-naanaagadawendaamin Manoomin Research Collaborative, UMN
2022 – 2023	Hydrogeology Field Course Teaching Assistant, Department of Earth and Environmental Sciences, UMN
2019 – 2023	Research Assistant, Department of Earth and Environmental Sciences, UMN
2019	Out-camping Program Coordinator for summer camp programs at Merrowvista, New Hampshire
2018 – 2019	Youth Facilitation and Outdoor Education Specialist for community and school programs at Merrowvista, New Hampshire
2016 – 2018	Computational Math, Hydrology, and Economic Research Assistant at PSU for T. Russo, K. Zipp, L. Zikatanov
2016	Research Assistant in the Human Environmental Dynamics Lab at PSU for R. Bird and D. Bird
2014 – 2018	Summer Camp Counselor and Trip Leader, Merrowvista, New Hampshire

PUBLICATIONS

Peer Reviewed Papers

Nyblade, M., Larkin, D. J., Vogt, D., Croll, R., Ng, G.-H. C., Graveen, W. J., Hanson, K., Panci, H., Byrne, B., & Panek, B. M. (2025). Climate change contributes to the decline in off-reservation tribal harvest availability in the Great Lakes region. *Communications Earth & Environment,* 6(1), 288. https://doi.org/10.1038/s43247-025-02233-0

Leonard, K., C. Avery, J. Manitowabi, **M. Nyblade**, N. D. Smiles, T.R. Hedman, S. Smith, C. Toulouse. D. David-Chavez. (2025). Water Justice. *The Status of Tribes and Climate Change.* Volume 2. Institute for Tribal Environmental Professionals.

Panek, B., K. James, N. M. Montano, J. Graveen, **M. Nyblade**. (2025). Indigenous Ways of Not Knowing. *The Status of Tribes and Climate Change.* Volume 2. Institute for Tribal Environmental Professionals.

Nyblade, M. L., Smith, S. J., & Sumida Huaman, E. (2024). "The heavy burden": Indigenous knowledge systems, biocultural diversity, and transknowledging in sciences education. *Cultural Studies of Science Education*, *19*(4), 779–792. https://doi.org/10.1007/s11422-024-10236-0

Nyblade, M., Graveen, W., Montano, M., Panek, B., & King, H. J. (2023). Tribal-University Partnership Methodology for Re-searching with Manoomin/Psiŋ (Ojibwe/Dakota for Wild Rice). In E. Sumida Huaman & N. Martin (Eds.), *Indigenous research design: Transnational perspectives in practice*. Canadian Scholars and Women's Press.

Nyblade, M., & McDonald, J. (2021). Recognizing Geology's Colonial History for Better Policy Today. *Eos 102*. https://doi.org/https://doi.org/10.1029/2021EO162069

Matson, L., Ng, G.-H. C., Dockry, **M., Nyblade**, M., King, H. J., Bellcourt, M., Bloomquist, J., Bunting, P., Chapman, E., Dalbotten, D., Davenport, M., Diver, K., Duquain, M., Graveen, W., Hagsten, K., Hedin, K., Howard, S., Howes, T., Johnson Sr, J., Kesner, S., Kojola, E., LaBine, R., Larkin, D., Montano, M., Moore, S., Myrbo, A., Northbird, M., Porter, M., Robinson, R., Santelli, C., Schmitter, R., Shimek, R., Schuldt, N., Smart, A., Strong, D., Torgeson, J., Vogt, D. J., Waheed, A. (2021). Transforming research and relationships through collaborative tribal-university partnerships on Manoomin (wild rice). Environmental Science and Policy. https://doi.org/10.1016/j.envsci.2020.10.010

In Press

Panek, B., **M. Nyblade**, M. Montano, C. Reed VanDam. (in press). Plants and Partners: Honoring the Personhood of Manoomin in Research, Restoration, and Education. *AlterNative.*

In Review

Nyblade, M., Kayira, J., Artelle, K., Patterson, N., (invited, in review) Teaching an Ethic of Good Relationships within Environmental Science. *Indigenous Knowledge and Marine Conservation: Towards an Ethic of Good SeaRelations*

Ng, C., **Nyblade, M**., King, H., Dockry, M., Davenport M., et al. (in review). Journey to First Consider Manoomin/Psiŋ: A Medicine Wheel Framework for Forming a Tribal-University Collaboration Around Wild Rice. *Community Science.*

Non-peer Reviewed Papers and Reports

Nyblade, M. (2025). Potential Impacts of the Gypsum Mine on STAMP. Technical Review Memorandum for the Tonawanda Seneca Nation.

Nyblade, M. (2025). STAMP and Associated Development Hydrologic Impacts to Wetlands and Streams. Technical Review Memorandum for the Tonawanda Seneca Nation.

Nyblade, M. (2025). Batavia Wastewater Treatment Plant. Technical Review for the Tonawanda Seneca Nation

Nyblade, M., Glover, M., (2025). Flooding Impacts of the STAMP development. Technical Review Memorandum for the Tonawanda Seneca Nation.

Nyblade, M., Glover, M., (2025). 1000 Acres Stream Research Spring 2025 Update. Report for the Onondaga nation.

Nyblade, M. (2024). Wild Rice, Climate, and Land Cover Report in the 1854 Ceded Territory. Technical Report for the 1854 Treaty Authority.

Nyblade, M. (2024). Wild Rice, Climate, and Land Cover Report for the 1837 and 1842 Ceded Territory. Technical Report for the Great Lakes Indian Fish and Wildlife Commission.

Nyblade, M. (2024). Wild Rice, Climate, and Land Cover Report for the Fond du Lac Band of Lake Superior Chippewa Reservation. Technical Report for the Fond du Lac Band of Lake Superior Chippewa.

Nyblade, M. (2023). Geologic Mapping at the University of Minnesota. In *Towards Recognition and University-Tribal Healing Report*. University of Minnesota.

Nyblade, M. (2023). Indigenous Knowledge: Kawe Gidaa-naanaagadawendaamin Manoomin Case Study. In *Clean Water Act Section 106 Tribal Guidance* (p. 44). EPA. https://www.epa.gov/water-pollution-control-section-106-grants/clean-water-act-section-106-tribal-guidance

Jones, J., **Nyblade, M**., & Cantner, K. (2022). Reflections from a relationship building community-university summit. *Community Science Exchange*. https://communityscienceexchange.org/-/media/Files/CommunityScience/LocalStudy/Minneapolis_Community_University_Relationship_Building_Summit.pdf

Nyblade, M., Sayers, J., Voss, P., Hassenruck-Gudipati, H., Ng, G. H. C., Podany, N., White, D., Cottrell, A., Lapin, C., Green, E., David, P., Montano, M., Santelli, C. M., & Larkin, D. (2022). *Spur Lake Report (2018 - 2021)*. Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M., Sayers, J., Voss, P., Ng, G.-H. C., Hedin, K., Schuldt, N., Weske, C., Waheed, A., Santelli, C. M., Larkin, D. J., & Green, E. (2022). *Perch Lake Report (2018 - 2021)* Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M., Sayers, J., Voss, P., Ng, G. H. C., Weiss, C., Bunting, P., Moilanen, T., Waheed, A., Santelli, C. M., Larkin, D. J., & Green, E. (2022). *Ogechie and Swamp Lakes Report (2018 - 2021)* Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M., Sayers, J., Ng, G.-H. C., Bloomquist, J., Sangetay, C., Waheed, A., Torres, S., Dance, S., Santelli, C. M., Larkin, D. J., & Green, E. (2022). *Clam, Long, and Big Round Lakes Report (2018 - 2021)* Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M., Sayers, J., Santelli, C., Runzheimer, R., Ng, G. H. C., Vogt, D., Chun, C. L., Duhn, K., Thompson, M., Waheed, A., Dance, S., Voss, P., Hassenruck-Gudipati, H., Larkin, D. J., & Green, E. (2022). *Big Rice Lake Report (2018 - 2021)* Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M., Sayers, J., Voss, P., Torres, S., Hassenruck-Gudipati, H., Runzheimer, R., Ng, G. H. C., Graveen, J., De Vries, J., Virden, A., Allen, D., Hanson, K., Waheed, A., Santelli, C. M., Larkin, D. J., & Green, E. (2022). *Lac du Flambeau River Report (2018 - 2021)* Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M., Sayers, J., Dance, S., Voss, P., Torres, S., Ng, G. H. C., Waheed, A., Santelli, C. M., Larkin, D. J., & Green, E. (2021). *Site Comparison Report (2018 - 2020)* Kawe Gidaa-naanaagadawendaamin Manoomin.

Nyblade, M. (2020, April 16) Finding my place in the community science movement. *Thriving Earth Exchange Blog.* https://thrivingearthexchange.org/finding-my-place-in-the-community-science-movement/

Nyblade, M. (2018, April 29). Penn State values take a hike. Op Ed. *Washington Examiner.*

News and media about my work

Rogers, A. (2025). 'As vulnerable as a plant can be': New study finds climate change largely to blame for less wild rice.' Wisconsin Public Radio.

Deelen, G. (2023). *Climate Change Threatens the Future of Wild Rice*. Eos.

Looby, C., Vaisvilas, F. (2023). *Great Lakes tribes teach 'water is life.' But they're forced to fight for its protection*. Milwaukee Journal Sentinel. Republished in USA Today.

Rieger-Borer, B., Nace, A. (2023). *State of Water: Protecting and understanding wild rice, sacred to Ojibwe people*. CBS News Minnesota.

Denzin, N. (2023). *Wisconsin's wild rice harvest and threats of climate change*. PBS Wisconsin.

Hazzard, A. (2023). *Survival of wild rice threatened by climate change, increased rainfall in northern Minnesota*. Sahan Journal. Republished in MPR News.

Averett, N. (2023). *For Decades, the Ojibwe Tribe Shunned Scientists—Until Their Partnership Became Vital*. The Nation.

GRANTS

2025 – 2027	**M. Nyblade**, M. Cavo. *An Innovative Payment for Ecosystem Services Feasibility Study for Returning Indigenous Care and Access to Private Lands in New York's Northern Forests. McIntire Stennis*. USDA. ($96,509)
2025 – 2026	**M. Nyblade**. 2025-2026. *Onondaga Land Return Conservation Project. The Climate Resilience Grant Program.* The Nature Conservancy. ($49,784)
2024 – 2027	R.W. Kimmerer, **M. Nyblade**. S. Diemont, N. Paterson, C. Beier. *Development of an Indigenous-led Research Agenda for Restoration and Stewardship of Culturally Significant Plants for Climate Change Adaptation in the Northeast*. Northeast Climate Adaptation Science Center. USGS. ($500,000)
2023 – 2027	N. Patterson., **M. Nyblade**, K. Artelle. *NYSDEC Cross-Cultural Program*. New York State Department of Environmental Conservation. ($1,142,000 per year)
2023	**M. Nyblade**, UMN Doctoral Dissertation Fellowship ($35,000 plus tuition)
2023	**M. Nyblade**, G-H. Ng., Mini Grant, Institute on the Environment, University of Minnesota ($3000)
2023	**M. Nyblade,** American Geophysical Union travel grant for AAAS Catalyzing Advocacy in Science and Engineering Workshop ($2,000)
2022	**M. Nyblade,** American Geophysical Union travel grant for the Second National Conference for Justice in the Geosciences ($2,000)
2022	**M. Nyblade**, J. Jones, Mini Grant, Institute on the Environment, University of Minnesota ($3,000)
2022	**M. Nyblade**, J. Jones, Community Partnerships Grant, Clinical and Translational Science Institute, UMN ($5,000)
2021	**M. Nyblade**, Land-Grab/Land-Grant Short-Term Fellowship, Institute on Advanced Studies, UMN ($2,000)
2021	**M. Nyblade**, J. Jones, Sawkins Outreach Grant, UMN Department of Earth and Environmental Sciences ($7,500)
2020	**M. Nyblade,** Travel grant for Graduate Leaders in Interdisciplinary Research, National Socio-Environmental Synthesis Center ($2,000)
2019 – 2022	**M. Nyblade,** UMN College of Science and Engineering Three-Year Graduate Fellowship ($35,000 per year plus tuition)

2017 **M. Nyblade,** Erickson Discovery Grant for undergraduate summer research, PSU ($3,500)

PRESENTATIONS (presenters underlined)

Invited Talks

Nyblade, M. *First We Must Consider Manoomin/Psiŋ: Impacts of Climate and Land Cover Change on Wild Rice*. Lunch with Friends. Friends of the Boundary Waters. Virtual Presentation. (Invited) August 8, 2024.

Nyblade, M. *First We Must Consider Manoomin/Psiŋ: Impacts of Climate and Land Cover Change on Wild Rice*. Water Seminar. SUNY ESF. 2025. Presentation. (Invited)

Nyblade, M. *Water Intensive Industries*. Freshwater Futures. 2025. Presentation (Invited)

Nyblade, M., J. Graveen, B. Panek, G. Voss, A. Gregg, C. Ng, Plenary: *First We Must Consider Manoomin/Psiŋ:* A Conversation on Tribal-University Collaborative Research around Wild Rice. AGU and CUAHSI Water Science Conference. June 24, 2024

Nyblade, M. *First We Must Consider Manoomin/Psiŋ: Impacts of Climate and Land Cover Change on Wild Rice*. HydroReads Seminar. Syracuse University. March 27, 2024

Nyblade, M. *Geoscience, Colonialism, and Just Ways Forward: A Minnesota Case-Study*. Central New York Association of Professional Geologists Monthly Lecture. May 1, 2024

Nyblade, M., Graveen, W., Croll, R., Krumwiede, B., (2023). *Climate Change Impacts on Wild Rice Panel Discussion.* Wild Rice Conference, Fond du Lac Reservation.

Panek, B., Reed-VanDam, C., Dorr, S., Nyblade, M. (2023). *A holistic framework for Manoomin research, restoration, and learning.* Wild Rice Conference, Fond du Lac Reservation.

Sumida-Huaman, E., Panek, B., Nyblade, M. et al. (2023). *Indigenous Research Design Book Launch Panel Discussion*. The Center for Race, Indigeneity, Disability, Gender, and Sexuality Studies. University of Minnesota – Twin Cities. Minneapolis, MN.

Nyblade, M. (2023). *Climate and Land-Use Change Impacts on Wild Rice.* Tribal Pesticide Program. Virtual.

Nyblade, M. (2023). *First, we must consider Manoomin/Psiŋ : Stories and Science from a Tribal-University Research Collaboration Studying Wild Rice.* Water Issues Talk. Minnesota Pollution Control Agency. St. Paul, Minnesota. Virtual.

Nyblade, M. (2023). *Climate and Land-Use Change Impacts on Wild Rice.* Wild Rice Research Roundtable, St. Paul, Minnesota.

Dorr, S., Panek, B., Reed-VanDam, C., Nyblade, M. (2023). *A holistic framework for Manoomin research, restoration, and learning.* Wild Rice Research Roundtable, St. Paul, Minnesota.

Nyblade, M. (2023). *Wild Rice Health, Restoration, and Collaborative Research.* Ramsey County Cooperative Weed Management Area Meeting. Ramsey County Soil and Water Conservation Division. Shoreview, Minnesota.

Nyblade, M. (2023). *Incorporating Indigenous Knowledge to Target Tribal Nonpoint Source Work.* EPA. Virtual.

Nyblade, M., Watkins, M., Runkle, T. (2023). *Geologic Mapping and Indigenous Land Dispossession in present-day Minnesota*. USGS Geoheritage Mapping Workshop. Virtual.

Nyblade, M., Graveen, W., Montano, M., Panek, B., & King, H. J. (2022). *Bringing the Spirit Back to Science: A Tribal-University Methodology for Re-search Co-Production, Healing, and Justice with Psiŋ/Manoomin (Wild Rice)*. Tribal Water Workshop. Prairie Island Indian Community.

Nyblade, M. (2022). *A Conversation on Tribal-University Research Collaboration*. Stories from the Field Series. Center for Economic and Community Development. Penn State. Virtual.

Nyblade, M. (2022). *First, We Must Consider Manoomin/Psiŋ: Stories and Science from a Tribal-University Research Collaboration Studying Wild Rice*. Earth and Environmental Sciences Department Seminar, University of Minnesota – Duluth.

Nyblade, M., Green, D., Vogt, D., Schuldt, N., & Graveen, W. (2021). *Kawe Gidaa-naanaagadawendaamin Manoomin: First we must consider Manoomin/Psin*. Natural Resource Research Institute Seminar. University of Minnesota – Duluth. Virtual.

Conference Oral Presentations

Nyblade, M., McClure, G., Vogt, D., Croll, R., Byrne, B., Panek, B., Larkin, D., Ng, G. H. C., (2023). *First, we must consider Manoomin/Psiŋ: Impacts of Climate and Land Cover Change on Wild Rice*. American Geophysical Union Fall Meeting.

Nyblade, M., McClure, G., Schuldt, N., Vogt, D., Croll, R., Larkin, D. J., & Ng, G. H. C. (2023). *Land Use and Climate Change Impacts on Manoomin (Psiŋ, wild rice, Zizania palustris) across the Upper Great Lakes Region*. St. Louis River Summit.

Nyblade, M., Ng, G. H. C., Runkel, A. C., McDonald, J., Francis, S., & Hassenruck-Gudipati, H. (2022). *Geologic Mapping and Indigenous Land Dispossession in present-day Minnesota*. American Geophysical Union Fall Meeting.

Panek, B., Nyblade, M., & Montano, M. (2022). *Manoomin Medicine Wheel Model: An Indigenous Framework for Holistic, Respectful Earth Science Research*. American Geophysical Union Fall Meeting.

Nyblade, M., Graveen, W., Montano, M., Panek, B., & King, H. J. (2022). *Bringing the Spirit Back to Science: A Tribal-University Methodology for Re-search Co-Production, Healing, and Justice with Manoomin/Psiŋ (Wild Rice)*. American Geophysical Union Fall Meeting.

Nyblade, M., Vogt, D., Hedin, K., Weske, C., Schuldt, N., Larkin, D., & Ng, G.-H. C. (2022). *Wild Rice Relationships with Climate: Results from a Multi-decadal, Statistical Analysis of 56 Rice Waters across the Upper Great Lakes Region*. North American Lakes Management Society.

Nyblade, M., Hedin, K., Weske, C., Schuldt, N., Vogt, D., Larkin, D., & Ng, C. (2022). *Multi-decadal climate and lake-level relationships with Manoomin (Psin, wild rice, Zizania palustris) in the Upper Great Lakes region*. St Louis River Summit.

Davenport, M. A., King, H. J., LaBine, R., Nyblade, M., & Vogt, D. (2021). *A deliberative science framework for evaluating community-engaged research*. International Association for Society and Natural Resources 2021 Virtual Conference. https://www.youtube.com/watch?v=PMs-Z8rhjzk&t=3s

Nyblade, M., Schuldt, N., Sayers, J., Hedin, K., Dockry, M., Vogt, D. J., Ng, G.-H. C., Graveen, W., Davenport, M. A., Duquain, M., & King, H. J. (2021). *Transforming research and relationships through collaborative tribal-university partnerships on Manoomin (wild rice)*. North American Lake Management Society National Monitoring Conference. https://www.youtube.com/watch?v=AZd6CN5C2d0 (30 min version) https://www.youtube.com/watch?v=PDUaQmvOw8o (10 min version)

Nyblade, M., Waheed, A., Ng, C., Santelli, C., Chapman, E., Graveen, J., Hedin, K., Bloomquist, J., Weiss, C., Bunting, P., Vogt, D., Dockry, M., Larkin, D., Davenport, M., Matson, L., Dalbotten, D., Duqain, M., King, H. J., Torgeson, J., … White, L. (2020). *First We Should Consider Manoomin (Wild Rice): Co-Producing Interdisciplinary Ecological Knowledge and Co-Protecting Indigenous Resource Sovereignty*. North-Central GSA Virtual Meeting. https://www.youtube.com/watch?v=FUJh9dEQ0fk

Nyblade, M. (2017). *A Fight for Clean Water: Acid Mine Drainage in the Beech Creek Watershed*. Presented at the Rural Studies Student Conference, Penn State.

Nyblade, M. (2015). *Biodiversity Characterization of UWICE Research Preserve.* Presented at the School for Field Studies Conference, Thimphu, Bhutan.

Conference Poster Presentations

Nyblade, M. Landis, C. Impacts and Insights from 200+ Years of Wetlandscape Change in the Northeast and Great Lake Region. American Geophysical Union. 2024.

Nyblade M., Landis, C. *Wild Rice Recovery Pilot Survey*. Great Lakes Coastal Symposium. 2024.

Gracelyn, M., Nyblade, M., Larkin, D. J., Ng, G. H. C., & Croll, R. (2022). *Statistical Analysis of the Combined Effects of Land Use Change and Climate Change on Manoomin/Psiŋ (Wild Rice) Abundance in the Upper Great Lakes Region*. American Geophysical Union Fall Meeting.

Jones, J., Nyblade, M., & Cantner, K. (2022). *"It was a rare opportunity to pick the professor's brain:" Relationship building as the foundation for community-university partnerships at the University of Minnesota*. American Geophysical Union Fall Meeting.

Nyblade, M., Hedin, K., Weske, C., Schuldt, N., Vogt, D., Larkin, D., & Ng, C. (2021). *Multi-decadal climate, lake-level, and water chemistry relationships with Manoomin (Psin, wild rice, Zizania palustris) in the Upper Great Lakes region*. American Geophysical Union Fall Meeting.

Nyblade, M., King, H., Aiona, M., Bellcourt, M., Bloomquist, J., Bunting, P., Chapman, E., Colvin, J., Dalbotten, D., Davenport, M., Diver, K., Dockry, M., Duquain, M., Graveen, W., Hagsten, K., Hedin, K., Howard, S., Howes, T., Johnson, J., … Waheed, A. (2020). *First we must consider Manoomin (Psiŋ, wild rice, Zizania palustris): Emergent understandings of meaningful research and relationships in tribal-university partnership centering Manoomin*. American Geophysical Union Fall Meeting.

Tran, T., Nyblade, M., & Ng, G.-H. C. (2020). *Importance of Manoomin (Psiŋ, wild rice, Zizania palustris) to the Culture, Diet, and Health of the Anishinabeg*. American Geophysical Union Fall Meeting.

Tallas, N., Torres, S., Nyblade, M., Ng, G.-H. C., & Vogt, D. J. (2020). *Big Rice Lake and the challenges of restoring Manoomin (wild rice)*. American Geophysical Union Fall Meeting.

Ng, G.-H. C., Nyblade, M., Bellcourt, M., Bloomquist, J., Bunting, P., Caldwell, T., Charwood, L., Chapman, E., Colvin, J., Dalbotten, D., Davenport, M., Dockry, M., Diver, K., Duquain, M., Duever, D., Graveen, J., Hedin, K., Howard, S., Howes, R., … White, L. (2019). *Decentering Western Science through Collaborative Tribal-University Research on Manoomin / Psiŋ / Manōmaeh (Wild Rice)*. American Geophysical Union Fall Meeting.

Nyblade M., Russo T., Zikatanov L., & Zipp K. (2017). *Numerical Modeling of the Agricultural-Hydrologic System in Punjab, India.* American Geophysical Union Fall Meeting.

Co-Organized Workshops and Conference Sessions

Summit for Building Twin Cities Community-University Relationships for Environmental Research, University of Minnesota – Twin Cities Department of Earth and Environmental Sciences (2021, 2023)

Earth Science Policy for Respecting Tribal Sovereignty, University of Minnesota Undergraduate Geoscience Club (2022)

Earth Science Policy for Respecting Tribal Sovereignty, Geoscience Alliance Conference. University of Minnesota – Twin Cities. (2022)

Cultivating Leadership for Change in the Geosciences: Effective Student Activism in the Earth Sciences, American Meteorological Society Conference (2021)

Convergence, Collaboration, Justice, and the Future of Geoscience, American Geophysical Union Fall Meeting (2020)

TEACHING EXPERIENCE

2024 – Lead Instructor for *Community Based Participatory Research Methods*, Graduate Course, SUNY ESF

2024 – Lead Instructor for *Introduction to Native Peoples, Lands, and Cultures*, Undergraduate Course, SUNY ESF

2024 – Lead Instructor for *Sloan Indigenous Scholars Seminar*, Graduate Course, SUNY ESF

2022, 2023	Teaching Assistant for Hydrogeology Advanced Field Course, UMN
2022	Guest Lecturer, *An Environmental History of Water in Northern Minnesota* for the Parks and Protected Areas Management Field Course, UMN
2022	Guest Lecturer, *Water Quality and Wild Rice Monitoring* for the Parks and Protected Areas Management Field Course, UMN
2022	Backcountry Guide and Educator, 2-night Boundary Waters canoe trip for the Parks and Protected Areas Management Field Course, UMN
2022	Guest Lecturer, *Stories and Science from a Tribal-University Research Collaboration Studying Wild Rice* for undergraduate introductory geology (University of Minnesota – Morris) and high-school biology (Pequot Lakes High School, Minnesota)
2020 – 2022	Guest Lecturer, *Critical History of Geologic Mapping in Minnesota* for UMN undergraduate courses: History of Earth and Environmental Science; Environmental Justice in the Earth Sciences; Standards and Practices for Professional Geosciences; Manoomin and It's Environment Seminar; Hydrogeology Field Course
2018 – 2019	Youth Facilitator, Outdoor Educator, and Program Coordinator for multi-day, overnight programs at Merrowvista with elementary through college students

STUDENT ADVISEES

2024 –	Mia Glover (SUNY ESF, PhD, Environmental Biology, Sloan Indigenous Scholar)
2024 –	Nevaeh Marshall (SUNY ESF, MS, Environmental Science, Sloan Indigenous Scholar)
2024 –	Abigail Guinan (SUNY ESF, MS, Environmental Science)
2024 –	Aaron Hagman (SUNY ESF, MS, Environmental Biology, Sloan Indigenous Scholar)
2024 –	Jade Huamann (SUNY ESF, MS, Environmental Science, Sloan Indigenous Scholar)
2022 – 2023	Gracelyn McClure (undergraduate research, UMN)
2022	Bazile Panek (undergraduate research, Northern Michigan University)
2022	Payton Kittaka and Ashley Murr (graduate seminar research project, University of Minnesota – Duluth)

2021	Ananya Vegesna and Lauren Shipman (undergraduate research, UMN)
2020	Nizhoni Tallas, Sirena Torres, Tyler Tran, Mōhala Aiona, and Jamie Colvin (Research Experience for Undergraduates, UMN)

HONORS AND AWARDS

2023	Deb Swackhamer Award, Minnesota Water Resources Conference Committee
2023	UMN Outstanding Community Service Award
2023	President's Student Leadership Award, Iowa & Minnesota Campus Compact
2021	President's Student Leadership and Service Award, UMN
2020	Honorable Mention, NSF Graduate Research Fellowship Program
2020	Honorable Mention of Student Presentation, North Central Geological Society of America
2018	Earth and Mineral Sciences College Science Honor Marshal (given to the science student with the highest GPA in the College of Earth and Mineral Sciences graduating class), PSU
2018	Dean Edward Steidle Memorial Scholar Award, PSU
2018	Earth and Mineral Sciences Academy for Global Experience Laureate, PSU
2017	Sustainability Tree Award for outstanding sustainability leadership, PSU
2017	Best Student Poster Award, MODFLOW and More Conference, Golden, Colorado

WORKSHOPS/PROGRAMS ATTENDED

Invited or Selected to Attend

2023	Michigan State University Summer Intensive on Community Engaged Scholarship

2023	AAAS Catalyzing Advocacy in Science and Engineering Workshop, Washington, D.C.
2022	Second National Conference for Justice in the Geosciences, American Geophysical Union, Washington, D.C.
2021	Land-Grab/Land-Grant University Short Term Fellowship Cohort Experience, UMN
2020	Graduate Leaders in Interdisciplinary Research, National Socio-Environmental Synthesis Center, Annapolis, Maryland
2019	Thriving Earth Exchange Fellows Training, American Geophysical Union, Washington, D.C.

Workshops Open to All

2019 – 2023	American Indian and Indigenous Studies Writing Workshop, UMN
2021	Participatory Modeling Field School, Michigan State University

SERVICE ROLES

2024 –	Department of Environmental Studies' Undergraduate Education Committee (member).
2024 –	Center for Native Peoples and the Environment Leadership Committee (Faculty Co-Director)
2024 –	Center for Native Peoples and the Environment Curriculum Committee (Chair)
2024 –	Center for Native Peoples and the Environment Research Committee (Member)
2024 –	Native Peoples and the Environment Undergraduate Minor (Faculty Coordinator)
2022	Co-author of a Lab Group Worksheet for Confronting Colonization in Research, UMN
2020 – 2023	Diversity, Equity, and Inclusion Committee Member, Department of Earth and Environmental Sciences, UMN
2021 – 2023	Community Engagement Seminar Series Co-organizer, Department of Earth and Environmental Sciences, UMN

2021 – 2023	Confronting Colonization Working-Group Member, Department of Earth and Environmental Sciences, UMN
2021	Rematriation and Intake Procedures for Earth and Environmental Sciences Department Rock Collections Co-Author, UMN
2021	Indigenous Science Seminar Organizer, UMN
2020 – 2021	Justice, Equity, Diversity, and Inclusion Seminars Creator and Co-Coordinator, Department of Earth and Environmental Sciences, UMN
2020	Earth and Environmental Sciences Department Climate Survey Qualitative Analysis and Presentation, UMN
2016 – 2018	President of Eco Action, PSU Environmental Advocacy Club

GRADUATE COURSEWORK

2021	Teaching in Higher Education
2021	Indigenous Qualitative Research Methodologies
2021	Community Based Participatory Research
2021	Forest Hydrology and Watershed Biogeochemistry
2021	Economic Geology
2020	Traditional Ecological Knowledge and Western Natural Resource Management
2020	Limnology
2020	Biometeorology
2020	Indigenous Education
2020	Indigenous Environmental Knowledge Independent Study with Dr. Michael Dockry
2020	Aqueous Geochemistry
2020	Cultural Awareness and Knowledge
2020	Critical Indigenous Theory
2019	Ways of Thinking About Health

2019 Geo Time Series

2019 Hydrologic Modeling

2019 Indian Law

LENNY SIEGEL

August, 2025

EDUCATION: Valedictorian, Culver City High School, Culver City, California, 1966
Stanford University (Physics), 1966-1969

EMPLOYMENT: Pacific Studies Center, Mountain View, President, 1970-present
Center for Public Environmental Oversight (CPEO),

Executive Director, July, 1994-present

ELECTIVE OFFICE: Mountain View (California) City Council, January 2015- January 2019, Mayor January 2018-January 2019

TEACHING EXPERIENCE: UCLA Department of Urban Planning, Guest Professor, Spring, 1995 and Winter, 1997

UC Berkeley Extension, Guest Lecturer, "Strategies for Site Remediation: A Case Studies Approach," Winter, 1995, 1996, and 1997; Fall, 1998

Council of Energy Resource Tribes, Guest Lecturer, "Mitigation of Environmental Impacts to Indian Lands due to Department of Defense Activities," Summer, 1994 and 1995

AWARDS:

ITRC Stakeholder of the Year Award, 2018

U.S. Environmental Protection Agency, National Citizen's Excellence in (Superfund) Community Involvement Award, 2011

U.S. Environmental Protection Agency, Region 9, Environmental Achievement Award, November, 2001

SAMPLE PUBLICATIONS:

"A Stakeholder's Guide to Long-Term Management at Vapor Intrusion Sites," April, 2015; "A Stakeholder's Guide to Vapor Intrusion: Update," November, 2015; "When the Going Gets Tough, Communities Believe It's Time to Optimize and Adapt," *Remediation Journal*, Summer, 2014; "Jordan Downs Redevelopment, South Central Los Angeles: Vapor Intrusion Should Not be Ignored," October, 2013; "Harlem: Learning About Vapor Exposures the Hard Way and Doing Something about It," August, 2012; "Minding the End: A Proposal for Long-Term Management," June, 2012; "Partnering with Communities for Biosafety's Sake," *Anthology of Biosafety XII*, 2011; "Long-Term Environmental Management at School and Daycare Sites," December 2010; "The Sun Shines on the Department of Defense," April 2010; "A Stakeholder's Guide to Vapor Intrusion," November, 2009; "Independent Review of the Cleanup Plan for the East 115th Street Manufactured Gas Plant Site, New York, New York," June 2009. *Stakeholders' Guide to Munitions Response* (Spring, 2004); *Stakeholders' Guide to Federal Facilities Cleanup* (Summer, 1997).

Committees (underlined are current)**:**

Air Combat Command Project on Streamlined Oversight, External Review Group

ASTM/ISR Brownfields Steering Committee

California Base Closure Environmental Advisory Group

California Brownfields Reuse Advisory Group

California CLEAN Loan Committee

California Site Mitigation Update advisory group

California Superfund Working Group

Clean Sites Independent Review of Program Performance, Defense Environmental Restoration Program, Blue Ribbon Review Panel

Community Environmental Health Assessment Project Steering Committee, National Association of City and County Health Officials

Compliance Assistance Advisory Committee (U.S. EPA)

Defense Science Board Task Force on Unexploded Ordnance Clearance Operations

Department of Toxic Substances Control (California) External Advisory Group

Federal Facilities Environmental Restoration Dialogue Committee

Interstate Technology & Regulatory Council 1,4 Dioxane Team

Interstate Technology & Regulatory Council Geophysical Classification for Munitions Response Team

Interstate Technology & Regulatory Council Perchlorate Work Team

Interstate Technology & Regulatory Council Permeable Reactive Barrier Work Team

Interstate Technology & Regulatory Council PFAS Team

Interstate Technology & Regulatory Council Pump & Treat Optimization Team

Interstate Technology & Regulatory Council Remedial Management of Complex Sites

Interstate Technology & Regulatory Council Vapor Intrusion Mitigation Training Work Team

Interstate Technology & Regulatory Council Vapor Intrusion Work Team

Interstate Technology & Regulatory Council Vapor Intrusion (VI) Pathway Evaluation and Mitigation

Moffett Naval Air Station Restoration Advisory Board

Mountain View (City of) Environmental Planning Commission

National Environmental Justice Advisory Council Subcommittee on Waste and Facility Siting

National Environmental Justice Advisory Council Federal Facilities Working Group

National Policy Dialogue on Military Munitions

National Research Council Committee on ACWA Secondary Wastes

National Research Council Committee on Army Non-Stockpile Chemical Demilitarization Program (three iterations)

National Research Council Committee on Environmental Remediation at Naval Facilities (two iterations)

National Research Council Committee on the Future Options for Management in the Nation's Subsurface Remediation Effort

National Research Council Committee to Review and Assess Closure Plans for the Tooele Chemical Agent Disposal Facility and Chemical Agent and Munitions Disposal System

National Research Council Committee to Review the Health and Safety Risks of High Containment Laboratories at Fort Detrick

National Research Council Committee to Review Risk Assessment Approaches for the Medical Countermeasures Test and Evaluation Facility at Fort Detrick, MD

National Research Council Committee to Review the IRIS Process

National Research Council Committee to Review the Toxicologic Effects from Past Exposure to Environmental Contaminants at the U.S. Army's Fort Detrick

Northeast Mountain View Advisory Council (Board member)

Peer Review Panel for the VOC Historical Case Initiative

Range Rule Partnering Team

Range Rule Risk Methodology Partnering Team

Santa Clara County Housing Bond Oversight Committee

Western Region Hazardous Substance Research Center Outreach Advisory Committee

Consulting Experience:

Bronx Community Board #4

Communities for a Better Environment

Council of Energy Resource Tribes

Kahoʻolawe Island Reserve Commission

Manhattan Center for Science and Mathematics Parents Association

Military Toxics Project

Natural Resources Defense Council

New Bedford (MA) Brownfields to Healthfields

New York Lawyers for the Public Interest

Physicians for Social Responsibility—Los Angeles Office

RAND Corporation

Rockefeller University Program on the Human Environment

Silicon Valley Toxics Coalition

Seaport Coalition (Manhattan)

South Bronx Committee for Toxic-Free Schools

U.S.EPA Soil Gas Safe Project