# U.S. Environmental Protection Agency National Environmental Justice Advisory Council

Public Meeting Summary

December 5, 2023

Location: Virtual

## Contents

## Preface

The National Environmental Justice Advisory Council (NEJAC) is a federal advisory committee that was established by charter on September 30, 1993, to provide independent advice, consultation, and recommendations to the Administrator of the U.S. Environmental Protection Agency (EPA) on matters related to environmental justice.

As a federal advisory committee, NEJAC is governed by the Federal Advisory Committee Act (FACA) enacted on October 6, 1972. FACA provisions include the following requirements:

- Members must be selected and appointed by EPA.
- Members must attend and participate fully in meetings.
- Meetings must be open to the public, except as specified by the EPA Administrator.
- All meetings must be announced in the Federal Register.
- Public participation must be allowed at all public meetings.
- The public must be provided access to materials distributed during the meeting.
- Meeting minutes must be kept and made available to the public.
- A designated federal officer (DFO) must be present at all meetings.
- The advisory committee must provide independent judgment that is not influenced by special interest groups.

EPA's Office of Environmental Justice and External Civil Rights (OEJECR) maintains summary reports of all NEJAC meetings, which are available on the NEJAC website at https://www.epa.gov/environmentaljustice/national-environmental-justice-advisory-council-meetings. All EPA presentation materials for this meeting are available in the public docket. The public docket is accessible at www.regulations.gov/. The public docket number for this meeting is EPA-HQ-OEJECR-2023-0101.

## About This Summary

The NEJAC convened virtually on Zoom, December 5, 2023. This summary covers NEJAC presentations, discussions, and public comments.

The Federal Register notice for this meeting is at https://www.federalregister.gov/documents/2023/11/16/2023-25245/national-environmental-justice-advisory-council-notification-of-public-meeting.

The meeting agenda is at https://www.epa.gov/system/files/documents/2023-11/nejac-public-meeting-agenda_december-5-2023.pdf

See appendix A for a list of NEJAC members and their affiliations.

The presentation slides are in appendix B.

Written public comments are in appendix C.

# PUBLIC MEETING SUMMARY

## Welcome

**Paula Flores-Gregg** | NEJAC Designated Federal Officer, U.S. EPA
**Na'Taki Osborne Jelks** | NEJAC Co-Chair
**Michael Tilchin** | NEJAC Vice Chair

Karen L. Martin opened the meeting and explained the format.

Karen L. Martin introduced the new NEJAC leadership team. Na'Taki Osborne Jelks will continue to serve as co-chair, and Jerome Shabazz, who has been on NEJAC for the past six years, will also serve as co-chair. Michael Tilchin is the outgoing vice chair who served for six years. Dr. April Karen Baptiste will serve as vice chair. Karen L. Martin said she looks forward to working with these members over the next year.

## Opening Remarks

**Matthew Tejada** | Deputy Assistant Administrator for Environmental Justice, OEJECR, U.S. EPA
**Theresa Segovia** | Principal Deputy Assistant Administrator for Environmental Justice, OEJECR, U.S. EPA
Theresa Segovia said she's gotten to know many NEJAC members and is energized and inspired by their commitment to environmental justice. She looks forward to leading her office to support their efforts and to working with members on some of the most challenging issues facing communities throughout the nation.

She said Matthew Tejada is leaving his position at EPA at the end of the week. She said it was impossible to measure his contributions to the office and to the lives of stakeholders, and they wished him well.

Matthew Tejada said he wanted to celebrate what NEJAC has done over the past year.

He said when the Inflation Reduction Act (IRA) passed, it was an enormous opportunity and challenge for both the environmental justice program at EPA and in the United States. It represented the first time that issues of equity and justice were finally given specific resources to do the work. He said they'd previously done this work either for free or with small budgets. When the IRA passed and $3 billion was available for environmental justice work, he knew it would be a challenge to find hundreds of partners to help build the infrastructure that would eliminate barriers and lift communities into a place to take advantage of these available resources. In addition to the $3 billion currently available in environmental justice resources, trillions of dollars of resources are currently available and can finally start to address generational issues of oppression and divestment in the United States. He credited the many people who helped with this work.

For instance, when EPA sought applications for the Thriving Communities Technical Assistance Centers (TCTACs), they worried they wouldn't get more than a couple dozen applications. They got 70 applications from across the states. They now have TCTACs in every region of the United States.

Similarly, with the Thriving Communities Grantmaking Program, the financial assistance complement to the technical assistance, Matthew Tejada said EPA received about 70 applications. Grant recipients would soon be announced.

He talked about other instances where fears of people not showing up to help with environmental work were allayed.

Matthew Tejada talked about the Community Change Grant announced before Thanksgiving. He said many people, including NEJAC members, helped them resolve some of the big policy issues and some of the vision they wanted to achieve with the grant.

Now, he said, it's important to ensure the resources are accessed and used to facilitate impactful projects and to address issues of pollution and to prepare communities for the changing climate. He said we're entering a new phase where all the programs are available. Now people are building infrastructure to do things such as technical assistance, which causes growing pains.

He credited NEJAC members for being a part of the historic success we are experiencing.

## NEJAC Member Introductions

Paula Flores-Gregg introduced new members and existing members.

Laprisha Berry Daniels
April Karen Baptiste, Ph.D.
Sandra Bonilla
Joy Britt
Reverend Ambrose Carroll, Sr., Ph.D.
Scott Clow
Ximena Cruz Cuevas
Jarod Davis
Cemelli de Aztlan
John Doyle
Jan Marie Fritz, Ph.D., C.C.S.
Yvonka M. Hall
Jill Lindsey Harrison, Ph.D.
Loren Hopkins, Ph.D.
Lisa Jordan
Andy Kricun, P.E.
Richard Mabion
Nina McCoy
Ayako Nagano, Esq.
Na'Taki Osborne Jelks, Ph.D., MPH
Sofia Owen
Brianna Parker, Esq.
Benjamin J. Pauli, Ph.D.
Jonathan Perry
Rosina Philippe
Millicent Piazza, Ph.D.
Jerome Shabazz
Jacqueline Shirley, M.P.H.
Pamela Talley, DNP
Michael Tilchin
Brenda Torres Barreto
Lynn Zender, Ph.D.

## National Environmental Policy Act (NEPA) Training Recommendations Progress Report and Overview of Revisions to Technical Guidance for Assessing EJ in Regulatory Analysis

**Victoria Arroyo** | Associate Administrator, Office of Policy, U.S. EPA
**Ann Wolverton** | Senior Economist, Office of Policy, U.S. EPA

Victoria Arroyo said her office will update the NEJAC on incorporating NEJAC's recommendations regarding training, which is in its early stages, and environmental justice technical guidance, which involves incorporating environmental guidance into all the regulatory work the agency is doing. This technical guidance was out for public comment.

She said staff received the NEJAC's letter in August and are looking at the 138 recommendations on NEPA and training. It will take time to determine how to best implement as many recommendations as possible. She said she appreciates the level of specificity of the recommendations and that they are taking their leadership role very seriously. Many of them fall in EPA's purview, while some will require working in tandem with the Council on Environmental Quality (CEQ), given the role CEQ plays on NEPA.

She said she has issued memos to the NEPA reviewers to promote environmental justice in NEPA reviews. Her team is looking at the goals in executive order (EO) 14096 (Revitalizing Our Nation's Commitment to Environmental Justice for All) and working with colleagues across the EPA to incorporate responses to the goals of the EO.

Victoria Arroyo said that in September the office hired Sumi Selvaraj as a new environmental justice coordinator in the NEPA compliance division. Her priorities will be to facilitate, coordinate, and release training materials and resources for the 309 NEPA reviewers.

Victoria Arroyo said they've updated NEPA training modules to include information about EO 14096 and how it intersects with 309 NEPA reviews. In November, staff began developing an environmental justice impacts analysis training module for NEPA reviewers that provides clear direction on how reviewers should determine appropriate and practical EPA comments on data sources, tools, analytical approaches, and best practices for meaningful engagement in NEPA reviews.

Over the last two years, she said, monthly 309 NEPA reviewer community meetings have been devoted to environmental justice-focused presentations and have included speakers such as staff from CEQ and the Bureau of Land Management to continue to update and support staff performance in these areas.

At an in-person 309 NEPA meeting in September, EPA shared best practices and training related to environmental justice in 309 NEPA reviews. In September, they awarded a contract to create environmental justice screen training for 309 reviewers because the environmental justice screen is such an important tool for both the regulatory and environmental impact sides at EPA.

Victoria Arroyo said that in January 2024, the NEPA Compliance Division will launch environmental justice office hours for NEPA reviewers. Sumi Selvaraj will provide an opportunity to discuss

questions related to environmental justice analysis in NEPA reviews, help develop practical recommendations, and share best practices to NEPA lead agencies. She said they will provide further updates on the NEPA training recommendations at the March meeting in Houston, where she will introduce Sumi Selvaraj, who was unable to attend this meeting.

Regarding the update of the environmental justice technical guidance, Anne Wolverton noted the guidance was originally released in 2016 and was finalized after extensive public and peer review. The guidance outlines analytic expectations, best practices, and technical approaches to evaluate environmental justice concerns for regulatory actions. EPA analysts are the main audience for the document, which is designed to be flexible so it may be tailored to reflect a specific regulatory context and allow offices to balance budget and time constraints and other factors. The draft revision reflects updates in science, new peer-reviewed agency guidance and new terminology, priorities, and direction including the recent EO 14096.

Some of the additions in the revision include how meaningful involvement can inform regulatory analysis, a discussion of new terminology and data reflecting EO 14096, a discussion of how differential monitoring compliance and enforcement can contribute to vulnerability, and a discussion of monitoring compliance and enforcement considering the different regulatory options as part of the environmental justice analysis. It also includes discussion on why some population groups are more vulnerable to climate change, the importance of considering multiple stressors, and an expanded section on investigating underlying heterogeneity as opposed to thinking about average effects such as the potential for hot spots both in the baseline and because of regulations. There's also an expanded section on presenting results.

She then briefly outlined the chapter-by-chapter revisions, which can be seen in the slide presentation in appendix B.

Regarding external engagement and review:

- Public comment closes January 15, 2024. The 60-day Tribal consultation period coincides with the public comment period.
- Informational webinars are scheduled for December 6, 2023, and December 12, 2023.
- A recording will be available on the website afterwards.
- The draft document and more information on the webinars can be found: https://www.epa.gov/environmental-economics/epa-draft-revision-technical-guidance-assessing-environmental-justice
- Science Advisory Board review is scheduled to begin by February.
- The draft document will be revised in response to all comments received and it will be released in late November 2024.

Cemelli de Aztlan asked what influence community members have to change things after the NEPA process begins.

Victoria Arroyo said the public process includes public comment on the draft documents as well as the EPA federal family comments that are often aimed at strengthening these aspects of the review. She said NEPA is a statute that requires agencies to consider what these implications are. It doesn't necessarily affect the outcome of the decision, but it can. She said if you look at the implications of

the actions and investigate alternatives that are less onerous, for example, to local communities or from a climate or environmental justice perspective, they are required to justify pursuing one approach versus another, and this can be used in litigation to try to change the outcomes, as they've seen in a lot of major cases over the years.

Paula Flores-Gregg said EPA will schedule time to talk further with Victoria Arroyo and Cemelli de Aztlan.

Jill Lindsey Harrison said robust environmental justice analysis has not been a typical part of rulemaking efforts. She asked Ann Wolverton how they can ensure that rule writers meaningfully practice the steps recommended in the environmental justice technical guidance. She also asked how the agency plans to provide oversight on the extent to which rules are taking environmental justice seriously, given the goal is to change the ways rules are written in order to change material conditions on the ground.

Ann Wolverton said that within the technical guidance, they don't address the process other than emphasizing the need to have solid analysis early in the process to inform various steps of the decision-making process, as opposed to being conducted at the end when decisions have already been made. She said there's a distinct guidance document about where and how the environmental justice analysis enters that process. There are also many internal activities within EPA to ensure the analysis can robustly inform those discussions when they happen.

Victoria Arroyo said the question about whether people will really internalize this guidance is good. She said this is her third time at EPA and she's never seen what she's seen in the last three years in terms of the leadership, particularly EPA Administrator Michael S. Reagan. Her colleagues across the agency are really asking questions related to environmental justice in briefings. People are using the best available science to determine what the monitoring at some of these locations is showing.

Victoria Arroyo added that they're actively engaged in conversation at every level, from the action development process, which is where their rules go through, through the workgroup stage, all the way up to briefing with the administrator. If there's a range of options, she said they're making sure that people who are the most vulnerable and are also often the most exposed to a variety of environmental and other stressors are protected by the regulations they are creating and approving.

Jill Lindsey Harrison said she was heartened to hear this and would like to see a concrete, formal plan for providing oversight over the rule-writing process for the integration of environmental justice.

Andy Kricun offered a scenario in which there's a limitation on what EPA can do, yet there's perhaps an opportunity for another federal agency, or another EPA entity such as the Office of Civil Rights (OCR), to assist. He asked if there's some way to bring them into the work to provide more protection if EPA's ability to do so is limited.

Victoria Arroyo said some of the tools they've created and advanced, like the Environmental Justice Screen, are available to everybody, including other agencies.

Sofia Owen said she wants to ensure accountability. She suggested to the extent possible a process to ensure accountability is incorporated into strategic plans and other documents. She also asked how federal rulemaking will or could impact processes on the state level, where EPA delegates tasks to the states and tribes.

Ann Wolverton said she assumed the comments were related to the environmental justice technical guidelines and said this could evolve; they've had a lot of discussion on it in the past. They have determined this guidance document does not necessarily apply to state implementation plans; it's geared to federal-level rulemaking and decision making. She said they post the guidance publicly and the technical assistance can be a resource for others on how to approach environmental justice analysis.

## Finance & Investments Recommendations Progress Report

**Jacob Burney |** Division Director, Environmental Justice Grants, Office of Environmental Justice and External Civil Rights, U.S. EPA

Jacob Burney explained his presentation is on the Finance & Investments recommendations progress report based on the December 29, 2022, letter with recommendations provided by NEJAC members. He said his presentation will focus from the perspective of the OEJECR, so he doesn't have purview over some of the other grant programs such as the Greenhouse Gas Reduction Fund, climate pollution reduction grants, etc. They are, however, working and collaborating with those other national programs and new national grant opportunities.

Jacob Burney's slide presentation (see appendix B) depicted four steps in the Environmental & Climate Justice Communities Grant Program: assessment, planning and project development, pilots and partnerships, and implementation.

Step one includes fundamental technical assistance and Jacob Burney explained the TCTACs are taking requests and providing technical assistance to communities and community-based organizations (CBOs). He said the TCTACs are the front door entry point for communities who are just getting started, who don't know where to go and are looking for direction on how to write better grants, comply with grant regulations, and build partnerships.

Accessible financial assistance comes under step two, and Jacob explained the environmental justice Thriving Communities Grantmakers will issue thousands of subgrants over the next three years. Selections for these grants were to be announced in December 2023, awards are to be made in the spring of 2024, and grantmakers will make the subgrants available to communities by the summer of 2024. Project activities that communities apply for and use this funding for are capacity building, technical expertise, addressing assessment, activities, water and air sampling, building collaborations and partnerships locally, doing research and outreach, and building sustainability within their communities. They are starting to do a lot of the technical work and planning related to community revitalization plans, blueprints, engineering specifications, etc. So, the grantmakers are providing accessible financial assistance while the TCTACs are providing the fundamental technical assistance. If a community applied and their application doesn't score very well, the grantmaker will be able to refer that applicant to the TCTAC serving that region to get technical assistance to increase the capacity and strengths of their application.

Legacy environmental justice grant programs are part of step three and are an opportunity for community-based nonprofit and grassroots organizations to manage federal funding directly. In October 2023, 186 environmental justice grant recipients were selected to receive $128 million collectively. Jacob Burney said his office has never awarded this number and amount of grants at any other time. They're looking for the selectees to receive their awards by spring 2024.

Step four is expected to fund catalytic, transformational implementation projects. Community change grants for $2 billion in IRA funds were released in November 2023. There are rolling application deadlines, and each award is for up to $20 million for a three-year project. EPA is looking to fund projects that tackle green infrastructure implementation construction projects, community revitalization, pollution remediation, green workforce development, and a plethora of other projects.

Jacob Burney then outlined the calendar of funding opportunities and application information.

In defining investments and benefits in environmental justice communities, Jacob Burney explained the OEJECR, and the Office of the Chief Financial Officer are collaborating on a pilot to standardize EPA grantee performance reporting questions, terms, and definitions that they could possibly use throughout EPA. He explained that in environmental justice grants programs they want their projects and funding to focus on the community resident and anything the project can do to enhance their enjoyment and the status of the situation they're in as they relate to environmental justice. This is true for both the communities to benefit from the project as well as the project partners, who receive technical assistance.

Regarding prioritizing investments and benefits in environmental justice communities, Jacob Burney highlighted the grantmakers and communities change grants priorities for investments and benefits which includes the following:

- Each grantmaker application had to prioritize and put forth a plan to ensure that community leaders and environmental justice champions drove the structure of how they were designing the grantmaker and are key to the evaluation and the evaluation criteria they will use to evaluate any sub grant application they receive.
- Projects must include plans for enhancing economic prosperity of current community residents while minimizing risks of area investment.
- Target areas include workforce development programs for occupations that reduce gas emissions as well as air pollutants.
- There's a statutory requirement for community-based nonprofit partnerships and any IRA-funded programs that calls for a CBO to either be a lead recipient or they must receive a sub award from a lead recipient or a lead applicant. So, if a local government or higher education institution or a tribal government is looking to apply for a community change grant or to be a grantmaker or to get an environmental justice problem-solving or government-to-government award, they must partner with a community-based nonprofit organization. The office is looking to maximize the amount of funding going to grassroots groups and community based nonprofit organizations.
- Jacob Burney said he was happy to report his office was able to include a 20% indirect cost limitation and 80% minimum pass-through requirement with the community grants notice

of funding opportunity (NOFO), something the NEJAC and the public has requested to ensure most of the funding goes to communities.

To distribute the investments and benefits in environmental justice communities, Jacob Burney said the TCTACs and grantmakers are the foundation, providing and prioritizing fundamental technical assistance to those most in need. He said his office continues to work with other EPA offices, such as the Office of General Counsel and the Office of Grants and Debarment and other national programs to determine EPA national program environmental justice criteria they wanted included in their grant solicitations. He said they continue to work on this criterion. One of their long-term goals is to track the outcomes and the meaningful impact of their different engagements, including long-term tracking of outcomes and impacts. The TCTACs, which are five-year projects, will help inform this tracking capability. He outlined some of the outcomes they're tracking, including the number of: TA requests received, recipients, equitable outreach activities, successful grant completions, as well as leveraging for additional community funding, long-term sustainability planning, and total federal funding (direct recipient and pass-through) being managed directly by CBOs.

Jacob Burney said his staff and TCTACs are currently working to develop a knowledge management system that will include geospatial capability that will allow them to track the environmental justice grants geospatially to illustrate where the benefits are going.

For more information on the EPA Inflation Reduction Act Community Change Grants, visit https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

For more information on EPA Inflation Reduction Act Community Change Grants technical assistance visit https://www.epa.gov/inflation-reduction-act/community-change-grants-technical-assistance

April Karen Baptiste asked how many pass-through organizations there are and how many per region. She also asked if there are progress reports the TCTACs will submit for their five-year projects. She wanted to know what would happen, for instance, if a TCTAC does not perform well in terms of active outreach. She said she liked the geospatial tracking of grants and their benefits he talked about and said it was something that her former chair of the Finance & Investment Workgroup really wanted to see.

Jacob Burney said each of the TCTACs are required to submit quarterly progress reports. The TCTACs are also incrementally funded, and they can hold back an increment if a particular TCTAC isn't performing well. Once they have a correction plan in place, they can receive additional incremental funding.

Responding to the question about the grantmakers, Jacob Burney said they hope to have at least one grantmaker and one TCTAC per EPA region. They would also like to have one or more national grantmakers to provide coordination and support because of the very complicated nature of tracking thousands of sub grants collectively over the next three years for those grantmakers.

Ayako Nagano said she was heartened by all the available funding, and while she knows Justice40 isn't an EPA initiative, she asked if the definitions and tracking mechanisms in the presentation intersected with it. She also asked if the tracking data was public.

Jacob Burney said for the knowledge management system, they're looking to build out the geospatial data and to provide updated maps, specifically for their environmental justice grantees as soon as they can. They have a rudimentary environmental justice grant map on their website. They're hoping to get updated data through this knowledge management system and capability so it's more interactive and in better real time. He said they also want to highlight the actual project results as part of the map.

Jerome Shabazz said it's clear that Jacob Burney's office is paying attention to what NEJAC members are saying about such topics as indirect costs, knowledge management, and geospatial tracking, all issues that the council had discussed. He had two questions. First, when he thinks about the larger projects like community change grants and having the community nonprofits as leads, is it an appropriate use of subawardees, for example, on the technical services, where these nonprofits may need technical design, engineering, or legal work? Is this allowable to structure that as a subaward or does it still have to go out to bid? Second, if these nonprofits are now going to be in demand, are they allowed to be on more than one application? Can they be a lead on one application and then subsequently be a partner in another?

Jacob Burney said that nonprofits seeking consultants must go to bid and comply with procurement regulations. He said that for collaborative problem solving, a singular CBO can be both a lead applicant on its own application as well as a partner on a different application. For community change grants, applying coalitions will have to put forth a conflict-of-interest mitigation plan that specifies how they will address this to ensure that somebody applying for one grant isn't looking to undercut somebody on another grant. Inevitably, with so many moving parts, there will be a conflict of interest.

Benjamin Pauli said he wants to ensure that, when tracking and measuring progress and benefit, results are not just a tally of how many people have been engaged by a TCTAC or by a CBO, but rather include feedback from the people who have been engaged on whether they have experienced some benefit. He said he hopes there are some robust requirements written about this.

Jacob Burney responded that for the TCTACs, they had to specifically describe their feedback mechanism. They had to explain how they were looking to get feedback from anybody that requested technical assistance from them or received technical assistance from them and how they could incorporate that feedback to bolster the technical assistance that they put forth throughout the project period. They will be looking to do something similar in OEJECR.

Loren Hopkins asked Jacob Burney to address possible conflict of interest regarding selection of the projects on the grantmakers. She also asked if there will be another Community Change Grant webinar since the registration for the next one is closed.

Jacob Burney said the webinar, which had a little more than 1,000 open slots, is full. They're looking to record the webinar and to have at least one webinar each month through the spring.

Michael Tilchin said the conflict-of-interest question was a bit more complex, so they'll follow up on that later.

Cemelli de Aztlan and Yvonka Hall asked questions about the TCTACs being accountable for their progress, if they can share their best practices, and how they are spending their funds. Yvonka Hall also asked if the TCTACs report quarterly and what their funding oversite is. She asked if they could come to a NEJAC meeting to tell members about their process. She also asked about popup nonprofits that have connections to the centers and how they can ensure they are not formed quickly and suddenly receive a lot of funding.

Jacob Burney reiterated that TCTACs report quarterly and are incrementally funded, and that funding could be held up until there's corrective action. In terms of popup nonprofits, especially with community change grants, the evaluation criterion builds in community strength and a link with the community to validate the length of a nonprofit's existence.

Paula Flores-Gregg reminded NEJAC members that if they needed to follow up with Jacob Burney, they could either schedule a session with him or send questions in writing.

## Per- and Polyfluoroalkyl Substances (PFAS) Recommendations Update

**David Cash** | Regional Administrator and Co-Chair, EPA Council on PFAS U.S. EPA
**Matt Klasen** | PFAS Council Manager, U.S. EPA

David Cash explained that in addition to serving as EPA's Region 1 administrator, he is also co-chair of EPA's PFAS Council. The council is a cross-agency group comprised of senior technical and policy leaders from across EPA's program and regional offices. The council leads the implementation of the PFAS Strategic Roadmap and their plan is to research, restrict, and remediate these "forever chemicals." David Cash began as co-chair in early 2023, soon after the NEJAC sent the PFAS recommendations to Administrator Regan.

New England was one of the first areas in the nation where the presence of PFAS was discovered. One of the critical areas of focus in the strategic roadmap is to empower meaningful action on behalf of all people who are impacted by these chemicals, regardless of their zip code or the color of their skin, particularly in communities that have been overburdened and are particularly vulnerable.

David Cash said EPA's priority on PFAS helps them understand how PFAS contamination may disproportionately impact communities already overburdened by a wide range of environmental hazards and contamination and what actions EPA or its partners can take.

David Cash said the NEJAC's recommendations from last December reinforce the urgency of their work. He thanked members for their thoughtful engagement and for the 34 recommendations they

gave to Administrator Regan. He said he appreciates how their recommendations have reinforced the structure and priorities of the PFAS Strategic Roadmap by calling out the research, restrict, and remediate framework. At the same time the NEJAC challenged them to build internal capacity for PFAS work, and to place increased focus on the other two Rs, responding to PFAS and providing resources to address PFAS in the areas of engagement and education.

David Cash said a critical initiative they undertook earlier this year harkens back to the NEJAC recommendation from 2019. The Council developed the PFAS Strategic Roadmap, which was released in October 2021. The roadmap is a strategic, EPA-wide approach to protect public health and the environment from PFAS. The roadmap includes timelines for concrete actions from 2021 to 2024, fills a critical gap in federal leadership, supports state's ongoing efforts, and builds on the administration's commitment to restore scientific integrity.

He said they committed in the October 2021 PFAS roadmap to engage directly with the communities in each EPA region to see how PFAS contamination might impact their lives and livelihoods. Earlier this year, he said, they held a series of community engagement sessions in each of EPA's 10 regions to inform the implementation of the roadmap. Not surprisingly, they heard concerns about the lack of PFAS testing and monitoring, the critical importance of strengthening PFAS regulations and addressing PFAS as a class, and how PFAS pollution raises concerns about drinking water and groundwater. He said they will soon release their second annual public progress report on the PFAS Strategic Roadmap, which will demonstrate Administrator Regan's focus on institutionalizing EPA's commitment to PFAS as the workgroup recommended.

Matt Klasen said it was a great experience to work with members of the PFAS workgroup in 2021 and 2022 as they crafted the recommendations. He said they've provided some updates on their PFAS Strategic Roadmap and considerations to inform the group's final recommendations. He talked about the slides in his presentation (appendix B) and said they will give more detail than he can cover in the time allotted.

He provided a quick overview of the roadmap, explaining that PFAS are a large group of synthetic chemicals created by humans that have been around since the 1940s. They exist in many consumer products to create nonstick properties, fire resistance, and other attributes that can be found in firefighting foams. They are ubiquitous in the environment and create significant human health and environmental concerns for the specific PFAS they know the most about.

The roadmap builds on the focus of scientific integrity and works to ensure science-based decision making and prioritizes the protection of disadvantaged communities in the work they do.

After further detailing the EPA's framework in the strategic roadmap—research, restrict, and remediate—Matt Klasen noted some key EPA PFAS accomplishments since December 2022. These include proposing a National Primary Drinking Water Regulation for six PFAS, finalizing rules to enhance PFAS data reporting, releasing a final plan for restricting PFAS discharges to waterways, continuing to distribute $10 billion in funding to address emerging contaminants in water, expanding the scientific understanding of PFAS and translating the latest science into EPA's efforts, proactively using enforcement tools to identify and address PFAS releases, and engaging with federal and state partners and the public.

The NEJAC had recommended adding to the research, restrict and remediate framework by adding "internal capacity" to the remediate goals and by adding "respond" and "resources." Respond, they recommended, would be emergency and community based. Resources would include engagement and education.

NEJAC added a strong recommendation that EPA ensure it has the internal capacity to implement the commitments in its PFAS roadmap. In response to enhancing internal capacity, they institutionalized and continued to convene the EPA Council on PFAS that was created in April 2021, identified lead internal PFAS points of contact for each EPA region, requested addition PFAS resources in the fiscal year 2023 president's budget, strengthened connections with federal partners through the Interagency Policy Committee on PFAS, and will soon present the second annual PFAS Strategic Roadmap public progress report.

Matt Klasen also outlined numerous key NEJAC recommendations and actions that resulted:

### Recommendations that fall under Research

**Recommendation:** Improve understanding of PFAS in small water systems and for EJ communities.
**Action:** Began nationwide drinking water monitoring. Data will help EPA better understand potential disproportionate impacts on communities with EJ concerns.

**Recommendation**: Assess and address PFAS air pollution.
**Action:** Proposed additional data collection.
**Action:** Advanced their understanding of PFAS air pollution through a variety of methods.

**Recommendation:** Sample and track PFAS in wastewater and in biosolids.
**Action:** Sent guidance to states recommending PFAS monitoring in Clean Water Act permits and steps to reduce the levels of PFAS entering wastewater and stormwater systems.
**Action:** Announced new nationwide study of PFAS entering publicly owned treatment works.

**Recommendation:** Convene and consult with state experts.
**Action:** Ongoing coordination with state partners.

### Recommendations that fall under Restrict

**Recommendation:** Enact a moratorium on approving new PFAS for use in environmental justice communities.
**Action:** Released a framework to guide review of new PFAS.

**Recommendation:** Regulate PFAS as a class rather than individually.
**Action:** Continued progress implementing EPA's category based National PFAS Testing Strategy.

**Action:** Proposed to regulate mixtures of four PFAS in EPA's proposed national drinking water regulation.

**Recommendation:** Curb industry discharges by enforcing effluent limitations guidelines (ELGs),
**Action:** Continued progress developing ELGs for PFAS manufacturing and metal finishing and new rulemaking to address PFAS in landfill leachate.

**Recommendation:** Disallow PFAS-containing aqueous film-forming foam (firefighting foam) in environmental justice communities.
**Action:** Coordinating with the Department of Defense and the Federal Aviation Administration as they transition to fluorine-free firefighting foam.

### Recommendations that fall under Remediate

**Recommendation:** Create a list of priority communities exposed to PFAS.
**Action:** EPA publicly released and is regularly updating PFAS Analytic Tools that compile and integrate data on the manufacture, release, and occurrence of PFAS in communities.

**Recommendation:** Prioritize accountability for PFAS manufacturers to address contamination in overburdened EJ communities.
**Action:** EPA's FY24–27 National Enforcement and Compliance initiatives aim to protect vulnerable and overburdened communities.

**Recommendation:** Assess and improve support for infrastructure.
**Action:** Continue distributing $10 billion under the Bipartisan Infrastructure Law to address PFAS and other contaminants in water, especially in small or disadvantaged communities.

Another NEJAC recommendation was to improve the EJSCREEN tool by connecting it to PFAS information. EPA has improved and updated the screen in the analytic tools released in January. Matt Klasen said he knows these analytic tools are just the first step, but EPA believes they are critical in enabling communities across the country to better understand what we know and what we don't know about PFAS from a demographic perspective.

Concluding his presentation, Matt Klasen said that while they have made great strides in researching, restricting, and remediating the environmental justice impact of PFAS, there is still much to be done.

Jerome Shabazz asked how far upstream the analytical tool goes when looking at PFAS, adding by the time PFAS hit the community, there is already a great deal of damage and contamination in the waterways. He asked if the tool addresses the manufacturing process.

Matt Klasen said EPA's tools are primarily focused on the laws and authorities the agency has, so their focus is on better understanding the potential for environmental contamination associated with PFAS, including as far upstream as you could get to the production of these chemicals, such as manufacturing facilities. EPA does not regulate PFAS in consumer products. They do go upstream to identify either known sources or potential industrial sources of PFAS. In addition, they also go to the other side of the lifecycle, to contaminated sites, for example, places where PFAS were used, disposed of, or destroyed.

Jacqueline Shirley asked if there's been any pushback from other agencies or policymakers or states about how aggressive the EPA might be in ensuring the PFAS policies, and regulations are forever because PFAS will be here forever.

Matt Klasen said they get many questions on the regulatory actions they are taking on PFAS. He said they are working closely with other federal agencies, and they remain focused on addressing these chemicals and achieving the outcomes they identified. He says they know more than they did a few years ago about the critical ways in which PFAS are used in the economy and in particular products. He said they are founded on protecting the human environment and human health from these chemicals, not only cleaning up the contamination where we know it already exists, but also, as Jacqueline Shirley alluded, to recognizing the forever nature of these chemicals, to focus on getting upstream of the problem and preventing them in the first place.

Ayako Nagano asked about banning PFAS from food packaging and clothing and noted they keep showing up in food, such as through non-stick food ware and disposable microwavable food packaging that still has PFAS in it. She asked what agencies they should be looking at if not the EPA to address this.

Matt Klasen said the Toxic Substances Control Act, the primary law at EPA for reviewing new chemicals before they enter commerce, was only strengthened in 2016 to give them authority to approve or ban new chemicals entering commerce. He said the Food and Drug Administration (FDA) and the USDA are more squarely in the regulatory role with respect to PFAS in food. He said they are coordinating very closely with other agencies on these issues.

David Cash said farmers, particularly dairy farmers, discovered that PFAS were in milk and there was a lot of concern about how that happened. It came from what was thought of as the sustainable practice of using sludge from wastewater treatment to put on agricultural fields. It seemed like a great way to reduce this material. It turns out there was a lot of PFAS in that. They are now working very closely with states to develop regulations and practices that will keep PFAS out of the sludge, or the sludge off the fields, so it doesn't go into the food chain, as well.

Benjamin Pauli said as one of the co-chairs of the PFAS workgroup he greatly appreciates the robust update, adding some group members had feared they would not be able to make recommendations that had much of an impact given all the work that was already underway. He looks forward to seeing the fuller update.

Matt Klasen talked about two additional areas the workgroup had recommended: respond and resources. Regarding respond, he said EPA is coordinating more closely with federal partners. Regarding issues that had arisen in Maine and other states recently, he said they are learning a lot from USDA and FDA. EPA also learned a lot from the local government advisory committee. They did a tabletop exercise on discovering PFAS in communities and addressing challenges and developing the resources and communication tools for those communities.

Matt Klasen further explained that they are excited in early 2024 in terms of the financing and ability to act and make progress toward designations on hazardous substances for PFAS. There is a new focus on a national enforcement and compliance initiative announced by the Office of Enforcement and Compliance Assurance to make this an ongoing EPA PFAS priority in the enforcement and compliance program until 2027.

David Cash said in the resources area, there are several funding opportunities. Last week they announced the $2 billion in environmental justice grants going out and PFAS is an area where communities can attempt to get federal funding that can address this issue beyond what the states are doing or beyond what the water utilities are doing.

David Cash added each EPA region has growing and robust environmental justice staff. In Region 1, for instance, they increased from a staff of one to a dozen.

## Air Quality and Community Monitoring Recommendations Update

**Chet Wayland** | Director, Office of Air and Radiation, Office of Air Quality Planning Standards, Air Quality Assessment Division, U.S. EPA
**Tanya Abrahamian** | Office of Air and Radiation, Office of Air Quality Planning Standards, Air Quality Assessment Division, U.S. EPA
**Erika Sasser** | Office of Air and Radiation, Office of Air Quality Planning Standards, Health and Environmental Division, U.S. EPA
**Trish Koman** | Senior National EJ Coordinator/Scientist, Office of Air and Radiation, Office of Air Policy and Program Support, U.S. EPA

John Shoaff, director of the Office of Air Policy and Program Support (OAPS) in the Office of Air and Radiation, thanked the workgroup for their recommendations.

Chet Wayland began by discussing slide 3 (see presentation, appendix B), which addresses monitoring and the EPA's broad response to it. He said it's not just about the monitoring itself, but also about how we communicate and interpret risk; how the data play into permitting and other things down the road.

He said they wanted to address monitoring sequentially because there are several aspects to monitoring. One of the first issues is if they can distribute the resources to do community-based monitoring so communities know what they are collecting and where they need to monitor.

Chet Wayland said that, once they are set up and monitoring, the quality of the data really matters. And once they have data from the monitoring, how do they share it? He said there are obviously back-end pieces such as how they act on the data.

Chet Wayland said in 2023 the EPA put over $50 million in community-based grants for air quality monitoring; about 130 different grants were awarded and many of them are currently underway, with some being further along than others.

In addition, the OEJ has $2 billion in community monitoring grants being awarded. They are using some of the resources at the American Rescue Plan and IRA to enhance existing regulatory monitoring networks.

Once the available resources and monitoring are in place, quality is essential, he said. One of the questions that people ask frequently is how good is the data? Is it representative of what's going on in the community? He noted that while EPA has established regulations for ambient air monitoring

programs, methods for identifying and addressing issues with sensor data are still under development. In recognition of this need, EPA hosted an Air Sensors Quality Assurance Workshop that was open to the public in July 2023. About 700 people attended the workshop virtually and in person and they talked about quality assurance and community-based monitoring. Chet Wayland said EPA plans to hold another workshop based on this one's success. He noted the focus was on community-based monitoring and not the general quality assurance and quality control that goes along with their regulatory networks.

The EPA has been trying for years to develop data standards for community-based monitoring programs that would be different from the regulatory standards. In at least two instances they have failed, Chet Wayland said. He explained this is partly because they're trying to look at things from an EPA and regulatory lens, which often have additional requirements which weren't helpful. They then sought assistance from the Denver Love My Air program, a grassroots program to collect air quality data from low-cost sensors and to exchange and share the data with others. EPA felt the best way to develop data standards was to go somewhere local where they have successfully developed a simpler platform of data standards that can be used to share community-based data. They're presenting a prototype of it and if that goes well and the air quality data exchange format is something that can be made available to anybody to share data across the platform, they will make it available. They are trying to do this sequentially: get the resources, ensure they have quality information, and determine how to share the data. They're also working on determining what to do with the information once they have the data. They also want to ascertain how to mitigate environmental problems in these communities.

Chet Wayland said this is not complete, but they've made good progress, and he will be happy to come back to NEJAC to report progress.

Erika Sasser addressed some of the other issues that came up in the Air Quality & Community Monitoring Workgroup (AQCM) recommendations. Several themes in the recommendations, she said, went beyond data infrastructure to focus more on public and at-risk communication. She said EPA has long recognized that risk communication is fundamental to their work, and in the past five years there's been a concerted effort to make investments in this area. These have included:

- The addition of a Senior Risk Communication Advisor in the Administrator's office who had worked with a framework called the SALT Framework (strategy, action, learning, and tools). This framework is the backbone of the way in which they are teaching staff to work with communities and to communicate about difficult, complicated issues in a way that is accessible and addresses community concerns and needs.
- Making investments in some key tools and ways of making data more accessible to public audiences. For instance, they have a tool called AirTox, that is a new air toxic screening assessment tool. This tool builds upon a previous tool but, from a community perspective, AirTox provides more routine updates that could be both provided at a higher degree of geographic resolution and with more frequent updates.
- They have a tool called NEXUS that is being used with regional offices and has not been rolled out to the public. It is designed to look at the overlap of fine particles, ozone, and air toxins, and to help people understand where the risks are in their communities and the

sources of those risks. NEXUS includes some mapping and demographic information and overlaps with EJScreen and CEJST.

- Erika Sasser talked about the EPA's Air Trends page, which is a web page with graphics that make information about air quality trends and monitoring more accessible to public audiences. The Air Trends Report on the page is put out every year and has been a success in providing a snapshot of our progress on air quality programs.
- Regarding environmental justice analysis in her regulatory program, Erika Sasser said many regulations come out of her office and they are committed to develop tailored approaches for each of the regulations so it is clear what the impact, or potential impact of a regulatory proposal, or final action might be. They're also working to incorporate cumulative air pollution impacts. She provided a resource, EPA Technical Guidance for Assessing Environmental Justice in Regulatory Analysis. She explained there are different types of analysis for different types of problems that they use in their approach to evaluate a regulation.
- In March of 2022, the office conducted the first of what they call air cumulative risk evaluations. In the context of the chemical sector rule proposal, also known as the Hazardous Organic National Emission Standards for Hazardous Air Pollutants (HON), or the chemical sector air toxins regulation, they looked at what level of risk is associated with a source category. They can also look at the risk for the entire facility at which the source might be located, or what the community scale risk is. Increasingly they are looking beyond the source category to the entire community, which is an innovative assessment, Erika Sasser said.

Regarding some of the ongoing challenges the office experiences, Erika Sasser said obtaining data below the state level can be difficult. This might include zip code-level information on public health like hospitalizations or asthma incidence rates. Other challenges include the volume and complexity of air quality information and the technical complexity of data analysis and visualization tools.

Tanya Abrahamian talked about the principles for addressing environmental justice in air permitting. She said EPA released the EJ and Air Permitting Principals document to provide a framework of principles and practices to help EPA regions promote environmental justice and equity through air permitting programs. This document was developed by a Region 5-led workgroup. The audience is primarily the regions, and they are encouraged to work collaboratively with state, local, and tribal permitting authorities to adopt similar principles to the eight that were developed by the workgroup. (See slide presentation, appendix B).

Chet Wayland concluded the presentation by saying his team is making progress in implementing some of the NEJAC's recommendations, which cover many different areas of their office.

Loren Hopkins asked if NEJAC members will be able to see NEXUS. Loren Hopkins also asked for clarification on the data quality guidelines for community-based monitoring. Regarding guidance for states, she asked if their office is tracking the implementation of best practices across states and regions so they can be shared.

Chet Wayland responded to the NEXUS question by saying a journal article will soon come out on the tool. He also said they probably have a little more work to do internally but the goal is to eventually make this public, likely in the next months.

Regarding quality standards, Chet Wayland clarified that they sought a simpler format that makes it easier for people to document the data versus using something that has 60 data elements like the regulatory data standards have. This simplified structure does not have any bearing on the quality of the data.

Tanya Abrahamian said they are internally tracking where EPA has commented on permits and on states that have implemented more robust environmental justice programs for the permitting process. The environmental justice and air permitting document also reference the need to incorporate the experience and insight gained. She said they're cognizant that there is a patchwork out there when it comes to implementing environmental justice in permitting.

Sandra Maria Bonilla asked if the EPA provides communities with training and assistance in identifying a new indicator of risk that has a growing body of scientific information that is showing a disparity. Ericka Sasser says they probably don't. However, they will have training they could offer on how to approach new indicators or new environmental phenomena that might be observed. She said she'd be happy to follow up offline with Sandra Maria Bonilla.

## EPA Region 2 Follow-Up from the Puerto Rico NEJAC Public Meeting

**Lisa Garcia** | Regional Administrator, Region 2, U.S. EPA

Lisa Garcia thanked NEJAC members who attended the July meeting in San Juan, Puerto Rico, saying they had fruitful conversations. She said the Caribbean EPA division has been working hard on following up on the Administrator's July 2022 Journey to Justice trip. They have been trying to ensure they address concerns around health impacts from power plants and the electric grid and a lot of clean drinking water issues, particularly in the rural areas. She credited NEJAC with making sure funding is getting out to the communities in Puerto Rico and in the U.S. Virgin Islands.

Lisa Garcia spoke about fossil fuel generation in the San Juan Bay area in response to concerns shared by individuals and organizations who met with the Cumulative Impact Framework Workgroup after the public meeting.

Lisa Garcia explained approximately 17 mobile generators have been or are in the process of being installed and operated in the San Juan Bay area. There are two generator facilities, Palo Seco and San Juan Bay, for a total of 350–450 megawatts. A lot of this work is done under FEMA, who responded to the hurricane emergency in Puerto Rico. The U.S. Army Corps of Engineers (USACE) is also doing some of the work.

Lisa Garcia explained that after many natural disasters, including most recently Hurricane Fiona in 2022 in Puerto Rico, the electric grid was on the verge of collapse. Puerto Rico Governor Pedro Pierluisi requested emergency federal assistance on October 12, 2022. President Biden ordered the federal agencies to work together to form a task force to ensure the stabilization of the grid. FEMA led the workgroup with the DOE and the USACE. After consultation with the EPA, FEMA installed

the temporary power generators at the two sites. A variety of federal agencies entered into the Federal Facilities Compliance Agreement (FFCA). The FFCA was executed in January 2023 with FEMA and EPA. Its purpose was to enable FEMA to operate temporary generators while still complying with the Clean Air Act (CAA). EPA would ensure the CAA regulations were implemented and the EPA would provide timelines for analysis and testing results to be provided to the agency.

Lisa Garcia said NEJAC had concerns with the temporary generators that were trying to meet the electrical needs in Puerto Rico. NEJAC is concerned that the EPA can ensure these generators are complying with the CAA. The first question in the NEJAC draft letter was if EPA can reconsider issuing permits for the generators. While the EPA did not issue permits, the FFCA did require compliance with the CAA. Lisa Garcia said they are now considering the analysis of their compliance with the CAA and will decide whether to issue the PSD permits.

Lisa Garcia said related to clean water, which was also questioned, on May 9, 2023, and July 10 of 2023, the EPA issued letters granting the Puerto Rico Electric Power Authority (PREPA) conditional approval to discharge from the temporary power generating units. The EPA required PREPA to notify the EPA before starting operations and to provide information to the local Department of Environmental Conservation, DNER, and EPA for development of any clean water certificate under the Clean Air Act, or section 401.

Lisa Garcia said the NEJAC was also concerned that EPA issued letters granting conditional approval to discharge into the San Juan Bay from the temporary generating units. The NEJAC also wanted EPA to closely scrutinize and regulate the temporary nature of the project and impose conditions and limitations to protect public health and the environment.

The temporary generators' use came under the FFCA agreement. In that agreement, EPA required FEMA to submit applications for a type of CCA permit called the Prevention of Significant Deterioration (PSD) for the generators on the two sites. In November of 2023, Genera PR LLC submitted these applications to the EPA as required under the FFCA temporary agreement and Lisa Garcia said they are reviewing the application. The EPA's proposed action on the PSD permit application would undergo a public comment period. Given the interest of the topic, she said they would likely provide a public hearing.

The current operator of the generation facilities, Genera, asked EPA to allow them to operate the temporary turbines at the two sites after FEMA's operation of them is scheduled to end on March 15, 2024, noting this is vital to avoid power outages on the island. The government of Puerto Rico also requested that this permission be extended beyond March 15, 2024. The issue is currently being reviewed.

Lisa Garcia noted some of the other concerns in the document: ensuring community outreach, that federal agencies talk with other federal agencies involved, and transparency. She said they are committed to working with FEMA to ensure that everyone is updated on these issues; her office will schedule public meetings, if necessary.

Jerome Shabazz asked if EPA can fully explore and support alternatives to the project, such as solar and other energy sources.

Lisa Garcia said she and a team met with the mayor of San Juan to talk about a solar project on an old landfall. They have been working with the government of Puerto Rico to apply for greenhouse gas reduction funds.

They also were in Puerto Rico after the NEJAC meeting there and worked with the Department of Energy to ensure there is funding for clean energy. Puerto Rico applied for Climate Pollution Reduction Funds.

Ayako Nagano said she heard that the way the infrastructure is being rebuilt is still susceptible to hurricanes because it uses power lines. She said she heard from the public in Puerto Rico that FEMA, ACE, and DOE are not listening to public feedback, and asked Lisa Garcia what she has observed.

Lisa Garcia said the work they have been doing with DOE is focused on making sure there is a transition to a clean energy economy. Hector Velez-Cruz said they are trying to make sure that the government at all levels knows of available funding. The goal is to be 100% renewable by 2050. EPA has also reached out to owners and operators of underused landfill, Superfund, and Brownfields sites in Puerto Rico that are being considered for possible solar projects.

Lisa Garcia said when they go to Puerto Rico, they go into communities, as has DOE. Lisa Garcia said she thinks the federal agencies' efforts on the ground has improved, but government doesn't move at the speed communities would like us to.

Jacqueline Shirley asked Lisa Garcia if she'd heard any comments from citizens of Puerto Rico about NEJAC members' visit and how they conducted themselves.

Lisa Garcia said her team worked very hard to showcase the true essence of Puerto Rico when planning for the meeting. She said citizens certainly felt the NEJAC members were embracing that and were willing to listen and to learn.

Joy Britt asked about the process to request the NEJAC's attention if they are experiencing environmental injustices.

Paula Flores-Gregg said they will bring the question to the next NEJAC meeting they have, where they decide where they will focus the rest of the year and next year.

Andy Kricun questioned the number of people in Puerto Rico who aren't connected to municipal water systems and experience sewage issues.

Lisa Garcia said following the Journey to Justice, she and others from EPA went to some rural Puerto Rico areas and discovered many communities not linked to municipal water systems. They then hired four ORISE fellows and tracked about 243 of these communities that may be able to connect to the municipal system or connected to another system. They are now working with partners to upgrade the water infrastructure in about 50 communities and are working to look at the other communities to determine their water needs and the possibilities for meeting them. She said they're also getting technical assistance from Syracuse University to help communities write their project plan.

Andres Febres said some communities don't want to connect to the municipal system; they want to depend on their own system. Lisa Garcia added some communities have a smaller system in place that may be family or community owned. Others may not want to link to the municipal system due to the costs. She said they're trying to be mindful of what communities need and what they desire.

Andy Kricun asked if there could be a robust drinking water testing program put in place to protect the people in these communities. Lisa Garcia said she thinks they have to monitor and comply with the department of health and CWA regulations but said they will send a better explanation of that process.

## Office of Land and Emergency Management (OLEM) Environmental Justice Activities Update

**Clifford Villa** | Deputy Assistant Administrator, Office of Land and Emergency Management, U.S. EPA

Mike Tilchin explained Clifford Villa oversees the major land waste management programs, including Superfund, Brownfields, hazardous waste management, underground storage tanks and the cleanup of federal facilities and emergency response. He had a 20-year career as an EPA attorney in multiple regions and has published extensively on environmental justice.

Clifford Villa said he would like to talk about OLEM and to get insight into how they can do what they do better to serve their communities.

Clifford Villa said his office is doing a lot of work from the EJ Action Plan, produced by his office last year. He said they're also working on many cumulative impacts. He said they've learned a lot about lead toxicity of the last 20 years and the guidance is behind in terms of incorporating science, something they're working to rectify.

They're working on regulations to make safer industrial communities to prevent chemical accidents under their risk management program. For the first time, they're considering the cumulative impacts. They have extra protection when there are concentrations of industrial facilities near communities.

Clifford Villa said they know there's a lot of concern about PFAS across the board and agency and his office is working on numerous regulations to address PFAS. They've gone to public comments on the PFAS rule and they're working to complete it. They're also working on addressing coal ash and some rules have been through public comments.

He said a new rule was approved after the 2010 concern about chemical dispersants being used to break up oil in the marine environment. They finalized a rule earlier this year that limits the kinds of dispersants that might be used and how they can be applied.

The EPA received new funding through the Bipartisan Infrastructure Law and OLEM received $5.4 billion in addition to its regular appropriation to address concerns for environmental justice communities. His office specifically received an extra $3.5 billion to accelerate cleanup on Superfund sites, which they're doing. In fact, he said, they've been moving $1 billion a year for the

last two years and are about to announce sites selected for the next round of funding, which will accelerate cleanup. They've cleared a backlog of cleanup sites.

His office received $1.5 billion to accelerate work under the Brownfields program and they have a Brownfields job training grant. He said graduates have come from many places and they are receiving licenses and certifications and coming back to the communities to work. They'll soon announce the next round of grants.

Earlier this year they announced more Brownfields grants and more funding than ever in EPA history, $315 million. Admittedly, he said they still have challenges as to where the money goes. He said they're excited about the TCTACs that can help communities with grant applications, which will help the funding go where it is needed.

His office provides funding to deal with underground storage tanks that are often located in communities of color and communities with people with low income and less than high school education.

Clifford Villa said he was born and raised in New Mexico, which in 2022 had the worst fires in their recorded history. He learned that many people in northern New Mexico depend on subsistence hunting to get through the winter. And they had freezers full of meat when the fires hit, and they lost them in the fires. These losses were not covered by FEMA. He said we must think how people live and adjust accordingly.

He said he went to Maui to see the cleanup after the horrific fires there. Cleanup crews went out every morning to clean parcels impacted by the fire, and the EPA had cultural monitors from the local native Hawaii community that went ahead of us to make sure the work was completed responsibly. They were paid for their service, and they taught staff a lot about mental health and resilience.

Clifford Villa talked about the RSR Corporation Superfund site, a lead smelter in West Dallas that is a significant part of the history and origin of environmental justice. The community was impacted by lead contamination in the 1970s and 1980s and it's been redeveloped and used for affordable housing, educational facilities, and recreational amenities and provides new opportunities for businesses and jobs.

Ximena Cruz Cuevas asked if there is money to pay for cleanup sites or to close them out, particularly old sites, if the people who own the site don't have it. Clifford Villa said there are many resources available, and he believes the Brownfields program also funds assessment and cleanup. He said they provide block grants for states to provide funding directly, adding we should never put the burden on community members, themselves.

In addition, Brownfields funding and the Bipartisan Infrastructure Law don't require a community match, which had been prohibitive. Clifford Villa said he was meeting with a TCTAC person to determine how those providing assistance plan to connect people and communities to funding.

Jerome Shabazz asked if Brownfields resources are allocated to develop a cleanup site.

Clifford Villa says they used to have a dedicated program for something like land use planning under Brownfields; they can and do still use Brownfields funding for planning. However, the reuse of a cleanup site depends on community members and organizations putting together a proposal to address that. He noted they have technical assistance for Brownfields. He said there's another round of Brownfields funding coming out and they have a couple more years of funding under the Bipartisan Infrastructure Law.

Na'Taki Osborne Jelks said she lives in the community near the West Side Lead Removal project in Atlanta and she said there's public concern about trees being taken down as part of the remediation and they're not being replaced, which has increased flooding. Extreme heat is also a concern. She asked if the agency looks at unintended consequences of remediation.

Clifford Villa said it may be worth developing a policy or a letter reminding cleanup contractors and EPA staff how important it is to consider the impact of cleanup work.

## Water Infrastructure Technical Assistance Recommendations Progress Report

**Jennifer L. McLain** | Director, Office of Ground Water and Drinking Water, Office of Water, U.S. EPA
**Ellen Tarquinio** | Director, Water Infrastructure and Resiliency Finance Center, Office of Water, U.S. EPA
**Sheyda Esnaashari** | Senior Technical Assistance Specialist, Office of Water, U.S. EPA
**Trish Koman** | Senior National EJ Coordinator/Scientist, Office of Air and Radiation, Office of Air Policy and Program Support, U.S. EPA [is she really here?]
**Morgan Brown** | Senior Technical Assistance Specialist, Office of Water

Jennifer L. McLain said they appreciated the 80 recommendations the Water Infrastructure Technical Assistance Workgroup provided in August 2023. Their progress report covers the major recommendation themes that are priorities across the Office of Water's Water TA program. She said they plan to provide a formal response to the recommendations at the spring NEJAC meeting.

Ellen Tarquinio said there are a lot of water infrastructure challenges and there needs to be more funding to address them. She said 2.2 million people in the U.S. lack basic running water and indoor plumbing in their homes. The Bipartisan Infrastructure Law provides substantial funding for water infrastructure, and they've been able to increase the water TA services to address ongoing community needs. (See slides in appendix B.)

Morgan Brown said the themes running through the workgroup's recommendations that they are prioritizing include improving accountability and transparency. To foster more peer-to-peer engagement, they held a summit with a majority of water team coordinators. One of the workgroup recommendations was to establish a user-friendly, centralized TA website. They've tried to make it more user friendly and reduce the number of clicks people needed to get the information they wanted. The revised site also provides stories on how communities are successfully working on their water issues. They are continually working on the website: https://www.epa.gov/water-infrastructure/water-technical-assistance-waterta

Morgan Brown said they're trying to expand their outreach to communities in need. For instance, they had a webinar about the opportunities of water TA for communities in July and more are

planned. They continue to work on the workgroup recommendation to determine where the bottlenecks are in the information sharing and exchange between EPA and communities.

Sheyda Esnaashari talked about a NEJAC theme in their recommendations: actualizing community-centered TA values and approaches. She discussed how EPA is committed to culturally competent and community-centered water TA. She said NEJAC recommendations called for engaging and involving communities and ensuring members of the community are key participants in identifying needs and developing solutions to their water issues.

She talked about increasing coordination between EPA OW TA programs, OEJECR TA, regions and states. She outlined key NEJAC recommendations in this area: to encourage states to simplify the SRF application process and to improve the capacity and learning across TA providers to create peer-to-peer engagement.

Jacqueline Shirley said the water workforce is going to be a critical issue, not just water operators but also meter readers, water board members, bookkeepers, and other workers in the water sector. She asked what the EPA plans to do about it.

Ellen Tarquinio agreed it will be a big challenge, particularly for small, underserved communities.

Jennifer L. McLain said they agree, workforce will be a significant challenge. EPA is implementing a new initiative to support the water workforce and to ensure they're talking about it in the communities.

Morgan Brown said several of the recommendations the workgroup provided call for building out the technical and managerial capacity and financial planning and to work with the communities to build applications to access federal funding.

Sheyda Esnaashari said the March 2023 Water TA Implementation memo that was signed by the assistant administrator is the office's guide to approaching water TA. She said staff works with their water TA provider to ensure they have the competence to conduct community engagement, build relationships in the communities in which they work, and to support water systems and build their own capacity to build relationships with the communities they serve.

Sheyda Esnaashari said they've also highlighted the guidance documents, manuals, and webinars accessible to stakeholders. She said some key NEJAC recommendations encouraged states to simplify their SRF application process but that each state has the authority to run it in their own way.

Jacqueline Shirley asked what initiatives or activities EPA is undertaking to address the workforce issues in the water sector.

Jennifer L. McLain said EPA is implementing a new program to support the water workforce and ensuring it's something they talk about in the communities. Morgan Brown added that the workgroup provided a number of recommendations regarding the workforce, and they will make sure they weave this throughout their technical assistance.

Na'Taki Osborne Jelks asked if there's any creative thinking on how they're working on environmental justice and if funding is reaching the overburdened and disadvantaged to help get them the help they need.

Sheyda Esnaashari said they've talked about the limitations of their jurisdiction and the importance of identifying opportunities for creative workarounds. Within their office, she said, they use the language "disadvantaged communities" as well as "underserved communities" and environmental justice communities to recognize their work should be touching not only state-defined disadvantaged communities, but those communities that have been unable to access the resource, regardless of whether they fit into the state definition of disadvantaged communities, which can have limitations of its own in that we can have parts of communities that are disadvantaged.

Jennifer L. McLain added that as they're thinking about this, they're also working through it. They're working with the state programs who are managing those funding programs to evaluate their definitions of disadvantaged communities as they are implementing the programs.

## Public Comment Period

**Kait Marano** | Public Commenter, said she's concerned with the CEJST. In working with communities in coastal Georgia, she said they found the methodology may result in smaller communities being overlooked and unable to access the benefits of the Justice40 funding. The tool, she said, relies on data aggregated at the census track level and the approach, while well intentioned, creates a significant blind spot and fails to account for the diversity of communities within these statistical areas. As a result, smaller, overburdened communities may find themselves overlooked again.

She said she'd like the NEJAC to consider communities struggling with gentrification and encroaching development pressures whose long-term residents face inadequate infrastructure, limited access to health care, and continued exposure to pollution. They may get lost in the broader statistics of the track and the tract as a whole may not be identified as disadvantaged and may therefore be denied the resources to build a resilient future. She said this is not hypothetical. This is what they're seeing in the communities of coastal Georgia. Therefore, they're proposing a critical addition to the CEJST framework, a community appeals process that would empower misidentified communities to demonstrate their true disadvantage through submission of local quality-checked data which could be reviewed by experts at the federal level, including community collected environmental data such as air and water quality measures or health surveys and proxy data for socio economic burdens such as assessed property values. She said this is not a technical adjustment. It's a step towards transparency, inclusivity and accountability and environmental justice. By granting communities the ability to appeal their misidentification in CEJST and provide evidence of their burden, we can ensure Justice 40 reaches the communities they were designed to empower. She urged NEJAC to consider and adopt the recommendations as quickly as possible to adjust the screening tool to a more inclusive, responsive, and effective instrument for identifying and supporting community most in need of Justice40 funding.

Ayako Nagano said she believes the CEJST is under the WHEJAC and CEQ and she believes they have a public hearing the next day. Kait said she was registered to speak there.

Jerome Shabazz said he thinks the idea of an appeal or the ability to make recommendations around what's happening in real time is important. He asked if they could manipulate the data and get smaller sectors. Kait Marano said it does not have that ability currently. She understands that CEQ considered data at smaller geographic levels but due to the statistical reliability and higher margins of error at block group levels they decided to go with census track instead.

Kait Marano said she will share information on the topic in writing.

Joy Britt commended Kate Marano for not simply identifying a challenge but also for offering a solution. She said she was speaking on behalf of Indigenous communities with which she works, and the data of rural communities and U.S. territories are not in EJ screens.

**Daniel Savery** | Public Commenter, began to address the NEJAC with a quote about farm workers across the U.S. organizing, rallying and marching to fight for rights and pesticide protections. He spoke of EPA banning the use of chlorpyrifos, a class of chemical originally developed by Nazis for chemical warfare, on food two years ago. It had been used on a wide variety of crops. It is acutely toxic to people and poisoned farmers every year it was in use. Numerous studies have found links between this chemical and learning disabilities and behavioral disorders in children. Chemical groups and grower groups sued and last month the ban was revoked, meaning that chlorpyrifos could be back on our food later this month. He asked the NEJAC to urge the EPA to quickly reinstate the ban.

Dr. Jill Harrison said as an active member of the NEJAC Farmworkers and Pesticides Workgroup, has had her eye on this topic for some time. She asks Daniel Savery to send his comments to her. Paula Flores-Gregg asked that she also receive the written comments. She said backyard use of chlorpyrifos were banned a long time ago due to the demonstrated toxicity of the people using the chemical.

**Elliot Wesler** | Public Commenter, lives in a rural part of New Hampshire and directed his message to David Cash, EPA. He said PFAS needs to be remediated, but the EPA also needs to focus on prevention. He said two of three large commercial landfills are located in rural northern New Hampshire, which has less sophisticated environmental laws, is getting overrun with trash sent to them by the wealthier New England states. He said one of the existing landfills is leaking PFAS into the river and said the evidence has been provided to EPA and the response has largely been to take it up with the states. Elliot Wesler hopes the EPA and perhaps NEJAC could be more proactive. The same landfill developer that owns the leaking landfill wants to build a new landfill about five miles away. That would make three of the large commercial landfills in New Hampshire all in the same rural, relatively economically disadvantaged area.

Jacqueline Shirley asked Elliot Wesler what he is asking of the NEJAC.

Elliot Wesler responded that the focus of NEJAC and EPA seems to be on remediation. Prevention, he said, in his opinion would also go a long way in ensuring environmental justice. He asked that EPA be more aggressive and proactive in working with states that are not at the forefront of environmental justice and assessing the implications of EJ in their industrial environmental decisions.

He specifically asked the EPA to get involved and said at least half of the solid waste to be deposited in the New Hampshire landfill would come from Massachusetts and Connecticut, transported long distance by diesel trucks, thereby exacerbating global climate concerns. The rationale for Connecticut and Massachusetts shipping their solid waste to New Hampshire, he says, is because those states have more sophisticated laws that limit expanding landfills or building new landfills.

Scott Clow said his grandmother had a hazardous material landfill built next to her home near the Sugar River in Claremont, New Hampshire, a couple decades ago and she was concerned about that. He thanked Elliot Wesler for bringing the inequity with the state permitting of these facilities to his attention. He said they'll see what they can do to elevate it to the regional EPA and to EPA headquarters.

Elliott Wesler said people often think of environmental justice as providing protection for communities of color, in particular. In New England, which has a limited minority, the issue tends to be more urban and suburban versus rural. The part of the state where the landfill exists and the landfill developer is looking to build another, the site is in the middle of the sand and gravel pit, which has highly permeable soil, which, if there's an accident, increases the risk that PFAS will get in the ground water. Eventually it will get to the Connecticut River, exposing all New England to PFAS contamination. There's a multilayer environmental justice impact: It's rich states versus poor states, the rich part of New Hampshire versus the poor, and a for-profit corporation targeting a very small and economically disadvantaged community and offering goodies to them that they may find hard to say no to.

**L. Vannessa Frazier** | Public Commenter, said the southeastern part of Missouri known as the bootheel, is one of the most poverty-stricken areas in the state. She did a presentation for the NEJAC in Kansas City in about 2008 about the condition of our region and it has not changed. It is difficult to have an impact and resolve cumulative impact without resources.

She said the first EPA grant they got was a problem-solving grant through environmental justice. They used students to help with the project, and they came up with a 10-year strategic plan and they're still working with this plan.

The city also received a cleanup grant for the Howardville School, which has subsequently been listed on the National Register of Historic Places, and they had to return the money because the contractor was not acceptable to the people who had to pay them. That was seven years ago. They understand they can't get another Brownfield grant for the same site. She thinks there's a policy issue and she'd like somebody to address it. She said she will send her comments in writing.

Richard Mabion said he will connect L. Vanessa Frazier with someone who has a direct interest in the bootheel.

Jerome Shabazz pointed out there are TABs, or technical assistance for Brownfields. Kansas University offers free technical assistance on how to restructure or reposition applications so you can find pathways to achieve goals in terms of how to utilize the process.

L. Vannessa Frazier said they had used TABs. She reiterated that she understood they could not get funding for the same site. She said they need to get asbestos and lead paint removed and to start redeveloping. She said the inability to get additional funding for the same site is a policy issue and that's why she's bringing it to NEJAC.

Jerome Shabazz asked if she'd received a determination that said she can't apply for the same parcel or property because of a particular reason. L. Vannessa Frazier said she hadn't received anything in writing, that her project officer in her region notified her. Jerome Shabazz said he knows of sites that have received different federal funding for the same parcels, although he doesn't know the specific conditions. He said if she had something in writing saying she was disqualified it would be helpful to understand why. Paula Flores-Gregg said she would like to have a meeting with L. Vanessa Frazier and a regional representative to clear up a lot of the barriers and get clarity.

**Sylvester Reederill** | Public Commenter, said Houston One Voice is a nonprofit organization partnered with the University of Houston to determine the most critical needs in the county, including flooding and economic downturn. He said two landfills in the county—both between 40 and 100 years old and representing two billion gallons of detention—were capped to prevent downstream flooding. One was a magnet for development once it was capped. They hoped to bring commerce to these areas once the landfills were capped. Most of the landfills in Texas are in disenfranchised communities. These two were taken through eminent domain. He would like the owners' progeny to be rewarded and said there are 60 similar landfills in the Houston area that could benefit by similar changes to reward the original owners or their heirs, as he's requesting. Sylvester Reederill will submit his comments in writing because it was difficult to hear him.

**Yvette Arellano** | Public Commenter, said she is the founder and director of Fenceline Watch, which tries to stop multigenerational harm. Her first comment was about landfills experiencing large growth because our country no longer transports waste to other countries in the global south. In July of this year, she said, the EPA released the Draft National Strategy to Prevent Plastic Pollution and their environmental justice considerations, but they did not to make recommendations on how to move forward on those concerns. She wants NEJAC to push EPA, CEQ, and the federal government to tackle plastic pollution from upstream, which means from upstream chemical production in regions like hers, where they have more than 618 chemical manufacturers. They want emissions to be a part of tackling plastics. This could be achieved, she said, by removing fossil fuel subsidies and by adding a tax on plastic production and extended producer responsibilities and a recommendation that the draft national strategy recognize these as recommendations.

Yvette Arellano's second comment was she would like cumulative impacts frameworks to include extreme climate impacts. Permitting, whether it is through offshore fracking or inland, refuses to recognize the impact of extreme weather as part of their analysis of whether or not they would site these dangerous projects next to communities and she would like them to.

In her final comment, she said the DOE granted Houston $1.2 billion to become a regional Gulf Coast hydrogen hub. She said she would like NEJAC to recommend what qualifies as community outreach. Currently, she added, only national, large green organizations have a true voice and represent community voice. She said they want NEJAC to come up with this framework.

Additionally, Yvette Arrellano said they're working with other environmental justice and academic institutions to release a hydrogen framework and environmental justice hydrogen framework and with that there was the first release of the first report on water requirements for various approaches to hydrogen production. They want NEJAC to review this document and include water as a consideration for projects related to hydrogen and hydrogen projects for consideration and siting. She said they do not want desalination projects in their back yard because there's not enough water for chemical production and hydrogen. She said she will submit her comments in writing.

Na'Taki Osborne Jelks said they will sift through everything she said and urges the agency to be as responsive as possible and to expand our view around plastic pollution and what qualifies as true community outreach and engagement. She pointed Yvette Arellano to a very old guide produced by NEJAC, The Model Plan for Public Participation. While dated, she said, it contains important information for any community engagement process. She said she knows several EPA offices have talked about creating guidance on participation and engagement.

Paula Flores-Gregg said they'll have a presentation on the updated version, which she believes is out for comments. She'll send the link to everyone else.

**Mervin Wright** | Public Commenter, said he's served as the region 9 tribal operations community co-chair for the last two years. He said he heard today echoes what they've heard from EPA in the past: they're working on PFAS standards and want to hold polluters accountable. But Mervin Wright said nobody's talking about going to the developer or looking at the restrictions necessary to prevent PFAS contamination and he encouraged the NEJAC to do that.

Mervin Wright talked about lithium mining in Nevada. Two years ago, Senator Rosen changed the rules on exploration permits that could be obtained. At that time, more than 500 permits were issued. He just found out that there are now more than 2,000 exploration mining permits in Nevada. While they don't oppose renewable energy, when you're looking at mining, reclamation is the biggest problem. We're always in a reactive mode, he said, looking to clean up after the destruction has been caused. He advised the NEJAC to look ahead, to the beginning of the mining process, and avoid getting stuck in the terminology of critical minerals. When it comes to the economy, it looks like the EPA is supporting those that are looking to exploit the resources in the gain of profit.

Andy Kricun said he agrees it's important to look for ways to correct pollution at the source as opposed to putting the burden on rate payers or by not doing anything and putting the public health/environmental burden on the people who live downstream. He suggested encouraging EPA to strengthen industrial pre-treatment programs. EPA has delegated the pretreatment programs to states who in some cases delegated them to the wastewater treatment utilities, where there's a lot of latitude to what extent they're enforced. For areas where there's a high likelihood environmental justice communities will be impacted, we need to be sure the pretreatment program is effective. For example, some programs allow for inspections, scheduled in advance, once a year. Naturally, he said, the industry being inspected can prepare if they know they are being inspected, which would not be reflective of what's being discharged year-round.

Scott Clow, Region 8, said that most mining companies see short-term profit and usually jump ship before they clean up their mess. He said he hopes with all this unprecedented funding from EPA and other agencies the EPA could also look at enhanced lithium recycling and more stringent measures on the producers of the raw materials. For example, if they're going to exercise the use of federal funds, they have an adequate reclamation plan that is bonded so the site doesn't get left as a wasteland when they leave town. He also encouraged Mervin Wright to elevate this to the WHEJAC because they also deal with other parts of the Department of the Interior.

**Linda Karr** | Public Commenter, made 10 points:

1. Modeling using new source performance standards is not needed for indoor residential wood burning, described by the Office of the Inspector General in February 2023 as a failed program.
2. Real life monitoring is needed for indoor residential wood burning.
3. Data gathering and decision making should be made by near neighbors of indoor wood burners whose smoke enters the near neighbors' yard and sickens them.
4. If the government can devise a system for downloading three-day, purple layer PM2.5 monitored data and showing percent of time PM2.5 levels in the near neighbor's yard were above national ambient air quality standards NOX using EPA limits.
5. Such a monitoring system has been created showing percent above NOx in a three-day period. Video shows how this is done every three days for 12 resident-owned purple air monitors in California, Wisconsin, and Maine.
6. Indoor residential wood burners are often more effluent than their near neighbors'.
7. In December, RAWSEP contacted a group of 60 rural farmers; 27 of the 32 wood burners contacted expressed interest in exchanging their wood stoves for heat pumps, given that in 2024 there will be federal rebates up to $8,000 per household based on a sliding income scale.
8. They told the rural farmers about a RAWSEP grant being written to make up any deficit above the federal rebate to ensure exchanging the heat pump would not be as costly for those of modest means.
9. RAWSEP was given a match from the Department of Energy to help write the grant.
10. RAWSEP will contact urban indoor residential wood burners with the identical offer of heat pumps highly subsidized for indoor residential wood stoves.

When asked if she was looking solely at wood burning stoves or if she was looking at things like fireplaces, Linda Karr said that stoves are what is exchanged. Linda Karr said she will share her comments in writing.

**Noorulanne Jan** | Public Commenter, is an associate attorney at Earthjustice and addressed the Farmworkers and Pesticides Workgroup charge. She said the 8th circuit court put the decision on chlorpyrifos back in the EPA's hands. She requested that NEJAC protect children from behavior disorders and learning disability as it is required to do under the law by recommending they retain the chlorpyrifos ban. She said it is explicitly an environmental justice issue because chlorpyrifos mainly harms farmworker families and children and black and brown children and low-income populations across rural America.

She also talked about protections from organophosphate pesticides. She said under the Food Quality Protection Act EPA cannot lawfully use the new untested invalid science methods to weaken protections that protect children from adverse chemical exposure. She said studies show people engaged with organophosphate pesticides can put the nation's black and brown children at risk of learning disabilities. She requested that the NEJAC remind the EPA to act accordingly.

Jill Lindsey Harrison asked that the comments be submitted in writing and email directly to her since the Farmworkers and Pesticide Workgroup is in the process of putting together their recommendations to the agency.

Sandra Bonilla asked if Noorulanne Jan was looking at the current science on adolescent development and chlorpyrifos's impact to the developing brain of children 0 to 5 years of age. She said it's such a growing body of evidence in the field of adolescent development suggesting the link between the pesticides and cognitive development; the exposure causes neural developmental delays. Noorulanne Jan said studies have shown the exposure to pesticides in utero and through early childhood causes cognitive impairment as the child gets older.

**Rosemary Ahtuangaruak**, | Public Commenter, thanked the NEJAC for giving voice to people from small communities. She asked NEJAC to bring the public comment process land use changes, to engage more effectively in the process to affect land use funding decisions so bad planning efforts don't continue to threaten the future. She also requested help in communications that allow small communities to affect decision makers.

Jacqueline Shirley thanked Rosemary Ahtuangaruak for the reverence and appreciation she has and encouraged her to advocate for the people of their tribes and join these groups and said our people belong in these groups like the federal advisory groups.

## Public Business Meeting

**Na'Taki Osborne Jelks, PhD** | NEJAC Co-Chair
**Matthew Tejada** | Deputy Assistant Administrator for Environmental Justice, Office of Environmental Justice and External Civil Rights, U.S. EPA

Matthew Tejada said they will be having a number of workgroup report outs later in the business meeting. Some of the workgroups' charges have been completed while other workgroups will continue working on their charge.

He discussed potential NEJAC work for 2024, which NEJAC has been discussing all year and then worked with the steering committee. Paula Flores-Gregg and Karen L. Martin helped narrow these potential topics.

Potential charges, which would start with a consultation, include climate issues, Title VI and external civil rights, and acknowledgement of non-federally recognized tribes. Possible panels or consultations during future NEJAC public meetings include lead exposure/poisoning, border issues, disability justice and issues faced by Tribes along U.S. borders. Matthew Tejada suggested having a solid panel of experts in the disability justice field visit with NEJAC, perhaps at the Houston meeting, to determine if the NEJAC wants to undertake working on that topic. He said it's timely because

DOJ's EO 14096 and the inclusion of disabled people as another community within the definition of environmental justice in the United States.

It was agreed not to duplicate what other agencies are doing. (See slides appendix B.) He reminded that this work must be done through the lens of EPA, which is the agency NEJAC advises.

A full workforce charge is the specific definitions of what the workgroup will address. The charge is developed through a consultation process and the workgroup may work on the charge for up to three years. Matthew Tejada said that in the past, NEJAC held meetings on the ground in communities to get greater insight into issues.

April Karen Baptiste said people at the meeting in Puerto Rico asked about the possibility of having a representative of the territories or island states on NEJAC. Matthew Tejada said in the past, different advocacy groups have asked for a seat on the council and that it may become too cumbersome a process to do formally, but they may want to try to do this informally.

Andy Kricun asked if it's possible for NEJAC to work with EPA on developing a response to complaints and concerns around environmental justice and to investigate what states are doing good environmental justice work and to identify gaps to share with others. Matthew Tejada and Paula Flores-Gregg said they've been working on and continue to work on responsiveness. Regarding what states are doing with environmental justice, an analysis of this has been completed. Matthew Tejada also said we want to be sure NEJAC doesn't become a venue for picking a fight with certain states. Paula Flores-Gregg said they will discuss this at the next NEJAC business meeting. Andy Kricun asked If there was a way to codify that, so it remains despite changes in administrations.

Jan Marie Fritz suggested having EPA regional representatives at public meetings and to provide contact information and EPA staff roles to be more responsive to commenters' questions and concerns. Matthew Tejada said having a representative from each region and each program is a goal. Jan Marie Fritz liked the list of potential topics for the NEJAC in 2024 and suggested, based on comments from the public comments, landfills should be included. She also suggested adding recycling. Paula Flores-Gregg said they've had conversations with regions on issues that pop up to consider for NEJAC's future work. They still have work to do to determine what they do with comments received during public comment periods during meetings and in writing. All comments related to various NEJAC workgroups are shared with them, as well. Na'Taki Osborne Jelks supported sharing this information so the people who participate in the process know they're being heard.

Ximena Cruz Cuevas said this is her first NEJAC meeting and asked to what extent new EPA staff working on environmental justice are tapping into the NEJAC. She also asked to what extent there is collaboration between councils and others in the federal government collaborate on topic-specific issues. She mentioned that Oregon is updating their recycling legislation and since that came up as a possible topic NEJAC would explore, she said it might be worth connecting with them. Matthew Tejada said they've been working on getting more regional interactions with the NEJAC members in various regions; they wanted the NEJAC to help bring the EPA regions together with communities.

When discussing environmental justice as it relates to Tribes and Indigenous people, Karen L. Martin said there will be collaboration with others, and they will look at the work the workgroup did on environmental justice as it relates to federally recognized Tribes.

Jerome Shabazz asked if the list of potential topics were finalized or were they recommendations. Matthew Tejada said the topics came out of conversations with NEJAC members. While they're not final, he doesn't think they want to start the process of determining topics from the beginning.

Jerome Shabazz suggested adding workforce development or green collar jobs. Sandra Bonilla said it's essential to prepare young people, particularly people of color, for these jobs. Several members indicated their support. Paula Flores-Gregg said there's a list of possible topics and she's happy to share it and explain the process for putting topics on the list at the next meeting. Matthew Tejada said this could be a solid one regardless of political realities.

Na'Taki Osborne Jelks said their work is the interconnection of human health and the environment and they should be leaders, collaborating with communities and others working to improve environmental justice.

The Farmworkers & Pesticides Workgroup provided an update. Jill Harrison explained the workgroup members will distribute the recommendations to the full NEJAC In February and will present the report at the March meeting.

She explained the workgroups' charges. They met every other week this year. EPA provided valuable technical help. She explained the progress of their work, including EPA presentations that helped educate workgroup members. Any questions or comments should be sent directly to Jill Lindsey Harrison.

The Cumulative Impact Workgroup provided an update. The Workgroup Is planning an in-person meeting at the end of January.

Members said goodbye to Matthew Tejada, who is leaving the EPA, and lauded him for his work, tenacity, and friendship.

The following were next steps:

- Na'Taki Osborne Jelks said NEJAC members can discuss potential NEJAC topics and the topics that have been considered at the next business meeting.
- The next NEJAC meeting will be March 11–15 in person in Houston. There will be a NEJAC business meeting prior to the Houston meeting aimed at prioritizing work for 2024.

## Appendix A. NEJAC Members

**Cemelli De Aztlan** | La Mujer Obrera, Region 6

**April Karen Baptiste** | Colgate University, Region 2

**Sandra Bonilla** | Urban Conservation Corps of the Inland Empire, Region 9

**Joy Britt** | Chignik Bay Tribal Council, Region 10

**Rev. Ambrose Carroll, Sr., PhD** | Green The Church, Region 9

**Scott Clow** | Ute Mountain Ute Tribe, Region 8

**Leticia Colon de Mejias** | Green ECO Warriors, Region 1

**Ximena Cruz Cuevas** | Oregon Department of Environmental Quality, Region 10

**Laprisha Berry Daniels** | Detroiters Working for Environmental Justice, Region 5

**Jarod Davis** | Dow, Inc., Region 6

**John Doyle** | Little Big Horn College, Region 8

**Jan Marie Fritz, PhD, C.C.S.** | University of Cincinnati, Region 4

**Yvonka M. Hall** | Northeast Ohio Black Health Coalition, Region 5

**Jill Lindsey Harrison, PhD** | University of Colorado Boulder, Region 8

**Loren Hopkins, PhD** | City of Houston Health Department, Region 6

**Lisa Jordan** | Tulane Environmental Law Clinic, Region 6

**Andy Kricun** | Moonshot Missions, Region 2

**Richard Mabion** | Building A Sustainable Earth Community, Region 7

**Nina McCoy** | Martin County Concerned Citizens, Region 4

**Ayako Nagano, JD** | Common Vision, Region 9

**Na'Taki Osborne Jelks, PhD** | West Atlanta Watershed Alliance/Proctor Creek, Region 4

**Sofia Owen, JD** | Alternatives for Community & Environment, Region 1

**Briana Parker** | Elevate Energy, Region 5

**Benjamin J. Pauli, PhD** | Kettering University, Region 5

**Jonathan Perry** | Becenti Chapter, Region 6

**Rosina Philippe** | Atakapa Ishak Chawasha Tribe, Region 6

**Millie Piazza, PhD** | WA Department of Ecology, Region 10

**Jerome Shabazz** | JASTECH Development Services Inc. and Overbrook Environmental Education Center, Region 3

**Jacqueline Shirley, MPH** | Rural Community Assistance Corporation. Region 6

**Pamela Talley, PhD** | Lewis Place Historical Preservation, Inc., Region 7

**Michael Tilchin** | Jacob's Engineering, Region 3

**Brenda Torres Barreto** | San Juan Bay Estuary Program, Region 2

**Sandra Whitehead, PhD** | George Washington University, Region 3

**Lynn Zender** | Zender Environmental Health and Research Group, Region 10

## Appendix B. Presentations

## Appendix C. Written Public Comments

# National Environmental Justice Advisory Council (NEJAC) Virtual Public Meeting

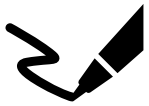
December 5, 2023

# Reminders

Meeting attendees are in listen/view mode only

The chat feature will not be available in this virtual meeting

Attendees who pre-registered for public comment will be given access to speak as time allows, today from 4:30pm to 6:00pm Eastern Standard Time.



If you do not get a chance to speak during the allotted time, please submit your comments in writing

Written comments can be submitted until; December 19, 2023, to nejac@epa.gov

# Dec 5 Agenda 10:00 AM – 7:30 PM Eastern Standard Time

| | |
|---|---|
| **10:00 AM – 10:15 AM** | **Welcome** |
| 10:15 AM – 10:30 AM | Opening Remarks |
| 10:30 AM – 10:45 AM | Member Introductions |
| 10:45 AM – 11:30 AM | NEPA Training Recommendations Progress Report and Overview of Revisions to Technical Guidance for Assessing EJ in Regulatory Analysis |
| 11:30 AM – 12:15 PM | Finance & Investments Technical Assistance Recommendations Update |
| **12:15 PM – 1:00 PM** | **Lunch Break** |
| 1:00 PM – 1:45 PM | PFAS Recommendations Update |
| 1:45 PM – 2:15 PM | Air Quality and Community Monitoring Recommendations Update |
| 2:15 PM – 3:15 PM | EPA Region 2 Follow-Up from the Puerto Rico NEJAC Public Meeting |
| **3:15 PM – 3:30 PM** | **Break** |
| 3:30 PM – 4:00 PM | Office of Land and Emergency Management (OLEM) Environmental Justice Activities Update |
| 4:00 PM – 4:30 PM | Water Infrastructure Technical Assistance Recommendations Update |
| 4:30 PM – 6:00 PM | Public Comment Period |
| **6:00 PM – 6:15 PM** | **Break** |
| 6:15 PM – 7:30 PM | NEJAC Business Meeting |
| 7:30 PM | **Closing Remarks** |

# Opening Remarks

**Matthew Tejada**, Deputy Assistant Administrator for Environmental Justice, Office of Environmental Justice and External Civil Rights, U.S. Environmental Protection Agency

**Theresa Segovia**, Principal Deputy Assistant Administrator, Office of Environmental Justice and External Civil Rights, U.S. Environmental Protection Agency

# National Environmental Justice Advisory Council Member Introductions

# New Leadership Team & New Members

**Co-Chairs**: Na'Taki Osborne & Jerome Shabazz

**Vice-Chair:** April Baptiste

# NEW NEJAC MEMBERS

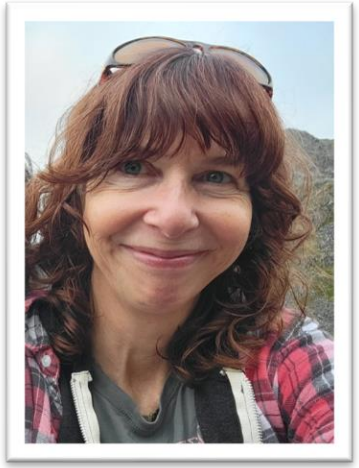
**Rosina Philippe**
Tribal Government - Indigenous Organizations
Region 6 – Louisiana

**Ximena Cruz Cuevas**
State/Local Government
Region 10 - Oregon

**Jarod Davis**
Industry - Business
Region 6 - Texas

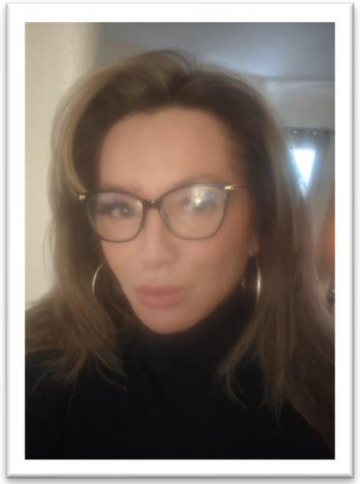
**Laprisha Berry Daniels**
Community Based Organization
Region 5 - Michigan

# NEW MEMBERS



**Lynn Zender**
Non-Government Organization
Region 10 - Alaska

**Lisa Jordan**
Academia
Region 6 – Louisiana



**Sandra Bonilla**
Community Based Organization
Region 9 - California

**Briana Parker**
Non Government Organization
Region 5 - Illinois

# NEJAC MEMBERS

## ACADEMIA

**April Karen Baptiste, PhD**
Colgate University
Region 2 - New York

**Benjamin Pauli, PhD**
Kettering University
Region 5 - Michigan

**Jan Marie Fritz, PhD, C.C.S**
University of Cincinnati
Region 4 - Florida

**Sandra Whitehead, PhD,**
George Washington University
Region 3 - District of Columbia

**Jill Lindsey Harrison, PhD**
University of Colorado Boulder
Region 8 - Colorado

# NEJAC MEMBERS

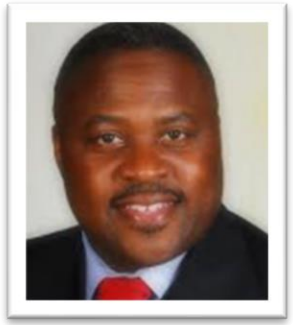
## BUSINESS & INDUSTRY

**NEJAC VICE-CHAIR**

**Michael Tilchin**
Jacobs Engineering
Region 3 - Maryland

# NEJAC MEMBERS

## COMMUNITY BASED ORGANIZATIONS



**Rev. Ambrose Carroll, Sr., PhD**
Green The Church
Region 9 - California

**Leticia Colon de Mejias**
Green ECO Warriors
Region 1 - Connecticut


**Cemelli De Aztlan**
La Mujer Obrera
Region 6 - Texas

**Pamela Talley, PhD**
Lewis Place Historical Preservation Inc.
Region 7 - Missouri

**Jerome Shabazz**
JASTECH Development Services Inc
Region 3 - Pennsylvania

**Sofia Owen, JD**
Alternatives for Community & Environment (ACE)
Region 1 - Massachusetts

# NEJAC MEMBERS

## COMMUNITY BASED ORGANIZATIONS (continued)

**Yvonka M. Hall**
Northeast Ohio Black Health Coalition
Region 5 - Ohio

**Richard Mabion**
Building A Sustainable Earth Community
Region 7 - Kansas

**Nina McCoy**
Martin County Concerned Citizens
Region 4 - Kentucky

**CHAIR OF NEJAC**

**Na'Taki Osborne Jelks, PhD**
West Atlanta Watershed Alliance and Proctor Creek Stewardship Council
Region 4 - Georgia

# NEJAC MEMBERS

## NON-GOVERNMENT ORGANIZATIONS

**Andy Kricun**
Moonshot Missions
Region 2 - New Jersey

**Brenda Torres Barreto**
San Juan Bay Estuary Prog.
Region 2 - Puerto Rico

**Jacqueline Shirley, MPH**
Rural Community
Assistance Corporation
Region 6 - New Mexico

**Ayako Nagano, JD**
Common Vision
Region 9 - California

# NEJAC MEMBERS

## STATE & LOCAL GOVERNMENT

**Millicent Piazza, PhD**
Washington State Department of Ecology
Region 10 - Washington

**Loren Hopkins, PhD**
City of Houston Health Department
Region 6 - Texas

# NEJAC MEMBERS

## TRIBAL & INDIGENOUS GOVERNMENT & ORGANIZATIONS

**Joy Britt**
Chignik Bay Tribal Council
Region 10 - Alaska

**John Doyle**
Little Big Horn College
Region 8 - Montana

**Scott Clow**
Ute Mountain Ute Tribe
Region 8 - Colorado

**Jonathan Perry**
Becenti Chapter
Region 6 - New Mexico

# National Environmental Policy Act (NEPA) Training Recommendations Progress Report

**Victoria Arroyo**, Associate Administrator for Policy, U.S. Environmental Protection Agency

**Ann Wolverton**, Senior Economist, Office of Policy, U.S. Environmental Protection Agency

# NEJAC NEPA Training Recommendations


Office of Federal Activities

December 5th, 2023

# Progress Update

- EPA has hired a dedicated NEPA EJ specialist
  - Sumi Selvaraj (contact information on next slide)
- EPA has reviewed the recommendations and has:
  - Updated NEPA 101 training modules
  - Initiated development of EJ training module
  - Conducted training and best practices discussed/shared during September in-person community meeting
  - Awarded contract for updated EJ Screen Training for 309 reviewers and workplan in development
  - Dedicated EJ Office Hours to begin in January
- Additional updates at March 2024 NEJAC meeting

# Senior NEPA/Environmental Justice Coordinator in OFA/NCD

Sumi Selvaraj
Selvaraj.Sumi@epa.gov
(202) 564-0086

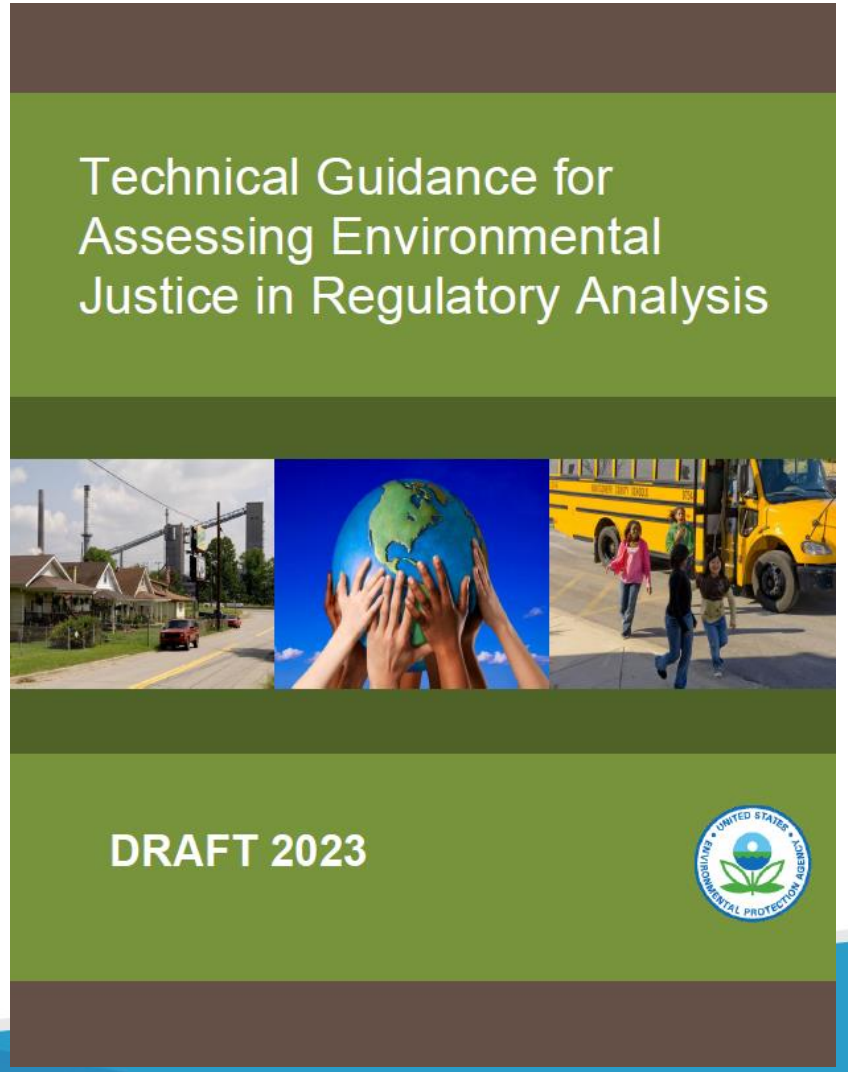
- Joined EPA on 9/24/23
- Served as the EJ Manager for the California Coastal Commission (CCC)
- Developed and implemented environmental justice policies and coordinated integration of environmental justice considerations into environmental impact assessments and planning documents for coastal development in California, consistent with the California Coastal Act, California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA).

# Revised Technical Guidance for Assessing Environmental Justice in Regulatory Analysis

Dr. Ann Wolverton
Office of Policy
December 5, 2023

# Targeted Update of EJ Technical Guidance

- Originally released in 2016
- Outlines analytic expectations, best practices, and technical approaches to evaluate EJ concerns for regulatory actions.
- Main audience is EPA analysts.
- Designed to be flexible
  - Data and methods to evaluate EJ concerns may be tailored to reflect a specific regulatory context.
  - Allows offices to balance budget and time constraints with analytic expectations.
- Revision reflects latest state of science, new peer-reviewed Agency guidance and new terminology, priorities, and direction.



# Overview of Revisions

- **Chapter 1: Introduction** provides background and outlines the main objectives of the EJ Technical Guidance.
  - Changes include discussing the importance of integrating EJ into rulemaking process early to inform the rule and describing specific EJ analytic requirements from new Executive Orders
- **Chapter 2: Key Definitions** reviews key EJ concepts that are expected to influence analytic considerations.
  - Changes include expanded discussions of meaningful involvement as it pertains to analysis, and updating and expanding relevant terminology

# Overview of Revisions

- **Chapter 3: Key Analytic Considerations** discusses questions analysts should strive to answer when evaluating EJ concerns, provides a basic framework to guide the analysis, and presents overarching recommendations and best practices.
  - Changes include refining analytic questions and overarching recommendations; considering cumulative impacts from multiple stressors in the analysis; and broadening the concept of baseline beyond directly regulated stressors.

# Questions analysts strive to answer with EJ analysis

- **Baseline:** Are there existing (baseline) EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern?

- **Regulatory options:** Are there potential EJ concerns associated with environmental stressors that are affected by the regulatory action for population groups of concern for the regulatory option(s) under consideration?

- **Mitigation or exacerbation of impacts:** For the regulatory option(s) under consideration, are EJ concerns exacerbated, mitigated, or unchanged compared to the baseline?

# Overarching Recommendations to Analysts

1. While analysts should use best professional judgement to decide on the type of analysis that is feasible and appropriate, when risks, exposures, outcomes, or benefits are quantified, some level of quantitative EJ analysis is recommended.
2. Analysts should integrate EJ into the planning of a risk assessment conducted for the regulatory action.
3. Analysts should strive to characterize the distribution of risks, exposures, or outcomes within each population group, not just average effects.
4. Analysts should follow best practices appropriate to the analytic questions at hand.
5. As relevant, analysts should consider any economic challenges that may be exacerbated by the regulatory action for relevant population groups of concern.

# Overview of Revisions

- **Chapter 4: Contributors to Environmental Justice Concerns** identifies factors that contribute to EJ concerns and highlights reasons why environmental health risks are unevenly distributed across population groups.
  - Changes include discussing vulnerability as a function of intrinsic and extrinsic factors to strengthen the link to disparate patterns of exposure and health effects, expanding discussion of climate change as a contributor to higher vulnerability and susceptibility, and adding differential monitoring, compliance and enforcement as factors that contribute to increased exposure.
- **Chapter 5: Considering Environmental Justice when Planning a Human Health Risk Assessment** provides guidance on incorporating EJ concerns into the planning of an HHRA, including descriptions of available methodologies and tools.
  - Changes include substantial reorganization, an expanded discussion of cumulative impacts and highlighting the possible role of participatory science.

# Overview of Revisions

- **Chapter 6: Conducting Regulatory Analyses to Assess Environmental Justice Concerns** discusses how to identify and evaluate the feasibility and appropriateness of analytic approaches and tools; the types of information to include; other analytic considerations that could affect results; and how to consider costs and non-health effects.
    - Changes include discussing how impacts from multiple stressors may interact with regulatory options; expanded discussions of hotspots, evaluating underlying heterogeneity, Census data, EJScreen, comparison groups, and exposure/risk-based approaches; updates to the proximity analysis section, including use of aerial apportionment and how to consider buffer distance in the water quality context; and new sections on presenting results and on how differences in compliance/enforcement across options may lead to EJ concerns

# Overview of Revisions

- **Chapter 7: Research Priorities to Fill Key Data and Methodological Gaps** provides information on research goals to improve assessment of EJ at the EPA.
  - Based on listening sessions and interviews with program office staff on key gaps.
  - Plan to expand this discussion for the final document to incorporate input from the public, Tribes, and the Science Advisory Board

# Other Relevant Guidances

- Current draft does not reference revised Circular A-4, or the draft *Meaningful Involvement Policy* or *Guidance for Planning, Scoping and Problem Formulation for Cumulative Risk Assessment*.

- Plan to update references and language prior to finalizing document,
- Coordinating public comment period to coincide with that for Meaningful Involvement Policy.

# External engagement and review

- Public Comment
  - Closes on January 15, 2024.
  - Informational webinars scheduled for Dec 6 and Dec 12
  - A recording will be available afterwards on the website.
- You can find the draft document and more information on the webinars at:

  https://www.epa.gov/environmental-economics/epa-draft-revision-technical-guidance-assessing-environmental-justice
- Submit comments through the Federal Register, Docket ID No. EPA–HQ–OA–2013–0320
- Tribes
  - 60-day Tribal consultation period coincides with public comment period
- Science Advisory Board (SAB) review scheduled to begin in January
- Revise draft document in response to all comments received and release in late November 2024

**Contact Info:**

Dr. Ann Wolverton
Office of Policy
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

wolverton.ann@epa.gov

# Finance & Investments Recommendations Progress Report

**Jacob Burney**, Division Director, Environmental Justice Grants, Office of Environmental Justice and External Civil Rights, U.S. Environmental Protection Agency

# Finance & Investments Recommendations Progress Report

(Letter dated 12/29/2022)

NATIONAL ENVIRONMENTAL JUSTICE ADVISORY COUNCIL (NEJAC)
VIRTUAL PUBLIC MEETING

December 5, 2023

# Slide Agenda

I. Finance and Investment Program Highlights (OEJECR)

II. DEFINING Investments and Benefits in EJ Communities

III. PRIORITIZING Investments and Benefits in EJ Communities

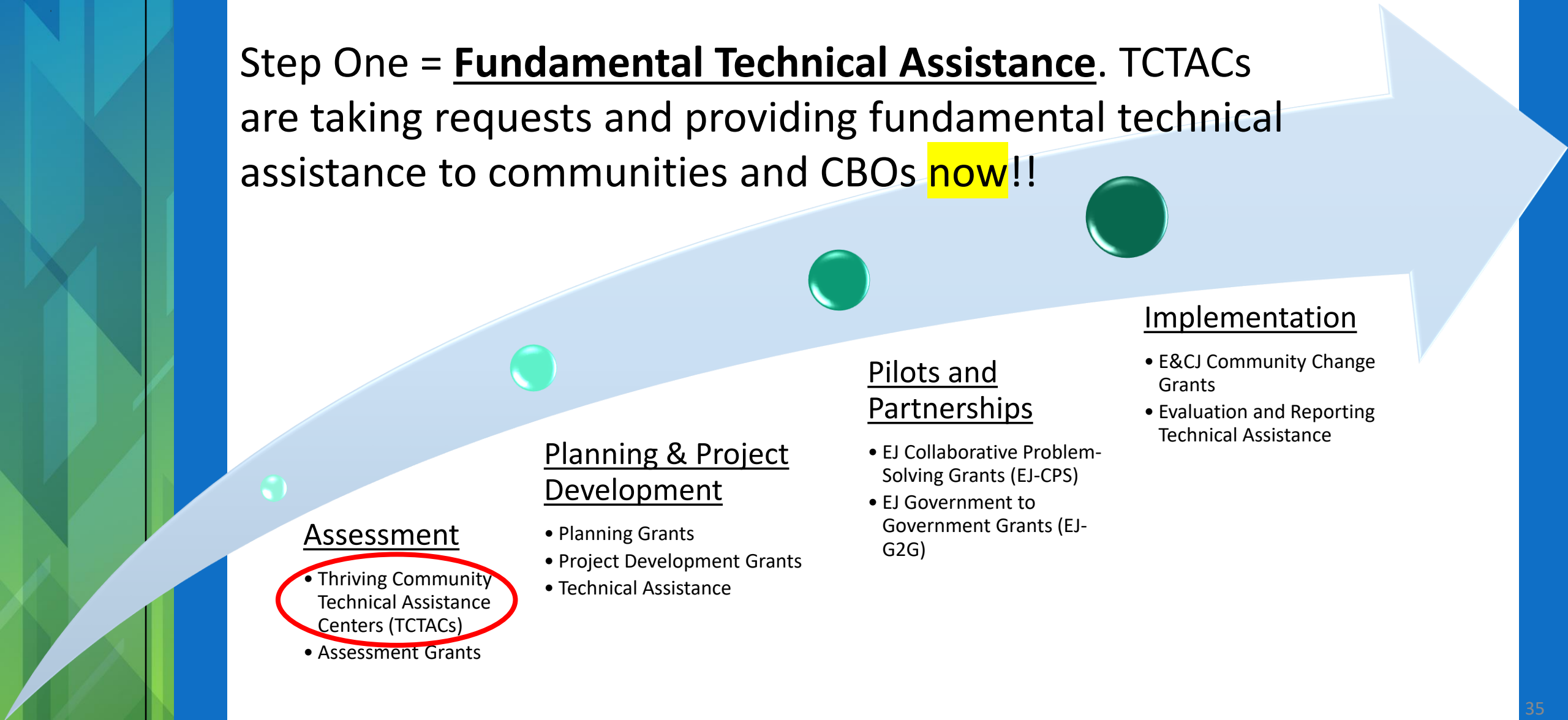
IV. ASSESSING/DETERMINING and DISTRIBUTING Investments and Benefits in EJ Communities

V. MEASURING and TRACKING Direct Investments and Benefits in EJ Communities

VI. MAPPING and REPORTING Investments and Benefits in EJ Communities

# ENVIRONMENTAL & CLIMATE JUSTICE COMMUNITIES GRANT PROGRAM

Step One = **Fundamental Technical Assistance**. TCTACs are taking requests and providing fundamental technical assistance to communities and CBOs now!!



## Assessment

- Thriving Community Technical Assistance Centers (TCTACs)
- Assessment Grants

## Planning & Project Development

- Planning Grants
- Project Development Grants
- Technical Assistance

## Pilots and Partnerships

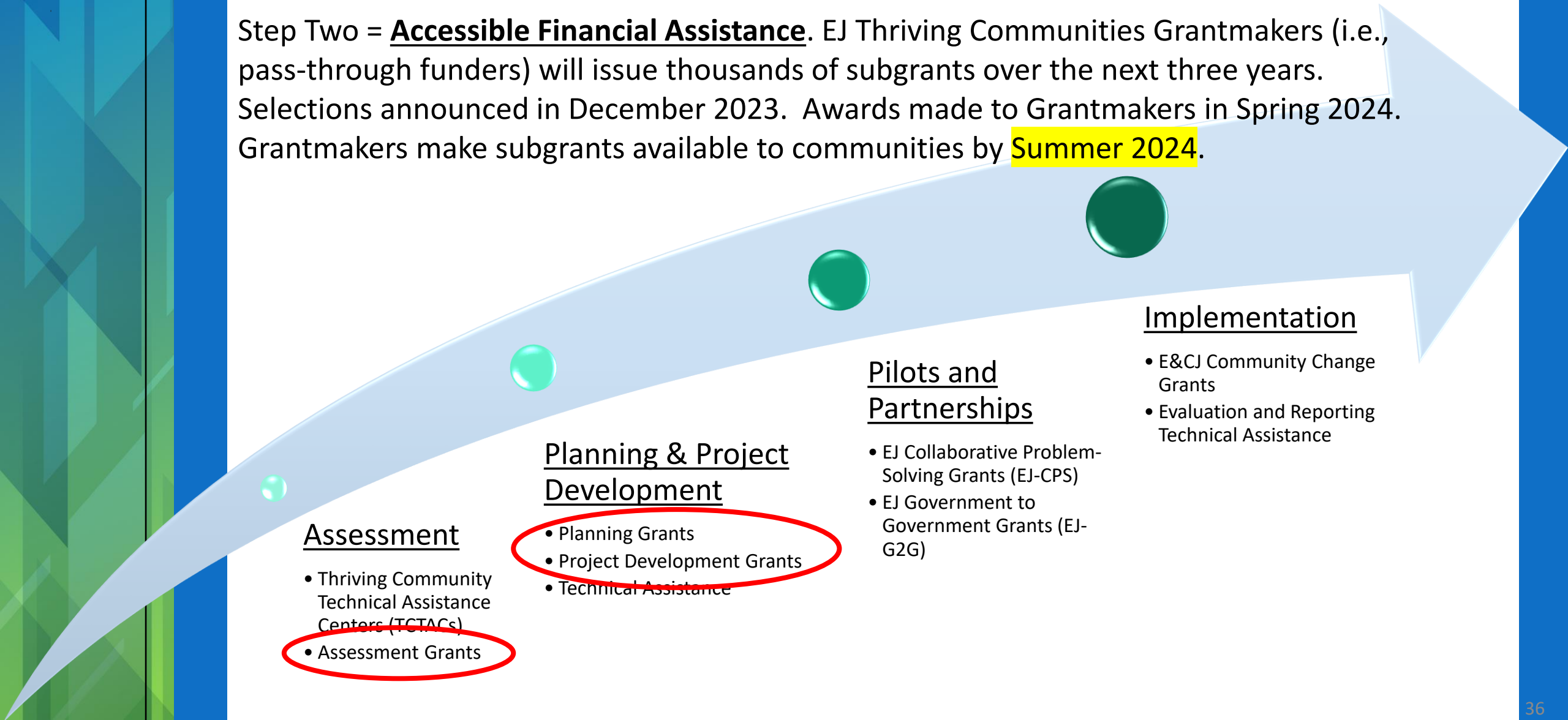
- EJ Collaborative Problem-Solving Grants (EJ-CPS)
- EJ Government to Government Grants (EJ-G2G)

## Implementation

- E&CJ Community Change Grants
- Evaluation and Reporting Technical Assistance

# ENVIRONMENTAL & CLIMATE JUSTICE COMMUNITIES GRANT PROGRAM

Step Two = **Accessible Financial Assistance**. EJ Thriving Communities Grantmakers (i.e., pass-through funders) will issue thousands of subgrants over the next three years. Selections announced in December 2023. Awards made to Grantmakers in Spring 2024. Grantmakers make subgrants available to communities by Summer 2024.



## Assessment

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- Planning Grants
- Project Development Grants
- Technical Assistance

## Pilots and Partnerships

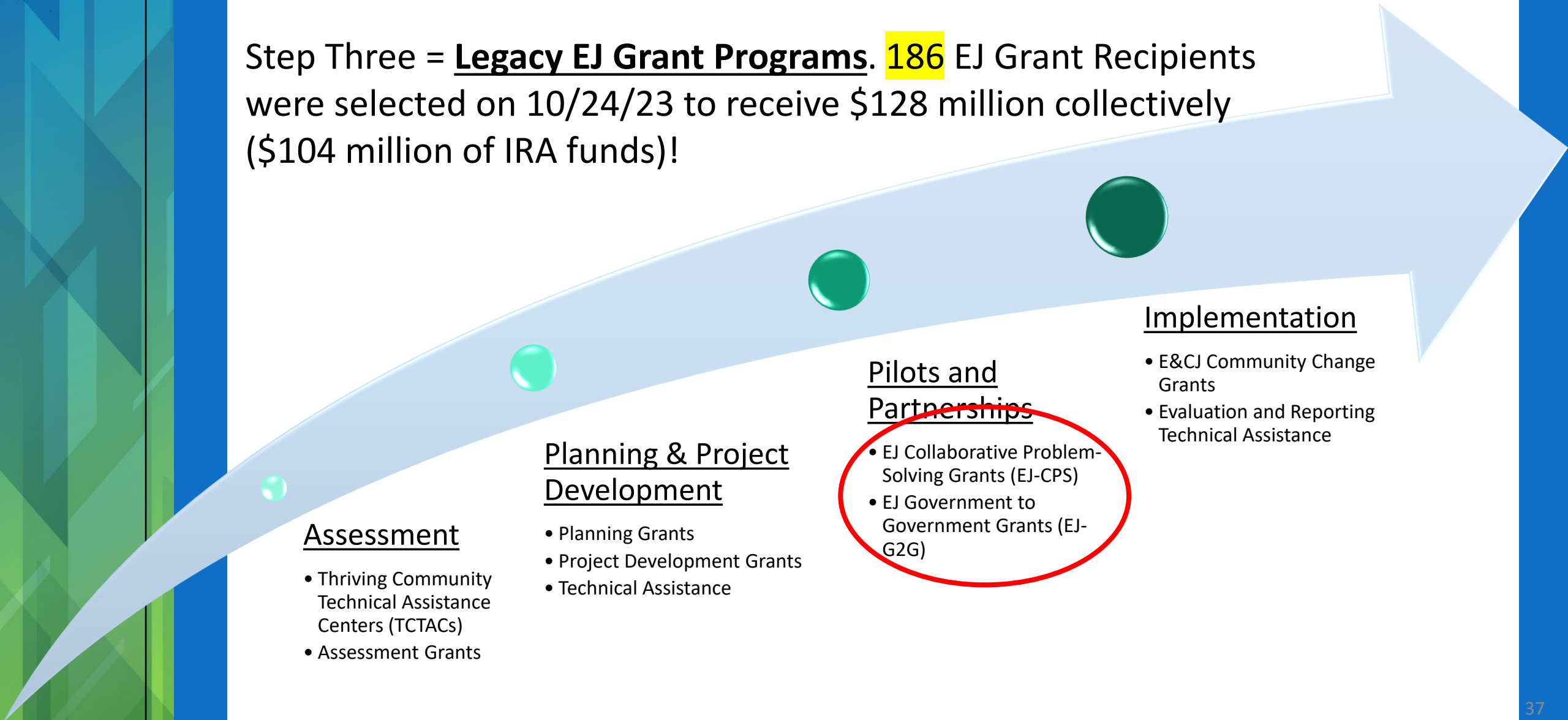
- EJ Collaborative Problem-Solving Grants (EJ-CPS)
- EJ Government to Government Grants (EJ-G2G)

## Implementation

- E&CJ Community Change Grants
- Evaluation and Reporting Technical Assistance

# ENVIRONMENTAL & CLIMATE JUSTICE COMMUNITIES GRANT PROGRAM

Step Three = **Legacy EJ Grant Programs**. 186 EJ Grant Recipients were selected on 10/24/23 to receive $128 million collectively ($104 million of IRA funds)!



## Assessment

- Thriving Community Technical Assistance Centers (TCTACs)
- Assessment Grants

## Planning & Project Development

- Planning Grants
- Project Development Grants
- Technical Assistance

## Pilots and Partnerships

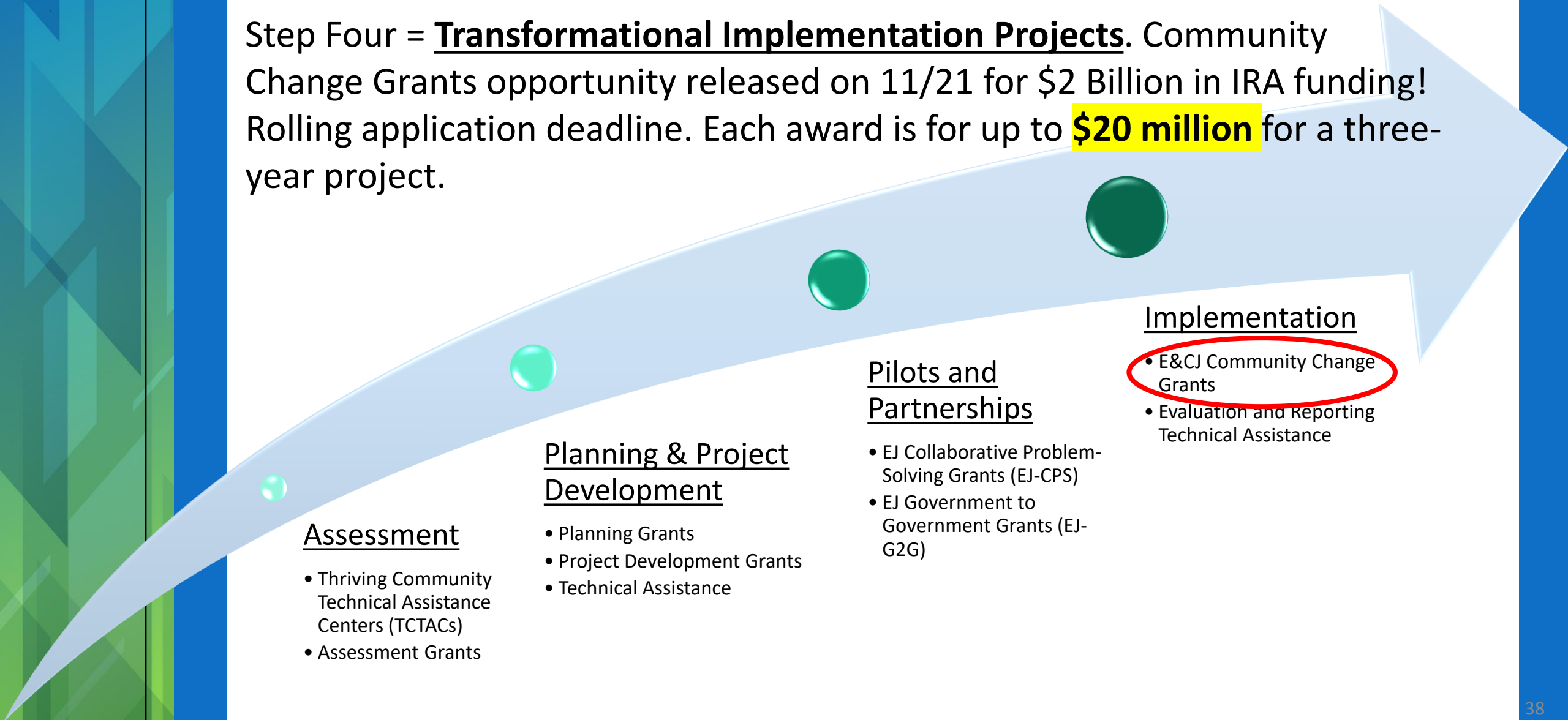
- EJ Collaborative Problem-Solving Grants (EJ-CPS)
- EJ Government to Government Grants (EJ-G2G)

## Implementation

- E&CJ Community Change Grants
- Evaluation and Reporting Technical Assistance

# ENVIRONMENTAL & CLIMATE JUSTICE COMMUNITIES GRANT PROGRAM

Step Four = **Transformational Implementation Projects**. Community Change Grants opportunity released on 11/21 for $2 Billion in IRA funding! Rolling application deadline. Each award is for up to **$20 million** for a three-year project.



## Assessment

- Thriving Community Technical Assistance Centers (TCTACs)
- Assessment Grants

## Planning & Project Development

- Planning Grants
- Project Development Grants
- Technical Assistance

## Pilots and Partnerships

- EJ Collaborative Problem-Solving Grants (EJ-CPS)
- EJ Government to Government Grants (EJ-G2G)

## Implementation

- E&CJ Community Change Grants
- Evaluation and Reporting Technical Assistance

# ENVIRONMENTAL & CLIMATE JUSTICE GRANT PROGRAMS

Over $800 million is being deployed quickly to build the project pipeline by funding technical assistance, as sessments, planning, and pilots.

$2 billion are allocated for the new Community Change Grants opportunity!!

| Name | Funding | Description | Timing |
|---|---|---|---|
| **Thriving Communities Technical Assistance Centers (TCTACs)** | $177 million | 16 awards to establish technical assistance centers across the nation to support communities with environmental justice concerns access federal funding. | All TCTACs awarded and in operation. Currently providing fundamental TA and services. |
| **EJ Collaborative Problem-Solving Grants (EJ-CPS)** | $43.8 million | 98 awards to assist recipients in building collaborative partnerships with other stakeholders (e.g., local businesses, government, medical providers) to develop solutions to environmental or public health issues at the community level. | 98 selectees announced on 10/24/23 |
| **EJ Government to Government Grants (EJ-G2G)** | $84.2 million | Up to 70 awards at the state, local, territorial and tribal governments to support and/or create model government activities (existing program). | 88 selectees announced on 10/24/23 |
| **EJ Grantmakers (EJ-TCGM)** | $550 million+ | 11 Grantmakers who will each make thousands of subgrants collectively to communities over the next three years | Applications closed May 31<br>Announce selections in December 2023 |
| **Technical Assistance (TA) For IRA Funded Grants** | $200 million | To provide TA to eligible entities and grantees for the IRA funded grants. TA request form currently available on EPA website. | Available now!!! |
| **Community Change Grants** | $2 billion | **Transformational, catalytic community-level projects** | Application period is open now and closes in Nov ‘24 |

# Defining Investments and Benefits in EJ Communities

OEJECR + Office of the Chief Financial Officer (OCFO) are collaborating on a pilot to standardize EPA grantee performance reporting questions, terms and definitions.

- Disadvantaged Community definition (CEJST tool)
- Defining the term “community” (see OEJECR definition in Community Change Grants NOFO
- Place-based investments
- Beneficiaries (community residents, project participants, resource users/recipients, Community-driven initiatives
- (working def) **Direct benefit** = direct recipient of a program activity, resource, education, and/or engagement
- (working def) **Indirect Benefit** = wider beneficiary of a program who isn’t a direct recipient of a program activity, resource, education, and/or engagement

# Prioritizing Investments and Benefits in EJ Communities

Grantmakers and Community Change Grants Priorities for Investments & Benefits:

- Participatory/Collaborative Governance Plan – Grantmakers were evaluated on their plan to ensure that community leaders and champions drive the structure of the Grantmaker and the evaluation of subgrant applications
- Community Strength Plan – projects must include plans for enhancing economic prosperity of current community residents while minimizing potential risks of area investment.
- 5 Target Investment Areas
- Workforce Development Programs for Occupations that Reduce GHGs and pollutants
- Statutory Requirement for CBO partnerships (IRA)
- Indirect Costs limitation (20%) and minimum pass-through requirement (80%)

# Assessing, Determining, and Distributing Investments and Benefits in EJ Communities

1) Capacity-building Centers and Resources
   - TCTACs and Grantmakers
   - Community Change Grants TA Contractor (available now)
2) Community-Driven and Environmental Justice Evaluation Criteria
   - Available to all EPA National Programs for Grant Solicitations
3) Community Engagement Outcomes
   - OEJECR goal to conduct long term tracking of engagement results and benefits
   - TCTACs will help inform this tracking capability too

# Measuring and Tracking Direct Investments and Benefits in EJ Communities

- **TCTAC and Community Change Grants TA:**
  - # of TA requests received
  - # of TA recipients
  - # of Training Workshops and Tutorials
  - # of successful grant applicants
  - Outreach activities
  - Outreach materials developed (websites, video tutorials, fliers, on site visits)
  - Successful grant completion
  - Leveraging for additional community funding
  - Long term sustainability planning
  - Number of partnerships developed
  - Local and State governmental response(s) and involvement
  - And more!!

NOTE: We are also tracking the total federal funding (direct recipient and pass-through) that is being managed directly by CBOs.

# Mapping and Reporting Investments and Benefits in EJ Communities

- OEJECR is working to develop Knowledge Management System(s) to include specific geospatial capability
- Mapping of all EJ grants and where EJ benefits are going
- TCTACs and Grantmakers are also developing systems to track benefits and geospatial data
- OEJECR is issuing cooperative agreements (i.e., substantial involvement with the grantees) for each EJ grant funding vehicle
- Teams of EPA staff manage and provide oversight for each TCTAC, Grantmaker, and Change Grantee

# For more on the Community Change Grants:

- To learn more about the Community Change Grants or technical assistance opportunities, please visit our webpage: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program
- Read the Notice of Funding Opportunity (or the NOFO)
- Register to join a future webinar or watch previously recorded webinars.

**Request Community Change Grants technical assistance today!**

Fill out a form found at: https://www.epa.gov/inflation-reduction-act/community-change-grants-technical-assistance

# Lunch Break

# Per- and Polyfluoroalkyl (PFAS) Recommendations Progress Report

**David Cash**, Regional Administrator, U.S. Environmental Protection Agency, Region 1, and Co-Chair, U.S. Environmental Protection Agency Council on PFAS

**Matt Klasen**, PFAS Council Manager, U.S. Environmental Protection Agency





# NEJAC Update on December 2022 Recommendations and PFAS Strategic Roadmap

## National Environmental Justice Advisory Council Meeting
## December 5, 2023

# EPA's PFAS Strategic Roadmap: Commitments to Action 2021-2024

- EPA Administrator Michael Regan established the EPA Council on PFAS in April 2021.
- The Council developed the PFAS Strategic Roadmap, released in October 2021 – a strategic, whole-of-EPA approach to protect public health and the environment from PFAS.
- The Roadmap:
  - Includes timelines for concrete actions from 2021-2024;
  - Fills a critical gap in federal leadership;
  - Supports states' ongoing efforts; and
  - Builds on the Biden-Harris Administration's commitment to restore scientific integrity.


PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

# EPA's Goals in the Strategic Roadmap

## RESEARCH

Invest in research, development, and innovation to increase understanding of

- Methods for measuring PFAS in the environment
- Assessing human health and environmental risks
- Evaluating and developing technologies for reducing PFAS

## RESTRICT

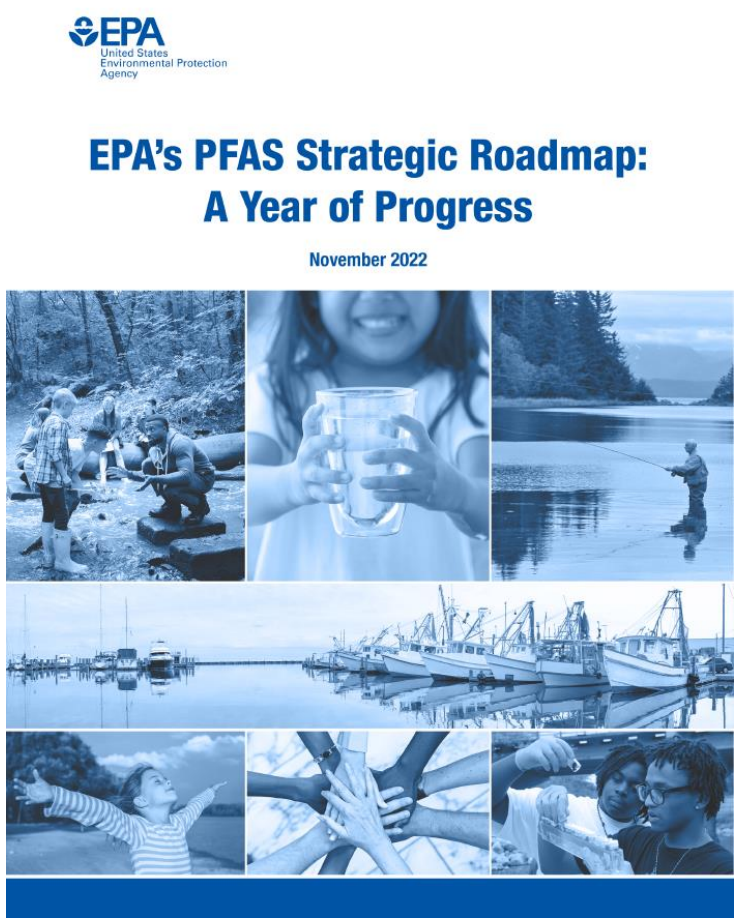
Pursue a comprehensive approach to proactively prevent PFAS from entering air, land, and water at levels that can adversely impact human health and the environment.

## REMEDIATE

Broaden and accelerate the cleanup of PFAS contamination to protect human health and ecological systems.

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

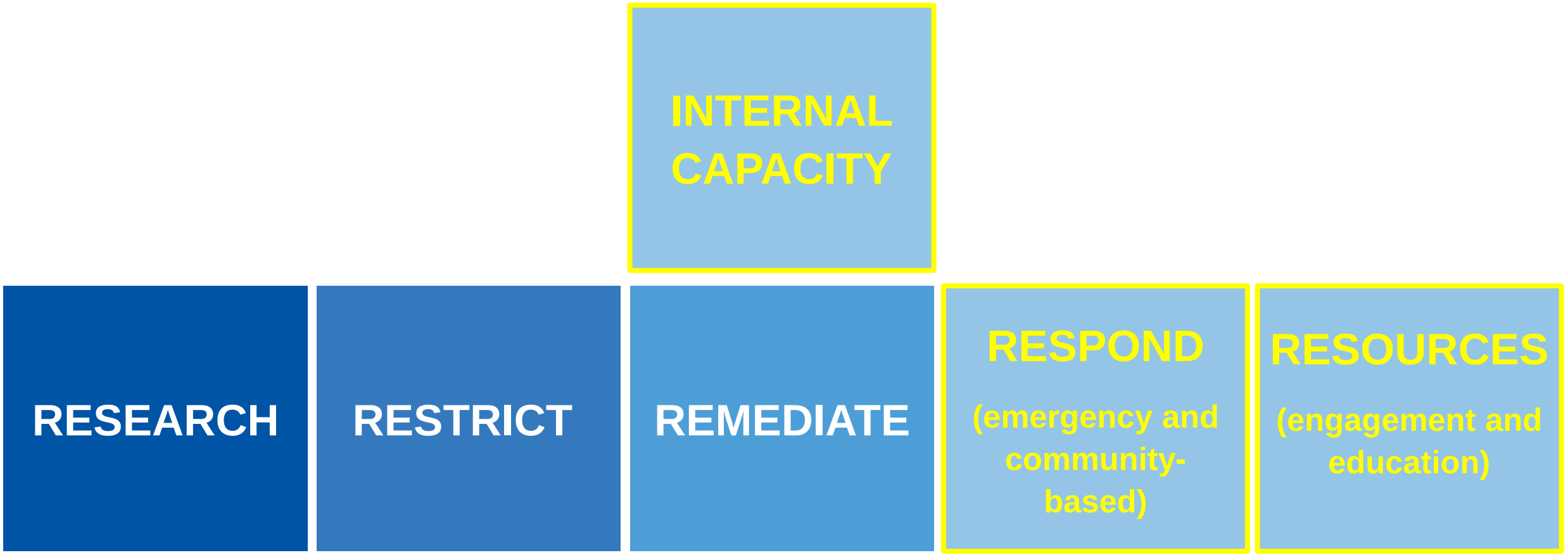
# Key EPA PFAS Accomplishments: (December 2022-present)




- Proposed a National Primary Drinking Water Regulation for six PFAS
- Finalized rules to significantly enhance PFAS data reporting under the Toxic Substances Control Act and Toxics Release Inventory
- Released a final plan for restricting PFAS discharges to waterways, including new regulations and studies
- Continued to distribute $10 billion in Bipartisan Infrastructure Law funding to address emerging contaminants in water
- Expanded the scientific understanding of PFAS and translated the latest science into EPA's efforts
- Proactively used enforcement tools to identify and address PFAS releases
- Engaged with federal partners and the public

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

# NEJAC's December 2022 Recommendations to EPA




PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

# Key NEJAC Recommendations and Responsive Actions

## INTERNAL CAPACITY

***NEJAC strongly recommends that EPA ensure it has the internal capacity to implement its PFAS Roadmap.***

- Institutionalized and continued to convene the EPA Council on PFAS created in April 2021
- Identified lead internal PFAS points of contact for each EPA Region with regular PFAS Council coordination
- Requests for additional PFAS resources in the FY24 President's Budget ($126m proposed in FY23, $170m proposed in FY24)
- Strengthened connections with federal partners through the Interagency Policy Committee on PFAS
- Upcoming second-annual PFAS Roadmap public progress report to highlight Roadmap implementation

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

# Key NEJAC Recommendations and Responsive Actions

## RESEARCH

*Improve understanding of PFAS in small water systems and for EJ communities*

- Commenced nationwide drinking water monitoring, including significantly expanded scope of water systems to measure more PFAS at lower levels. Data will help EPA better understand potential disproportionate impacts on communities with EJ concerns

*Assess and address PFAS air pollution*

- Proposed additional data collection under the proposed Air Emissions Reporting Rule
- Advanced our understanding PFAS air pollution through method development, air deposition and thermal treatment studies, and air modeling studies

*Sample and track PFAS in wastewater and in biosolids*

- Sent guidance to states recommending PFAS monitoring in Clean Water Act permits and steps to reduce the levels of PFAS entering wastewater and stormwater systems
- Announced new nationwide study of PFAS entering Publicly Owned Treatment Works

*Convene and consult with state experts*

- Ongoing coordination with state partners in the Environmental Council of the States, Interstate Technology and Regulatory Council, and state association partners

# Key NEJAC Recommendations and Responsive Actions

## RESTRICT

*Enact a moratorium on approving new PFAS for use in EJ communities*

- Released a framework to guide review of new PFAS to ensure that they are extensively evaluated and do not pose risks to people's health or the environment

*Regulate PFAS as a class rather than individually*

- Continued progress in implementing EPA's category-based National PFAS Testing Strategy
- Proposed to regulate mixtures of four PFAS under a "hazard index" approach in EPA's proposed National Primary Drinking Water Regulation

*Curb industry discharges by enforcing ELGs*

- Continued progress in developing proposed ELGs for PFAS manufacturing and metal finishing (including EJ analyses), and new rulemaking to address PFAS in landfill leachate

*Disallow PFAS-containing aqueous film-forming foam (firefighting foam) in EJ communities*

- Coordinating with the Department of Defense and the Federal Aviation Administration as they transition to fluorine-free firefighting foam

# Key NEJAC Recommendations and Responsive Actions

## REMEDIATE

*Create a list of priority communities exposed to PFAS*

- In January, EPA publicly released (and is regularly updating) PFAS Analytic Tools that compile and integrate data on PFAS manufacture, release, and occurrence in communities, including integrated ability to generate EJSCREEN reports

*Prioritize accountability for PFAS manufacturers to address contamination in overburdened EJ communities*

- EPA's FY24-27 National Enforcement and Compliance Initiatives include "Addressing Exposure to PFAS" to protect vulnerable and overburdened communities by addressing characterization and control of ongoing releases that pose a threat, ensure compliance, and address endangerment

*Assess and improve support for infrastructure*

- Continuing to distribute $10 billion under the Bipartisan Infrastructure Law to address PFAS and other emerging contaminants in water, especially in small or disadvantaged communities

# Key NEJAC Recommendations and Responsive Actions

## RESPOND

**(emergency and community-based)**

*Create an interagency PFAS response plan and response team, direct federal and polluter funds for response, and compile best practices, with focus on vulnerable communities.*

- Deeper coordination with the Interagency Policy Council on PFAS, including enhanced focus on communities, food systems, and health impacts
- Ongoing dialogue with Local Government Advisory Committee and Environmental Council of the States on PFAS response toolkits, best practices, and risk communications
- Continued progress toward CERCLA hazardous substance designations and PFAS National Enforcement and Compliance Initiative

## RESOURCES

**(engagement and education)**

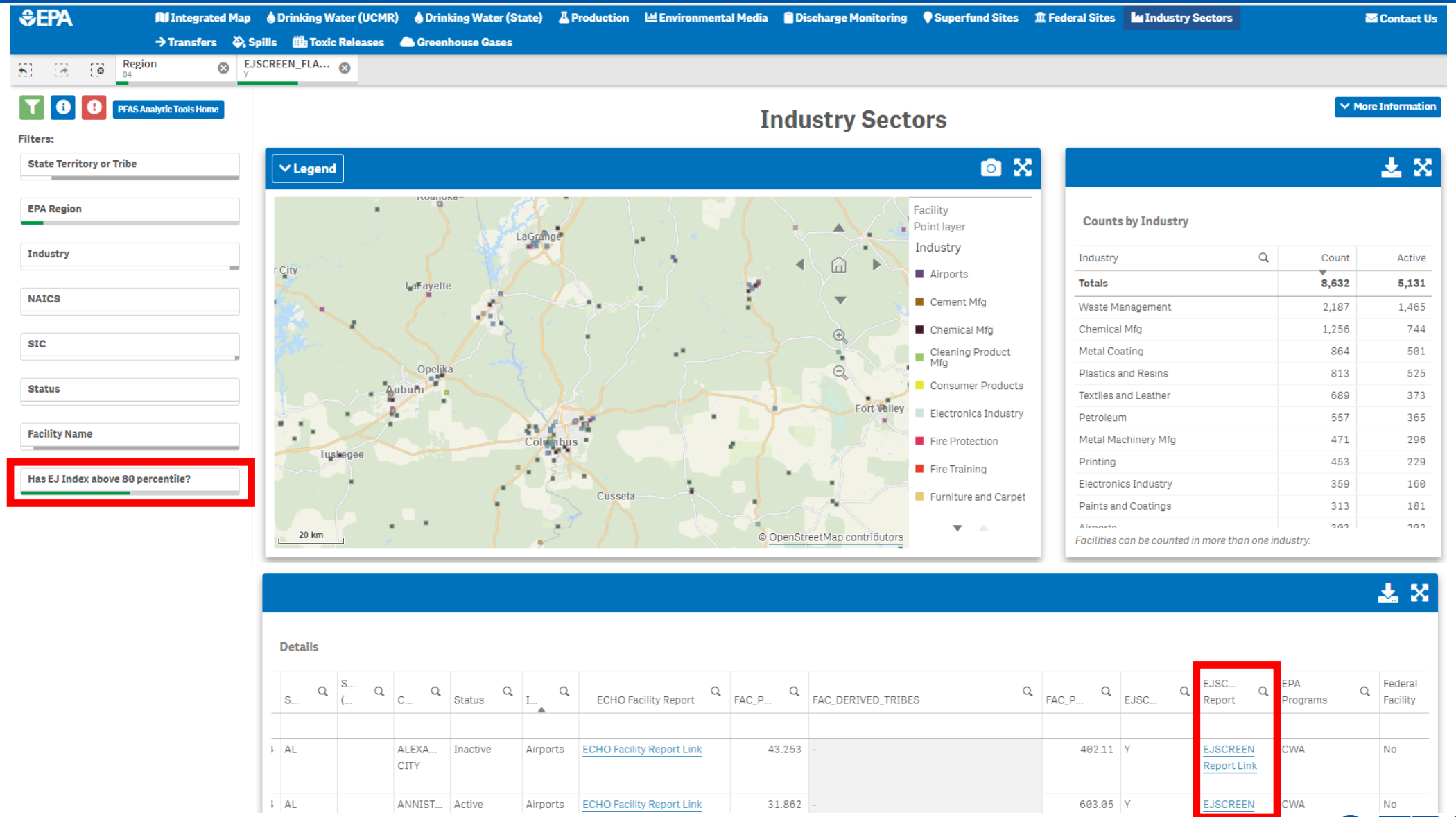
*Create a PFAS data dashboard, covering all aspects of the PFAS Roadmap, and incorporate PFAS data into EJSCREEN*

- Publicly release and periodically update EPA's multi-media PFAS Analytic Tools, including integrated ability to generate EJSCREEN reports

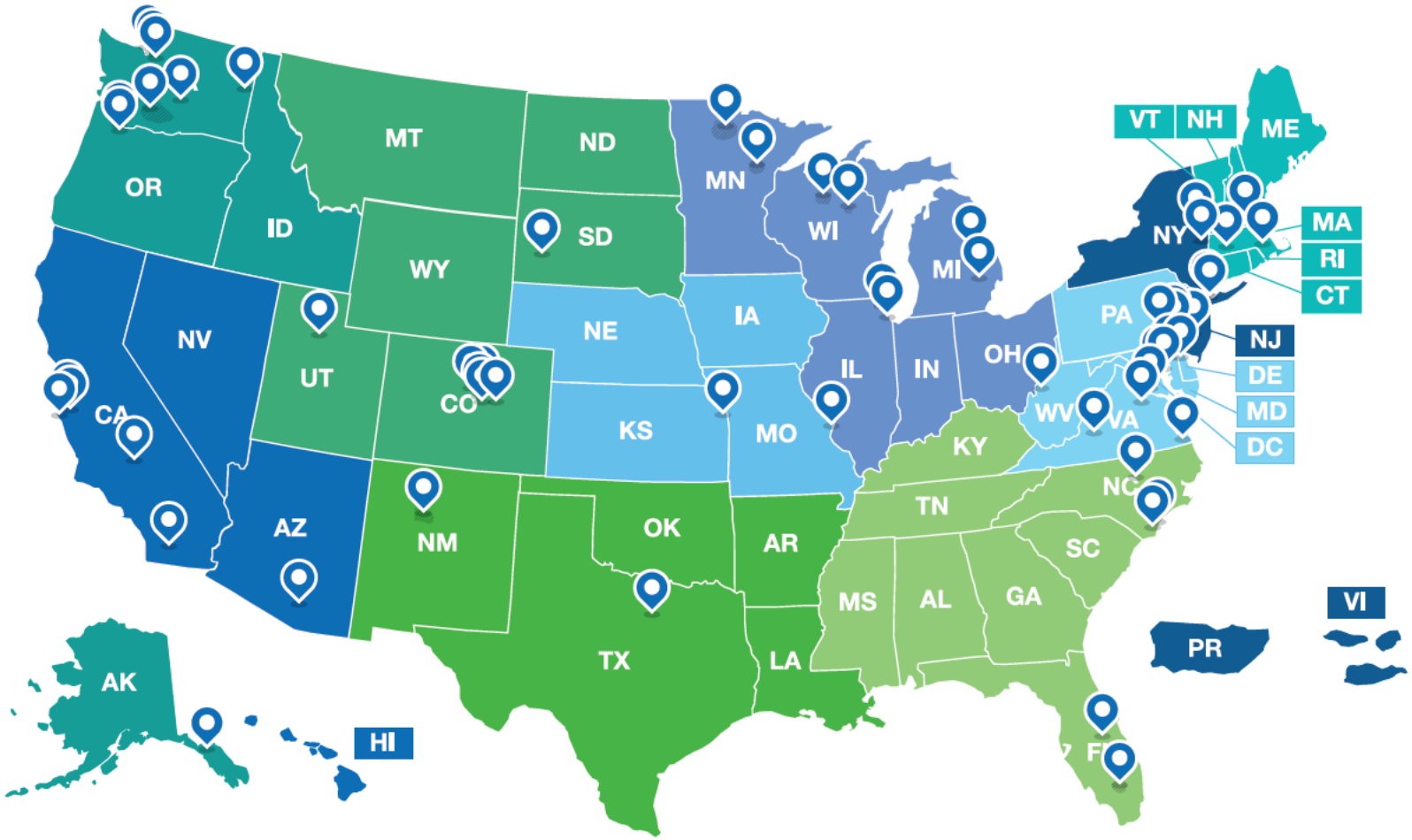
*Target outreach to EJ communities*

- Held *PFAS listening sessions in each of EPA's ten Regions and a session for Tribes in early 2023 (also responsive to 2019 NEJAC recommendations)*

# PFAS Analytic Tools and EJSCREEN Connection



# Regional PFAS Roadmap Listening Sessions




- **11 virtual sessions from February-April 2023**
- **Nearly 1,800 attendees**
- **Speakers from communities across the country** (depicted here)

PFAS Strategic Roadmap: EPA's Commitments to Action 2021–2024

# Next Steps

- Upcoming formal response to the NEJAC's December 2022 written recommendations to the Administrator
- Next public update on PFAS Roadmap progress expected soon
- Continued engagement and outreach with NEJAC and other stakeholders as foundational rules are finalized and as key data are collected to improve EJ analysis and action





# PFAS Strategic Roadmap:

## EPA's Commitments to Action 2021-2024

epa.gov/pfas

# Air Quality and Community Monitoring Recommendations Progress Report

**Chet Wayland**, Director, Office of Air and Radiation, Office of Air Quality Planning Standards, Air Quality Assessment Division, U.S. Environmental Protection Agency

**Tanya Abrahamian**, Office of Air and Radiation, Office of Air Quality Planning Standards, Air Quality Assessment Division, U.S. Environmental Protection Agency

**Erika Sasser**, Office of Air and Radiation, Office of Air Quality Planning Standards, Health and Environmental Impacts Division, U.S. Environmental Protection Agency

**Trish Koman**, Senior National EJ Coordinator/Scientist, Office of Air and Radiation, Office of Air Policy and Program Support, U.S. Environmental Protection Agency

# EPA Update:
# Air Quality and Community Monitoring

Chet Wayland, Director, Air Quality Assessment Division
Erika Sasser, Director, Health and Environmental Impacts Division
Tanya Abrahamian, Policy Analyst, Air Quality Policy Division

**Office of Air and Radiation**
**Office of Air Quality Planning and Standards**

December 5, 2023

# Background: Air Quality and Community Monitoring

**BACKGROUND**

- Nov 2020 NEJAC established AQCM workgroup
  - Additional Clean Air Act Advisory Committee expert added
- Nov 2022 NEJAC Report to EPA with recommendations

**PURPOSES**

- Update NEJAC on key progress and EPA actions
- Obtain additional input via Q&A

**PROMPT**

*We monitored the air, now what? Gathering public and community input on data management, interpretation, access, application, and impact of air quality monitoring data in anticipation of American Rescue Plan (ARP) grants and new techniques.*

Workgroup created 8 additional questions and corresponding recommendations.

# Ambient Air Monitoring

- EPA continues to balance the infrastructure and modernization needs of our current ambient air monitoring network with an increased demand for more localized monitoring.
- In 2023, EPA awarded funds made available through the American Rescue Plan and Inflation Reduction Act to enhance air quality monitoring in communities across the United States and enhance the monitoring of $PM_{2.5}$ and five other air pollutants regulated by the National Ambient Air Quality Standards under the Clean Air Act (Enhanced Air Quality Monitoring Funding under the ARP | US EPA)
- EPA appreciates the recognition that the competitive grant program under the American Rescue Plan (titled *Enhanced Air Quality Monitoring for Communities*) to support community air monitoring is a positive step forward.
  - Grant recipients have three years to complete their projects.
  - Grant recipients are responsible for making the data publicly available.
  - EPA looks forward to supporting these grant recipients and facilitating the sharing of lessons learned.

# Ambient Air Monitoring – Quality Assurance

- Community air monitoring projects vary in location, pollutant scope, measurement technology and methods used, and desired outcomes.
- Quality assurance and quality control are critical aspects of all air monitoring projects.
  - While EPA has established regulations and guidance for ambient air monitoring programs, methods for identifying and addressing issues with sensor data are still under development.
  - Air Sensors Quality Assurance Workshop – July 2023
    - In recognition of the need identified above, EPA hosted a workshop open to the public.
    - The workshop gathered air sensor technical experts and community members to discuss established and emerging QA methods to help support the user community in collecting air sensor data.
    - Materials and more information is available on EPA's website at: Quality Assurance for Air Sensors | US EPA

# Community Data – Data Standards

- EPA fully appreciates that the sharing of community data is critical to information being available for decision-makers and is working closely with Colorado DPHE on potential data standards for sharing community-based monitoring
- Effort trying to provide some consistent standards for sharing data that are less burdensome than traditional regulatory data standards, yet can provide useful basic metadata to inform those receiving and using the data
- Working on an Air Quality Data Exchange (AQDx) format for potential use as a common approach for sharing non-regulatory data

# Improving Public Access to Information

NEJAC AQCM recommendations highlighted several important goals:

- Improve public risk communication and education
- Improve the public's ability to evaluate and determine the health significance of air quality data at the local scale
- Help the public understand the sources of air pollution in their communities

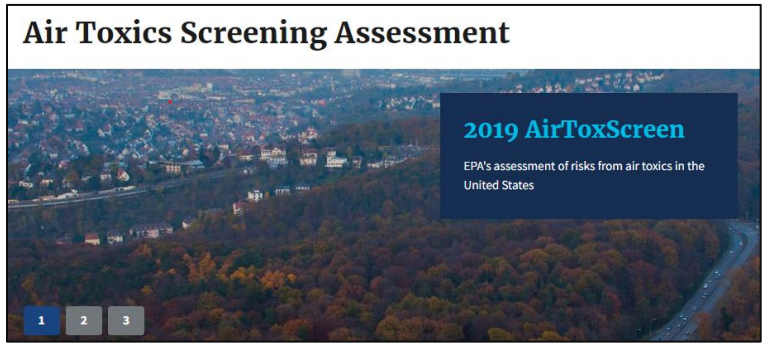
# Risk Communication and Community Engagement

Risk communication is fundamental to EPA's work, and we are taking steps to provide meaningful, understandable, and actionable information to our many audiences, including environmental justice communities.

- Dedicated Senior Risk Communication Advisor in the Administrator's office
- SALT Framework – Strategy, Action, Learning, and Tools
  - Includes an overview of key risk communication principles,
  - Outlines some of the science and research behind those principles, and
  - Provides clear, practical guidance for implementing a consistent approach to communicating risk across all EPA activities and programs.
- Recent efforts on risk assessment and outreach to support air regulations include:
  - ethylene oxide sterilizers
  - chemical sector proposal


More information at https://www.epa.gov/risk-communication/salt-framework

# Tools and Approaches to Enhance Data Accessibility




## AirToxScreen

- Now providing annual updates
- Includes visually dynamic and robust display of air pollution data and associated risks, including interactive mapping tools
- Helps state, local and tribal air agencies, EPA, and the public more easily identify existing and emerging air toxics issues

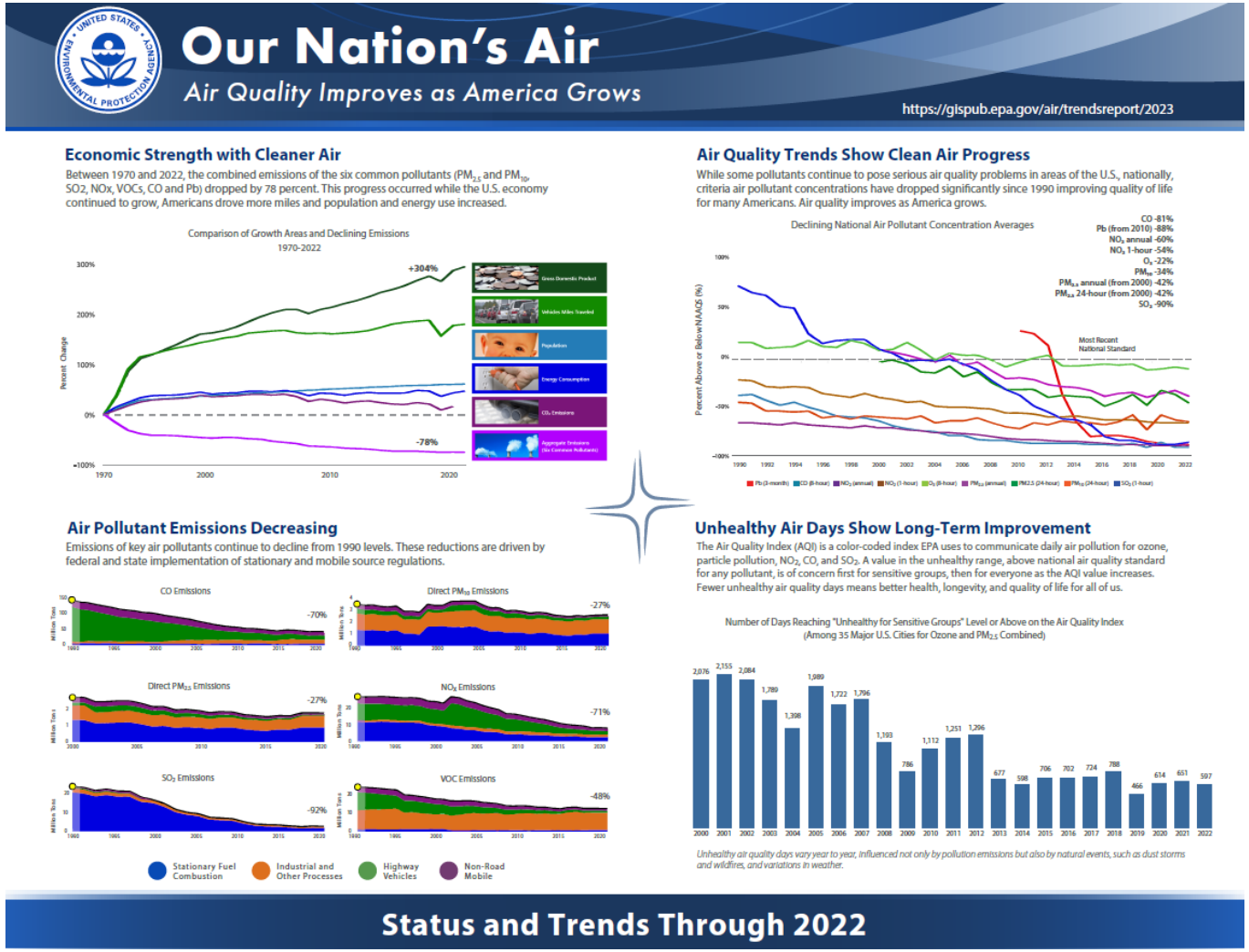
## NEXUS – Multi-Pollutant Advanced Screening Tool

- Internal tool for multi-pollutant planning. Intended for eventual future public release.
- Identifies geographic areas where health risks related to ozone, fine particulate matter, and air toxics overlap – the 'nexus'
- Designed because multi-pollutant strategies, compared to single-pollutant strategies, have the potential to reduce costs and increase health benefits.
- Includes emission source information and a suite of demographic indicators, pulled from EJ Screen, including low income, people of color, linguistically isolated and under age 5 and over age 64.

# Tools and Approaches to Enhance Data Accessibility

## Air Trends Report

- Annual summary of the nation's air quality status and trends
- Current through 2022
- Interactive display and one-page summaries
- Familiar graphics, broadly distributed



# Improving EJ Analysis in Regulations

- Developing advanced analytics to support OAQPS regulatory programs:
  - Tailored to specific regulation under development
  - Designed to address the risks associated with the specific pollutants involved, at the appropriate scale
  - Enhanced with graphics and interpretive text to help public understand the results
  - Working to incorporate cumulative air pollution impacts
- EJ analytics are designed around three guiding questions**:
  1. Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern **in the baseline**?
  2. Are there potential EJ concerns associated with environmental stressors affected by the regulatory action for population groups of concern **for the regulatory option(s) under consideration**?
  3. For the regulatory option(s) under consideration, **are potential EJ concerns…exacerbated or mitigated compared to the baseline**?

** EPA Technical Guidance for Assessing EJ in Regulatory Analysis

# Environmental Justice in OAQPS

Numerous recent and upcoming rulemakings leveraging OAQPS EJ analytics

- PM NAAQS, HON, Oil & Gas, Ethylene Oxide/Sterilizers, Good Neighbor Plan, Mercury and Air Toxics Standards – Risk & Technology Review (MATS-RTR), Greenhouse Gas Regulations for power plants, etc.

EJ analytical tools, models, approaches

- Typically conduct air quality and risk/health analyses with our refined OAQPS tools/models to inform necessary EJ assessments
- Learn from each application to develop/improve our EJ analytics tools and capabilities

Relevance for the Inflation Reduction Act (IRA)

- The Climate and Economic Justice Screening Tool (CEJST) defines the starting point for IRA work in terms of defining low income and disadvantaged communities (LIDACs)
- Expect OAQPS scientific tools/models to be applicable for EJ assessments under IRA

# Overview of Types of EJ Analyses


## 0. Tribal Proximity Screen

- For outreach/engagement early in rulemaking process
- Includes tribal areas and limited demographics/indices
- Requires a preliminary facility list

## 1. Demographics Proximity Analyses

- Compares proportionality of potential EJ populations living nearby affected facilities
- Requires a more refined facility list with location information

## 2. Risk-Based Demographics Analyses of HAP Emissions

- Compares proportionality of potential EJ populations exposed to various risk-levels from hazardous air pollutants (HAP)
- Requires detailed location, emissions data, and modeling

## 3. $PM_{2.5}$ and Ozone Exposure/Health Impact Analyses

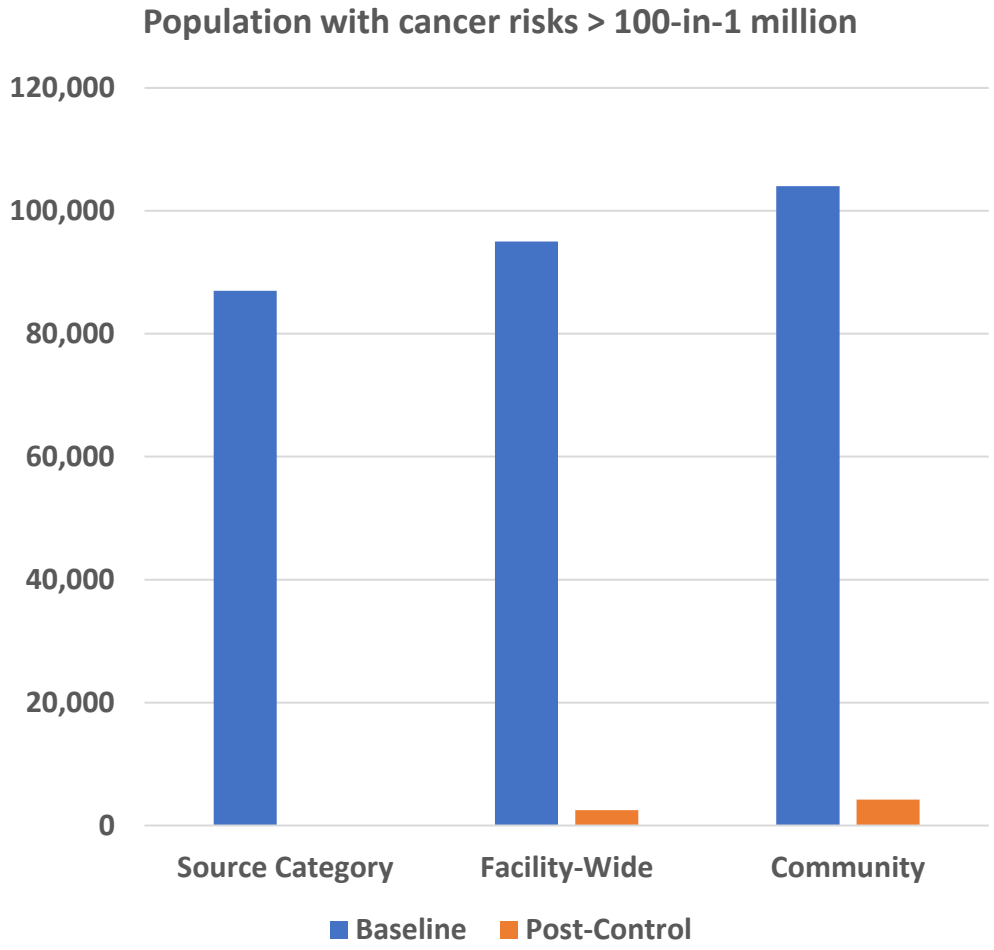
- Compares $PM_{2.5}$ and Ozone exposure/health impacts of potential EJ populations
- Requires air quality modeling surfaces and additional scientific support for health impact application

NOT Used to support regulation

Used to support regulation

# Community-based Risk Assessment: Chemical Sector Proposal

- **First risk and technology review (RTR) NESHAP with a community-based risk assessment**
- We considered air toxic inhalation cancer risks from all large stationary sources in communities around HON facilities
- Majority of risks in the community are from HON sources
- Where cancer risks are >100-in-1 million,
  - 91% HON sources
  - 7% Non-HON processes at HON facilities
  - 2% Other nearby stationary sources that are not HON facilities
- American, Hispanic or Latino population risk is substantially higher than the national average
- **Post-control cancer risks are significantly reduced from pre-control (baseline) risks**



# Ongoing Challenges

- Limited availability of local-scale public health data
- Volume and complexity of air quality information
- Technical complexity of data analysis and visualization tools

# Principles for Addressing EJ in Air Permitting

- Developed by a Region 5-led workgroup and issued by OAR on December 22, 2022, to assist in the promotion of environmental justice and equity through air permitting programs.
- Includes eight guiding principles that provide a framework for identifying, analyzing and addressing environmental justice concerns in the context of CAA Permitting.
- Encourages Regions to apply these principles when issuing federal CAA permits and to work collaboratively with state, Tribal, and local partners to implement EJ principles in their air permitting programs.
- Relies on existing CAA authorities to determine the appropriate scope of an EJ analysis on a case-by-case basis

# Principles for Addressing EJ in Air Permitting

1. Identify communities with potential environmental justice concerns
2. Engage early in the permitting process to promote meaningful participation and fair treatment
3. Enhance public involvement throughout the permitting process
4. Conduct a “fit for purpose” environmental justice analysis
5. Minimize and mitigate disproportionately high and adverse effects associated with the permit action to promote fair treatment
6. Provide federal support throughout the air permitting process
7. Enhance transparency throughout the air permitting process
8. Build capacity to enhance the consideration of environmental justice in the air permitting process

# For More Information:

Principles for Addressing Environmental Justice in Air Permitting

- https://www.epa.gov/caa-permitting

EPA Legal Tools to Advance Environmental Justice

- https://www.epa.gov/ogc/epa-legal-tools-advance-environmental-justice

*Interim* Environmental Justice and Civil Rights in Permitting FAQ

- https://www.epa.gov/nsr

# Discussion

# EPA Region 2 Follow-Up from the Puerto Rico NEJAC Public Meeting

**Lisa Garcia**, Regional Administrator, Region 2, U.S. Environmental Protection Agency

# Break

# Office of Land and Emergency Management (OLEM) Environmental Justice Activities Update

**Clifford Villa**, Deputy Assistant Administrator, Office of Land and Emergency Management, U.S. Environmental Protection Agency

# EJ UPDATE:

## EPA OFFICE OF LAND AND EMERGENCY MANAGEMENT


**CLIFFORD J. VILLA**
**DEPUTY ASSISTANT ADMINISTRATOR**
NEJAC - DECEMBER 5, 2023

EPA 500-R-96-002
December 1996

# ENVIRONMENTAL JUSTICE, URBAN REVITALIZATION, AND BROWNFIELDS:

# THE SEARCH FOR AUTHENTIC SIGNS OF HOPE

**A Report on the**
**"Public Dialogues on Urban Revitalization and Brownfields:**
**Envisioning Healthy and Sustainable Communities"**

***National Environmental Justice Advisory Council***
***Waste and Facility Siting Subcommittee***
***Charles Lee, Chair***

*A Federal Advisory Committee to the U.S. Environmental Protection Agency*

November 2002 (revised)

# FISH CONSUMPTION AND ENVIRONMENTAL JUSTICE

**A Report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001**

*A Federal Advisory Committee to the U.S. Environmental Protection Agency*

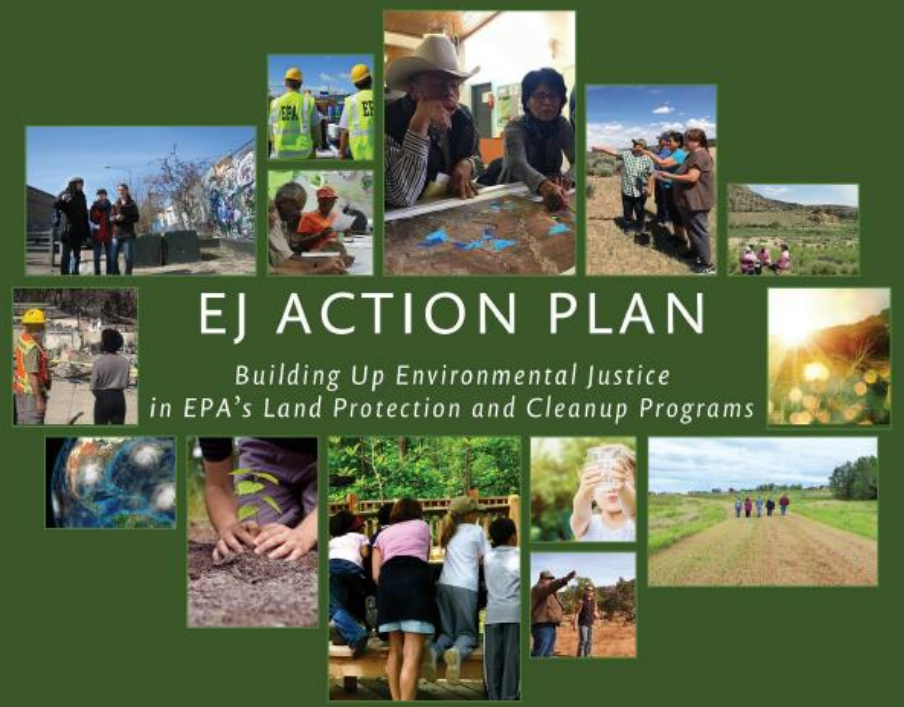
# Superfund Remediation and Redevelopment for Environmental Justice Communities

May 2021


National Environmental Justice Advisory Council
A Federal Advisory Committee to the
U.S. Environmental Protection Agency

EPA

September 2022



# EJ ACTION PLAN

*Building Up Environmental Justice in EPA's Land Protection and Cleanup Programs*

Office of Land and
Emergency Management (OLEM)
EPA 502/P-21/001

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

November 3, 2022

**MEMORANDUM**

**SUBJECT:** Transmittal of the *Integrating Environmental Justice into Emergency Response Preparedness and Management* Document

**FROM:** Matthew Tejada, Deputy Assistant Administrator for Environmental Justice
Office of Environmental Justice and External Civil Rights (OEJECR)

MATTHEW TEJADA Digitally signed by MATTHEW TEJADA Date: 2022.11.07 10:26:59 -05'00'

Carlton Waterhouse, Deputy Assistant Administrator
Office of Land and Emergency Management (OLEM)

CARLTON WATERHOUSE Digitally signed by CARLTON WATERHOUSE Date: 2022.11.04 12:58:03 -04'00'

**TO:** Regional Administrators, Regions 1-10

We are pleased to transmit to you the *Integrating Environmental Justice into Emergency Response Preparedness and Management* document, which OEJECR and OLEM's Office of Emergency Management (OEM) collaboratively developed to enhance the inclusivity, equitability, and responsiveness of EPA's emergency response functions. This paper was reviewed by EPA's National Incident Management System (NIMS) Integration Team (NIT), the Removal Managers, and the regional Environmental Justice (EJ) Coordinators. OEJECR and OEM also briefed the Superfund Division Directors and other EPA senior management on the paper.

The document lays out five discrete recommendations and clarifies who (i.e., OEJECR, OEM, and/or Regions) is responsible for implementation of each:

- Integrating EJ priorities into EPA's National Approach to Responses (NAR) structure and developing Management/Incident Objectives, as needed.
- Engaging EJ expertise in early response assessments, such as household hazardous waste, regulated facility, or staging areas, as needed.
- Incorporating environmental justice function and staffing support with regional Incident Management Team (IMT) and Emergency Operations Center (EOC) structures, where appropriate.
- Implementing training and other related requirements for the EJ Response Facilitator cadre.
- Developing and promoting the adoption and use of participation guidelines for disaster response situations by relevant emergency response organizations in both the public and private sectors.

# Tools for Considering Environmental Justice in CERCLA Investigations at Federal Facility NPL Sites

## Environmental Justice Reference Guide

Environmental Justice Pilot Project –
EPA's Federal Facilities Restoration and Reuse Office (FFRRO) and Region 3,
U.S. Department of Defense (DOD), and state agencies

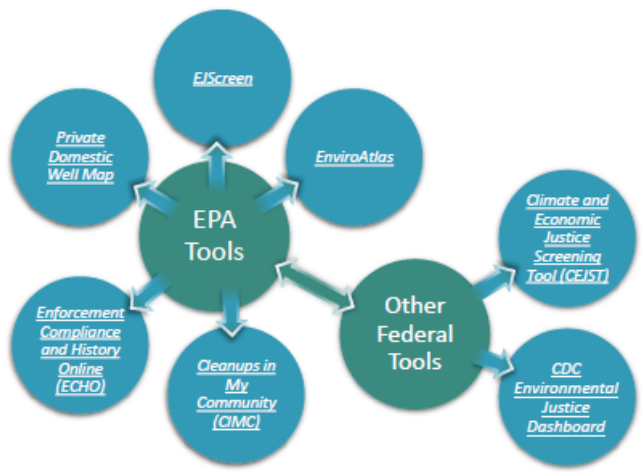
EPA's Environmental Justice Reference Guides provide tips to help CERCLA Superfund project team members apply guidance, tools and strategies to identify and address concerns related to environmental justice.* These concerns can indicate vulnerabilities and conditions that lead to disproportionate impacts.

At federal facility Superfund sites, the lead agency is responsible for cleaning up the sites. Federal agencies and their facilities must comply with environmental laws and requirements in the same manner and to the same extent as any other regulated facility. EPA and state regulators oversee site cleanups to ensure compliance with environmental laws and requirements and the protection of human health and the environment. The project team comprises the lead agency, EPA and the state.

This Reference Guide describes computer-based tools available for screening community characteristics and attributes.

### Tools to Characterize Potentially Impacted Communities

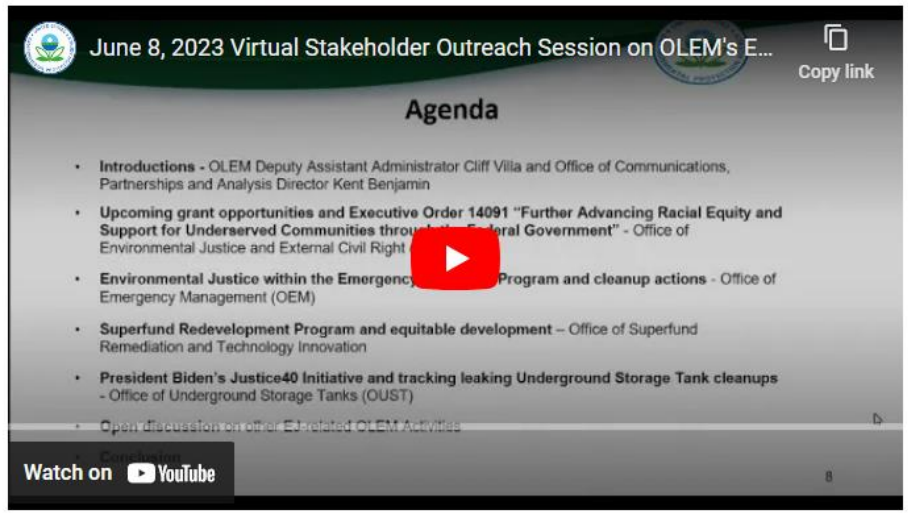
Several computer-based tools help project teams identify and learn about potentially impacted communities, and identify potential exposure pathways relevant to these groups. The use of these tools is enhanced by outreach strategies that engage communities in dialogue, lead to shared understanding of local concerns, and address potential exposures to site contaminants. This Reference Guide provides a brief overview of these federal tools below, as well as a selection of environmental justice and environmental screening tools that states have developed to address state-specific needs.




* CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

# Environmental Justice Action Plan for EPA's Land Protection and Cleanup Programs

## June 8, 2023 Community Engagement Zoom Call




EPA's Office of Land and Emergency Management hosted its second 2023 environmental justice community engagement.

Agenda:

- Introductions by OLEM Deputy Assistant Administrator Cliff Villa and Office of Communications, Partnerships and Analysis Director Kent Benjamin.

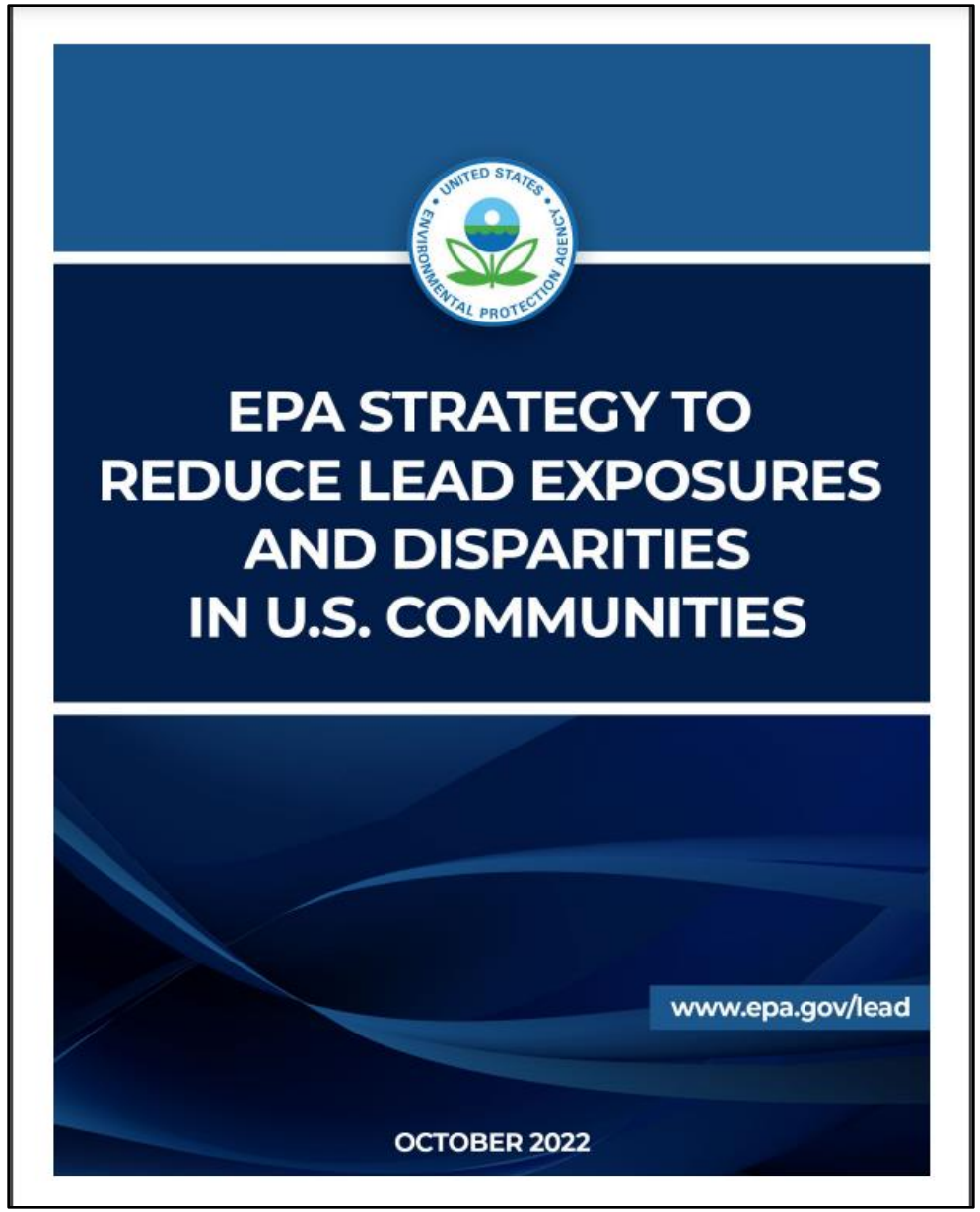
# EPA Legal Tools to Advance Environmental Justice: Cumulative Impacts Addendum

January 2023

Office of General Counsel
U.S. Environmental Protection Agency
Washington, D.C. 20460



Publication No.: 360R22002


UNITED STATES • ENVIRONMENTAL PROTECTION AGENCY •
EPA STRATEGY TO REDUCE LEAD EXPOSURES AND DISPARITIES IN U.S. COMMUNITIES
www.epa.gov/lead
OCTOBER 2022

EPA
United States
Environmental Protection
Agency

Office of Land
and
Emergency Management

EPA 540-F-22-004
August 2022
www.epa.gov/rmp

# Safer Communities by Chemical Accident Prevention
## RMP Proposed Rule Fact Sheet

EPA is proposing to strengthen its Risk Management Program (RMP) regulations (40 CFR Part 68) following a review of the existing RMP requirements and after considering information gathered from the 2021 Virtual Public Listening Sessions. These proposed amendments, the Safer Communities by Chemical Accident Prevention (SCCAP) proposed rule, further protect vulnerable communities from chemical accidents, especially those living near facilities with high accident rates. The proposed rule also includes new provisions that have not been addressed in prior RMP rules. EPA believes these revisions could increase protections for human health and the environment from chemical hazards, through advancement of process safety and lessons learned. The Agency looks forward to working with communities with environmental justice concerns, public health advocates, and other stakeholders during the public comment process.

## What are the proposed changes in the SCCAP Proposed Rule?

### Prevention Program (Subparts C and D)

- **Natural hazards and power loss***: (1) Adding amplifying regulatory text to emphasize that natural hazards (including those that result from climate change) and loss of power are among the hazards that must be addressed in Program 2 hazard reviews and Program 3 process hazard analyses. (2) Requiring a justification in the Risk Management Plan when hazard evaluation

information, please see the information provided in the **ADDRESSES** section of this document.

Dated: August 26, 2022.

**Daniel Blackman**

*Regional Administrator, Region 4.*

[FR Doc. 2022–19202 Filed 9–2–22; 8:45 am]

**BILLING CODE 6560–50–P**

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 302

**[EPA–HQ–OLEM–2019–0341; FRL–7204–02–OLEM]**

**RIN 2050–AH09**

## Designation of Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) as CERCLA Hazardous Substances

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (''CERCLA'' or ''Superfund''), the Environmental Protection Agency (EPA or the Agency) is proposing to designate

OLEM Docket, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.

- *Hand Delivery or Courier:* EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m.–4:30 p.m., Monday–Friday (except Federal Holidays).

*Instructions:* All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/,* including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the ''Public Participation'' heading of the **SUPPLEMENTARY INFORMATION** section of this document. For further information on EPA Docket Center services and the current status, please visit us online at *https://www.epa.gov/dockets.*

**FOR FURTHER INFORMATION CONTACT:** Michelle Schutz, Office of Superfund Remediation and Technology Innovation (5202T), Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number 703–346–9536; email address: *schutz.michelle@epa.gov.*

**SUPPLEMENTARY INFORMATION:**

IARC International Agency for Research of Cancer
ICR Information Collection Request
ILs Initiation levels
LEPC Local Emergency Planning Committee
LHA Lifetime health advisories
MAC Maximum acceptable concentration
MCL Maximum contaminant level
MDH Minnesota Department of Health
mg/kg milligram per kilogram
mg/kg/day milligram per kilogram per day
MRL Minimal risk level
MSC Medium-specific concentration
NAICS North American Industrial Classification System
NCP National Oil and Hazardous Substances Pollution Contingency Plan
ng/g nanograms per gram
ng/L nanograms per liter
NHANES National Health and Nutrition Examination Survey
NJDEP New Jersey Department of Environmental Protection
NPL National Priorities List
NRC National Response Center
OMB Office of Management and Budget
PADEP Pennsylvania Department of Environmental Protection
PBI Proprietary business information
PCBs Polychlorinated biphenyls
PCL Protective concentration level
PER Perimeter Well Study
PFAS Per- and polyfluoroalkyl substances
PFBS Perfluorobutanesulfonic acid
PFDA Perfluorodecanoic acid
PFHpA Perfluoroheptanoic acid
PFHxA Perfluorohexanoic acid
PFHxS Perfluorohexanesulfonic acid

# Fact Sheet: Legacy Coal Combustion Residuals (CCR) Surface Impoundments and CCR Management Units Proposed Rule

*The United States Environmental Protection Agency (EPA) issued a proposed rule that would require the safe management of coal ash dumped in areas that are currently unregulated at the federal level. This includes inactive power plants with surface impoundments that are no longer being used and historical coal ash disposal areas at power plants with regulated coal ash units. This proposal applies to historical contamination and inactive units that no longer support current power plant operations.*

## What Does the May 2023 Proposal Do?

On May 18, 2023, EPA proposed to amend the rules governing the disposal of CCR in landfills and surface impoundments. EPA proposed regulatory requirements for inactive surface impoundments at inactive facilities (referred to as "legacy CCR surface impoundments"). This proposal responds to the 2018 U.S. Court of Appeals for the District of Columbia Circuit ruling that vacated the exemption for legacy CCR surface impoundments from the CCR regulations

contaminants into water sources, including surface water and groundwater.

On April 17, 2015, the EPA promulgated national minimum criteria for existing and new CCR landfills and existing and new CCR surface impoundments. This final rule did not impose any requirements on inactive facilities. On August 21, 2018, the U.S. Court of Appeals for the District of Columbia Circuit vacated the exemption for inactive surface impoundments at inactive facilities and remanded the issue back to EPA to take action consistent with the opinion in "Utility Solid Waste Activities Group,

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 110 and 300**

**[EPA–HQ–OPA–2006–0090; FRL–4526–01–OLEM]**

**RIN 2050–AE87**

# National Oil and Hazardous Substances Pollution Contingency Plan; Product Schedule Listing and Authorization of Use Requirements

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency (EPA or the Agency) is amending the requirements in Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) that govern the use of dispersants, other chemicals and other spill mitigating substances when responding to oil discharges into jurisdictional waters of the United States. This action addresses the efficacy and toxicity of dispersants and other chemical and biological agents, as well as public, state, local, and federal officials' concerns regarding their use. Specifically, the Agency is amending the Subpart J regulatory requirements

Although listed in the index, some information is not publicly available, *e.g.,* CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through *http://www.regulations.gov*.

**FOR FURTHER INFORMATION CONTACT:** For general information, contact the Superfund, TRI, EPCRA, RMP, and Oil Information Center at 800–424–9346 or TDD at 800–553–7672 (hearing impaired). In the Washington, DC metropolitan area, contact the Superfund, TRI, EPCRA, RMP, and Oil Information Center at 703–412–9810 or TDD 703–412–3323. For more detailed information on this final rule contact Gregory Wilson at 202–564–7989 (*wilson.gregory@epa.gov*) or Vanessa Principe at 202–564–7913 (*principe.vanessa@epa.gov*). The contact address is U.S. Environmental Protection Agency, Office of Emergency Management, Regulations Implementation Division, 1200 Pennsylvania Avenue NW, Washington, DC 20460–0002, Mail Code 5104A, or visit the Office of Emergency

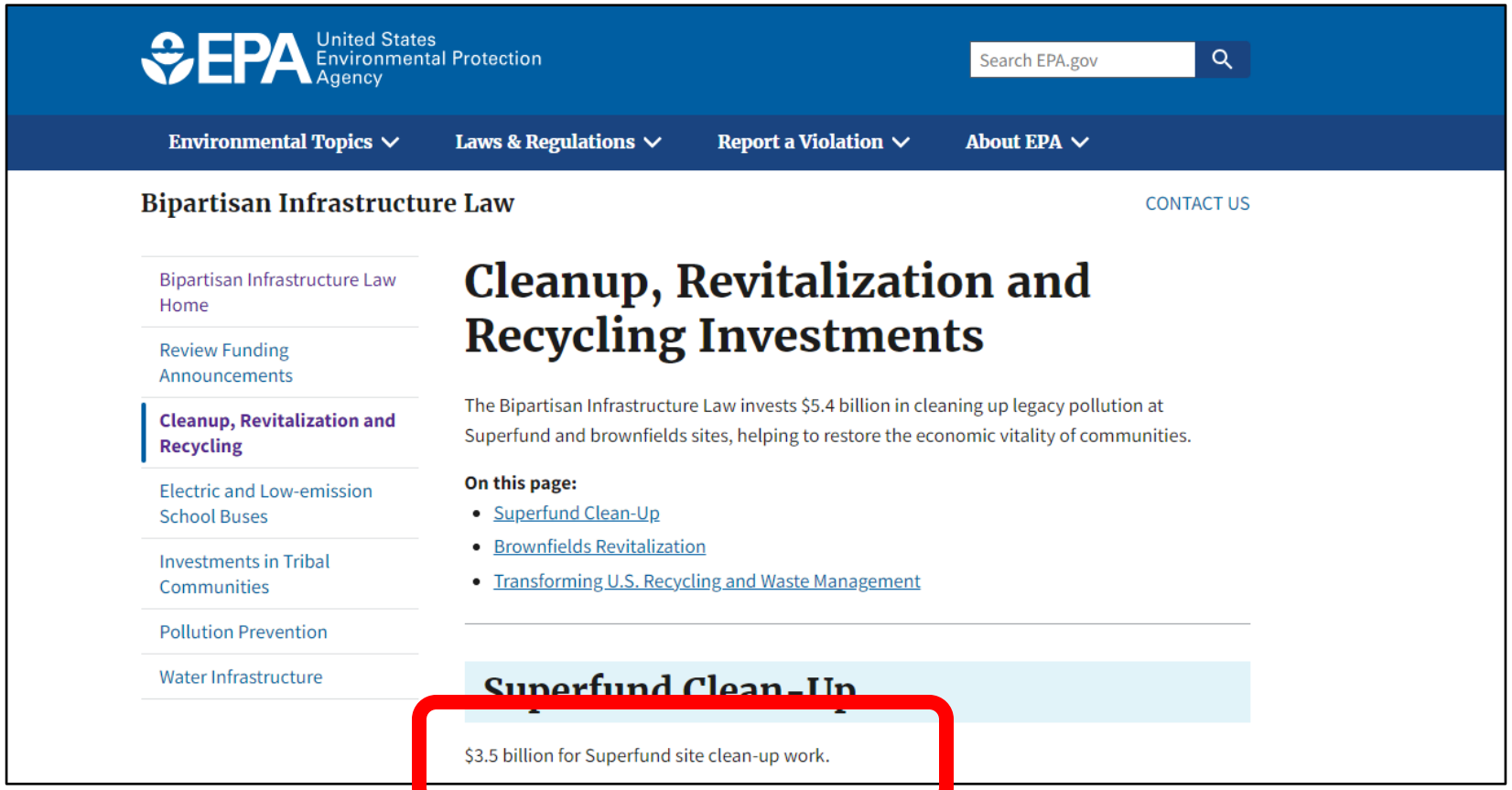


## I. General Information

In April 2010, the Deepwater Horizon underwater oil well blowout discharged significant quantities of oil into the Gulf of Mexico and raised questions about efficacy, toxicity, environmental tradeoffs, and the challenges of making dispersant use decisions in response operations for certain atypical dispersant use situations.

In this final action, EPA is

# Bipartisan Infrastructure Law


EPA United States Environmental Protection Agency
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Cleanup, Revitalization and Recycling
Electric and Low-emission School Buses
Investments in Tribal Communities
Pollution Prevention
Water Infrastructure
Cleanup, Revitalization and Recycling Investments
The Bipartisan Infrastructure Law invests $5.4 billion in cleaning up legacy pollution at Superfund and brownfields sites, helping to restore the economic vitality of communities.
On this page:
Superfund Clean-Up
Brownfields Revitalization
Transforming U.S. Recycling and Waste Management
Superfund Clean-Up
$3.5 billion for Superfund site clean-up work.

ENERGY & ENVIRONMENT

# EPA announces second $1 billion round of infrastructure funding for Superfund cleanup

BY ZACK BUDRYK - 02/10/23 12:00 PM ET


Westside Lead Superfund Site | Atlanta, GA
April 5, 2023


Brownfields Job Training Graduation | Chicago, IL
December 14, 2022

# Biden-Harris Administration Announces More than $315 Million Through Investing in America Agenda for Cleanup and Technical Assistance at Polluted Brownfield Sites

## EPA announces the largest investment ever in brownfields communities made by President Biden's Investing in America Agenda

May 25, 2023

**Contact Information**
EPA Press Office (press@epa.gov)

**WASHINGTON** – Today, the U.S. Environmental Protection Agency (EPA) announced more than $315 million from President Biden's Investing in America Agenda to expedite the assessment and cleanup of brownfield sites across the country while advancing environmental justice.

EPA selected 262 communities to receive 267 grants totaling more than $215 million in competitive EPA Brownfields funding through the Multipurpose, Assessment, Revolving Loan Fund, and Cleanup (MARC) Grant programs. Thanks to the historic boost from the Bipartisan Infrastructure Law, this is the largest ever funding awarded in the history of the EPA's Brownfields MARC Grant programs. In addition, the agency is announcing $45 million in non-competitive supplemental funding to 22 successful existing Revolving Loan Fund (RLF) Grant programs to help expedite their continued work at sites across the country by extending the capacity of the program to provide more funding for additional cleanups. EPA is also announcing selections of five Brownfields Technical Assistance Providers and three

# Leaking Underground Storage Tanks (LUST)

| | Within ¼ mile of LUST releases | U.S. Population |
|---|---|---|
| Minority | 53.6% | 41.1% |
| Below poverty level | 17.1% | 12.7% |
| Linguistically isolated | 7.8% | 4.8% |
| Less than a High School Education | 14.2% | 11.2% |

While there is no single way to characterize communities located near LUST sites, this population **is more minority, low income, linguistically isolated, and less likely to have a high school education** than the U.S. population as a whole.



Presidential Documents

Executive Order 14096 of April 21, 2023

## Revitalizing Our Nation's Commitment to Environmental Justice for All

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to advance environmental justice, it is hereby ordered as follows:

**Section 1**. *Policy*. To fulfill our Nation's promises of justice, liberty, and equality, every person must have clean air to breathe; clean water to drink; safe and healthy foods to eat; and an environment that is healthy, sustainable, climate-resilient, and free from harmful pollution and chemical exposure. Restoring and protecting a healthy environment—wherever people live, play, work, learn, grow, and worship—is a matter of justice and a fundamental duty that the Federal Government must uphold on behalf of all people.

We must advance environmental justice for all by implementing and enforcing the Nation's environmental and civil rights laws, preventing pollution, addressing climate change and its effects, and working to clean up legacy pollution that is harming human health and the environment. Advancing environmental justice will require investing in and supporting culturally vibrant, sustainable, and resilient communities in which every person has safe, clean, and affordable options for housing, energy, and transportation. It is also necessary to prioritize building an equitable, inclusive, and sustainable economy that offers economic opportunities, workforce training, and high-quality and well-paying jobs, including union jobs, and facilitating an equitable transition of the workforce as part of a clean energy future. Achieving this vision will also require improving equitable access to parks, tree cover, playgrounds, sports fields, rivers, ponds, beaches, lakes, and

**Environmental Justice (EO 14096)**

Environmental Justice is the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in agency decision-making and other Federal activities that affect human health and the environment …

**Environmental Justice (EO 14096)**

… so that people:

(ii) have equitable access to a healthy, sustainable, and resilient environment in which to live, work, learn, grow, worship, and engage in cultural and subsistence practices.

Mora County, New Mexico | June 2022

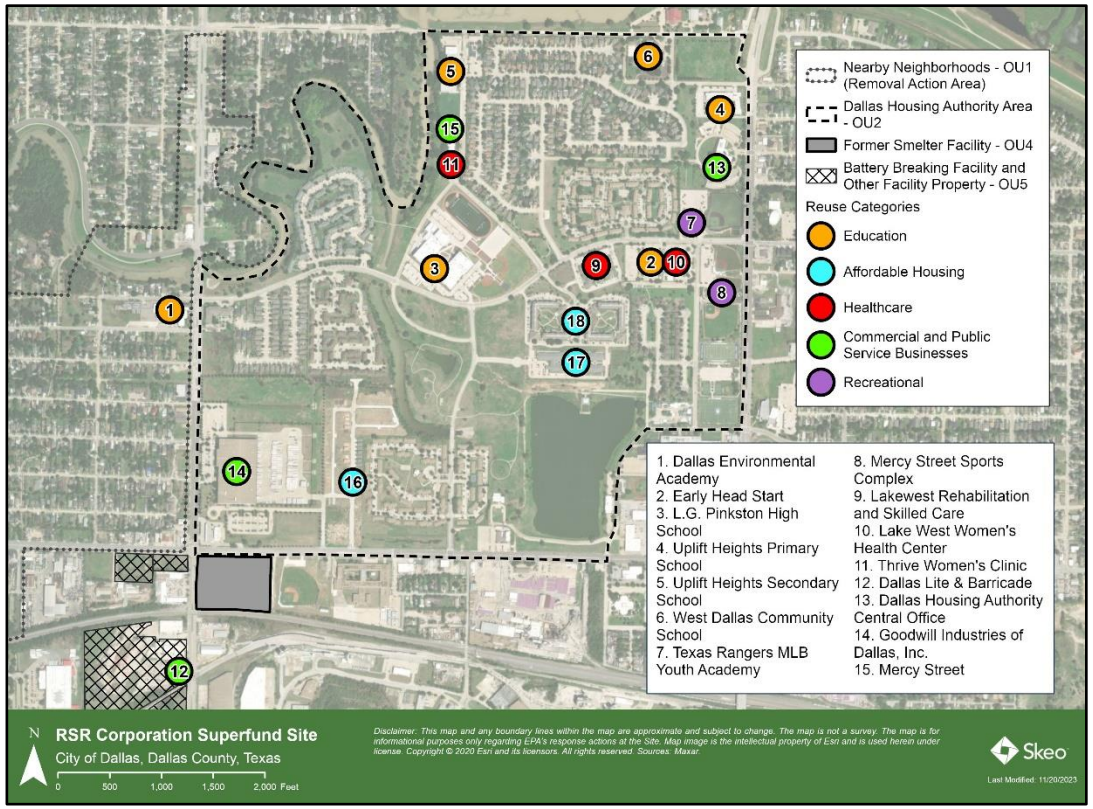

Graphic by Lily Nalulani Jenkins.

# Superfund Redevelopment Program:
# RSR Corporation Superfund Site – West Dallas, TX

Reuse projects and benefits:

- Affordable and safe housing
- Educational facilities
- Recreational amenities
- Health care centers
- Social services
- Job training
- 29 businesses: 1,100 jobs, $50 M/yr employee income.

Access the full case study here: https://semspub.epa.gov/work/HQ/100003358.pdf



# Superfund Redevelopment Program:
# RSR Corporation Superfund Site – West Dallas, TX


Figure 3. DHA housing developments at the DHA part of the Site (OU2).

**Cliff Villa, Deputy Assistant Administrator**

U.S. EPA Office of Land and Emergency Management

# Water Infrastructure Technical Assistance Recommendations Progress Report

**Jennifer L. McLain,** Director of the Office of Ground Water and Drinking Water, Office of Water, U.S Environmental Protection Agency

**Ellen Tarquinio**, Director of the Water Infrastructure and Resiliency Finance Center, Office of Water, U.S Environmental Protection Agency

**Sheyda Esnaashari**, Senior Technical Assistance Specialist, Office of Water, U.S Environmental Protection Agency

**Morgan Brown**, Senior Technical Assistance Specialist, Office of Water, U.S Environmental Protection Agency

# Update to the NEJAC on WaterTA Recommendations

December 5, 2023

EPA WATER TA

# NEJAC Recommendations

- 80+ recommendations on Technical Assistance from the Water Infrastructure Workgroup received by EPA in August 2023 – Thank You!
- First response captures the major themes throughout recommendations that are priorities across the Office of Water's WaterTA programs
- Formal response planned for Spring 2024 NEJAC meeting

# WaterTA Background and Priority Areas

# EPA WaterTA Supports Communities to:

- Identify water challenges
- Plan for solutions
- Increase community engagement
- Build technical, financial, managerial capacity
- Develop application materials to access water infrastructure funding

# EPA WaterTA Approach

- **Targeted**: Focused on disadvantaged, underserved and tribal communities as well as those that may struggle to access funding.
- **Proactive**: Shift burden away from disadvantaged and underserved communities – we go to them!
- **Community-centered**: Meet communities where they are by building trust, adjusting to their needs, and being culturally competent.

# WaterTA Priority Areas


# Improve Accountability and Transparency

- EPA recognizes the recommendations to develop mechanisms that allow for accountability and transparency in our TA programs are important for both trust and efficacy of our work.
- Key NEJAC Recommendations:
  - Develop mechanisms that allow communities to hold TA providers accountable.
  - Improve the capacity and learning across TA providers.

# Increase Awareness & Outreach

- EPA recognizes the recommendations to conduct proactive outreach to environmental justice communities, including working with established networks and organizations to expand our reach, are important to ensure our services reach all communities.
- Key NEJAC Recommendations:
  - Establish a user-friendly, centralized “TA-website” that displays all TA opportunities in an accessible and comprehensible manner.
  - Determine where the bottlenecks are in the information-sharing exchange between EPA and communities.

# Actualize Community-Centered TA Values and Approaches

- EPA is committed to culturally competent and community-centered WaterTA as fundamental in our technical assistance work, as described in the March 2023 WaterTA Implementation Memo.
- Key NEJAC Recommendations:
  - Engage and involve communities, ensuring that members of the community are key participants in the identification of needs and development of solutions.
  - Develop TA resources such as guidance documents, instruction manuals, and webinars that are available and accessible to a broad range of stakeholders.

# Increase Coordination between OW, OEJECR, Regions, and States

- EPA recognizes the value of collaboration and coordination and will build a strategy to increase coordination between EPA OW TA programs, OEJECR TA programs, Regions, and States.
- Key NEJAC Recommendations:
  - Encourage states to simplify the SRF application process
  - Improve the capacity and learning across TA providers by creating portals for peer-to-peer engagement between TCTACs, EFCs, EJ small grants administrators, etc.

# Next Steps

- Formal response to recommendations is planned for Spring 2024 NEJAC meeting
- Ongoing regular progress updates to the NEJAC following Spring 2024 meeting

# Questions?

EPA WATER TA

For the benefit of interpreters, please speak clearly and slowly

# Public Comment Period

Attendees who pre-registered for public comment will be given access to speak as time allows

Each commenter has **three (3) minutes** to speak

For the benefit of interpreters, please speak clearly and slowly

If you do not get a chance to speak during the allotted time, please submit your comments in writing

Written comments can be submitted until **December 19, 2023**

Comments will help the NEJAC form better recommendations

# Break

# Public Business Meeting

1. Potential Work for 2024
2. Updates from Workgroups
   - Farmworkers & Pesticides Workgroup
   - Cumulative Impacts Workgroup
3. Next NEJAC Public Meeting
4. Reflections and Appreciation

# Potential Work For 2024

**Potential charges (start w/a consultation)**

1. Climate Issues / Climate Education
2. Title VI and External Civil Rights
3. Acknowledgement of non-Federally recognized tribes

**Panels or consultations during future NEJAC public meetings**

1. Lead Exposure/Lead Poisoning (especially in urban areas)
2. Border Issues
3. Disability Justice
4. Issues faced by Tribes located along U.S. borders

# NEJAC Farmworkers and Pesticides Workgroup Charge Questions (summarized)

1. **Establishing Farmworkers' Access to Bilingual (Spanish) Labels.** What communications approaches, processes, or strategies would the NEJAC recommend for ensuring Spanish labels are accessible to farmworkers?
2. **Input on Building a New Environmental Justice Indicator**. Which types of indicators would be most meaningful to farmworker communities?
3. **Strengthening EPA's Pesticide Exposure Assessment of Children Working in Agriculture.** What type of information can help inform EPA's analysis of comparative exposures between adult and children in agricultural settings?
4. **Expand or Enhance Training for Inspectors Who Conduct Worker Protection Standard (WPS) Inspections.** What feedback, observations, or experiences can NEJAC share about inspections to help EPA enhance training of WPS inspectors and thereby improve inspections and enforcement?

# NEJAC Cumulative Impacts Workgroup Update

Co-chairs –
Dr. Sandra Whitehead
Dr. Kristie Ellickson

# Current Participants: NEJAC Cumulative Impacts

*Invited on workgroup, but not formally NEJAC Members

- Sandra Whitehead, George Washington University
- *Kristie Ellickson, Union of Concerned Scientists

- Ben Pauli
- Michael Tilchin
- Jill Lindsey Harrison
- Cemelli De Atzlan
- Yvonka Hall
- Richard Mabion
- Jerome Shabazz
- Andy Kricun
- Ayako Nagano
- Loren Hopkins
- Millie Piazza
- Pamela Talley

- * Ebony Griffin, Earth Justice
- * Alec Ayers, New Jersey Department of Environmental Protection
- * Sacoby Wilson, Professors University of Maryland,

# Timeline

| | Fall 2022 | Winter 2022/2023 | Spring 2023 | Summer 2023 | Fall 2023 | Winter 2023/2024 | Spring 2024 |
|---|---|---|---|---|---|---|---|
| Convened and introductions | | | | | | | |
| Charge questions | | | | | | | |
| Information sharing | | | | | | | |
| Recommendation topics and organization | | | | | | | |
| Outlining recommendations | | | | | | | |
| Writing recommendations | | | | | | | |
| Refining recommendations | | | | | | | |

# Recommendation topics

- Definition
  - social determinants of health not obvious,
  - needs explainer for non-scientists
- Current methods to lift up & why
  - case studies-Chicago, NJ
- Incorporating lived experience
  - theory and practice
- Community based strategies
  - Greenzones, Community Action Plans
  - need regulatory teeth
- Structural (racism, colonialism) drivers
  - Risk assessment is too reductionist
  - Development of indices of historic disinvestment, bias, and barriers
- Implementation
  - Short, intermediate, long-term recommendations to move from a cumulative impacts framework to addressing cumulative impacts
- Innovation
  - Practical methods to expand and integration to address cumulative impacts

# Process

- Biweekly full team meetings
- Biweekly small group writing meetings
- Co-chairs writing hours over winter break

# Questions?

Kristie Ellickson
Union of Concerned Scientists
KEllickson@ucsusa.org

# Closing Remarks - Adjourn

**Na'Taki Osborne Jelks**, NEJAC Co-Chair – West Atlanta Watershed Alliance and Proctor Creek Stewardship Council

**Jerome Shabazz**, NEJAC Co-Chair  Executive Director, JASTECH Development Services Inc. and Overbrook Environmental Education Center

**April Karen Baptiste**, NEJAC Vice Chair – Professor, Environmental Studies and Africana and Latin American Studies – Colgate University

**Matthew Tejada**, Deputy Assistant Administrator for EJ, Office of Environmental Justice and External Civil Rights – U.S. Environmental Protection Agency

**Paula Flores-Gregg**, NEJAC Designated Federal Officer – U.S. Environmental Protection Agency

# Thank you for your participation.

https://www.epa.gov/environmentaljustice/national-environmental-justice-advisory-council

# Public Comments

# National Environmental Justice Advisory Council

# December 2023 Public Meeting

# Virtual

# Region 1

CT, ME, MA, NH, RI, and VT

**Matthew LeFluer**
**Vermont Department of Health Equity Projects**

**Full Name (First and Last):** Matthew LeFluer
**Name of Organization or Community:** Vermont Department of Health Equity projects
**City and State:** Alburgh Vermont
**Subject of Comment is Relevant to: Cumulative** Impacts Framework Charge
**Brief description about your recommendation relevant to your selection above:**
Accessibility advancement AI technology Incorporated and framework of design practicality efficient systems throughout agriculture and environmental protection design and agencies and system networking I suggestions to make it more cost effective efficiency and more affordable for all within the design making of the process in general.

**Kathleen A. Curtis**
**Coming Clean, Inc.**

Thank you for the opportunity to comment directly to the EPA National Environmental Justice Advisory Council on the long-awaited release of the EPA cumulati e impacts framework.

We are wri ng on behalf of Coming Clean (Home — Coming Clean, Inc. (comingcleaninc.org), a coalition of environmental health, community, environmental justice and advocacy groups that work towards health protecti e chemical policies as re ected in the Louisville Charter for Safer Chemicals. Our Cumulati e Impacts and Mandatory Emissions Reduc on Team (Cumulati e Impacts and Mandatory Emissions Reduc ons Team — Coming Clean, Inc. (comingcleaninc.org) has been meeti g for over two years to engage and encourage agencies to develop and implement practices and decision-making that protect and re ect real life experiences in frontline and other highly impacted communi es.

We appreciate EPA's request to the NEJAC to work on cumulati e impacts, and we look forward to reading the NEJAC cumulati e impacts workgroup's recommendation .

You have speci cally requested comments on the charge. The charge is appropriate to establish a large scope of work and should ensure that the NEJAC Cumulati e Impacts workgroup will not be limited in its ability to provide acti nable and comprehensive recommendation . Our (Coming Clean - Cumulati e Impacts/Mandatory Emissions Reduc on) team urges the NEJAC Cumulati e Impacts workgroup to, in addi on to conducti g its own analyses as laid out in the charge, also look into options within EPA that bring a broader perspec ve and addi onal disciplines. This ensures that the NEJAC Cumulati e Impacts workgroup's recommendations to address and assess cumulati e impacts are comprehensive.

We support adop ons of a strong, ac on-focused cumulati e impacts framework by EPA, the agency commi ed to developing and releasing a framework in its Equity Action Plan. The Biden administratio further pressed EPA to do so in his Execu ve Order 14096: Revitalizing Our Na on's Commitment to Environmental Justice for All earlier this year. Therefore, EPA must demonstrate a clear policy direc on and articulate it in the public sphere in a strong engagement process so that EPA's work moving forward actually ful lls these direc ves and results in reduced toxic exposures in frontline communi es.

We support movement toward implementa on of cumulati e impacts practi es and away from the reducti nist approaches of tradi onal human health risk assessment. We are concerned about what we have seen so far from EPA in the Cumulati e Risk Assessment Planning and Problem Formulation document released last spring. We provided comments to EPA voicing our concern for the undue emphasis on screening proposals out of completi g assessments with a cumulati e lens rather than focusing on to what extent and how these might be accomplished.

We are concerned that EPA has not yet recognized that the fundamental approach to assessing and addressing cumulati e impacts will not be the same as the approach to assessing risks from single chemicals based on use of a quanti ati e dose-response curve. For too long, traditional risk assessment has allowed more and more increases of toxic exposures to Environmental Justic communi es with no end in sight. Tradi onal risk assessment does not re ect anyone's exposures nor does it support reducti ns in dispari es of chemical burdens in historically disinvested communi es.

We support the extension of EPA's cumulati e impacts work into its regulatory programs. It is way past ti e for environmental decision-making to re ect consideration of mul ple chemicals, mul ple sources of pollu on, and existi g health and social stressors and burdens. The current system does not protect people and is overly expensive, ti e-consuming, and burdensome for everyone.

We urge NEJAC to press EPA to release a strong, comprehensive cumulati e impacts framework. We are ready and able to engage with you in this work, provide comments, and advance system change.

Commenters thank NEJAC for this chance to communicate our concern with the delay on EPA's movement toward a regulatory system informed by cumulati e impacts analyses and we strongly urge EPA to move forward. We truly appreciate all that the Biden administratio , the EPA, the NEJAC, and the WHEJAC are doing to advance work on the many complex issues related to achieving justice

Signed,

Kathleen A. Cur s, LPN - Moms for a Nontoxic New York (MNNY)

Xavier Barraza - Los Jardines Instit te

Juan and Ana Parras - Texas Environmental Justic Advocacy Services

Monica E. Unseld, Ph.D. - Unti Justice Data Partners

Celeste Flores - Clean Power Lake County

Tianna Shaw-Wakeman - Black Women for Wellness

Bobbi Wilding, MS - Clean+Healthy

Mayra Reiter - Farmworker Justic

Dave Arndt – Locust Point Community Garden

Ronald H. White, MST - Individual Consultant

Yolanda Whyte - Ethical And Respectf l Treatment of Humans

Je Gearhart - Ecology Center (Michigan)

Lise e Van Vliet - Breast Cancer Preven on Partners

Beto Lugo Mar nez - Rise4EJ

Ted Sche ler - Science and Environmental Health Network

Pamela Miller - Alaska Community Action on Toxics

Jonathan Kalmuss-Katz - Earthjustic

Jessica Varner, PhD - Individual

Mily Trevino Sauceda - Alianza Nacional de Campesinas, Inc.

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Ted Sche ler - Science and Environmental Health Network

Pamela Miller - Alaska Community Action on Toxics

Jonathan Kalmuss-Katz - Earthjustic

Jessica Varner, PhD - Individual

Mily Trevino Sauceda - Alianza Nacional de Campesinas, Inc.

# Region 2

NJ, NY, Puerto Rico, U.S. Virgin Islands and 8 federally recognized Indian Nations

# Region 3

DE, DC, MD, PA, VA, WV and 7 federally recognized tribes

# Region 4

AL, FL, GA, KY, MS, NC,
SC, and TN

**Kait Morano**
**Coastal Equity and Resilience Hub**
Members of the National Environmental Justice Advisory Council,

Good evening, and thank you for the opportunity to speak to you today. My name is Kait Morano and I am the Resilience Planning Director for the Coastal Equity and Resilience Hub in Savannah, Georgia and a Research Scientist at Georgia Tech.

I am here to bring attention to concerns with the Climate and Economic Justice Screening Tool, or CEJST, that have far-reaching implications for the effectiveness of the Biden administration's Justice40 Initiative. In working with communities across coastal Georgia, we have discovered that CEJST's methodology may result in smaller communities being overlooked and unable to access the benefits of Justice40 funding.

As you are aware, CEJST relies on data aggregated at the Census tract level. This approach, while understandable and well-intentioned, creates a significant blind spot in that it fails to account for the diversity of communities *within* these statistical areas. As a result, the nuanced realities of smaller, overburdened communities are lost, and these communities may find themselves overlooked and left behind yet again.

To illustrate this point, consider a community struggling with gentrification and encroaching development pressures, whose longtime residents face inadequate infrastructure, limited access to healthcare, and continued exposure to pollution. The nuanced struggles faced by this community may get lost in the broader statistics of the tract, and the tract as a whole may not be identified as disadvantaged. The reality of that smaller community is masked in CEJST, denying them the resources they desperately need to build a resilient future.

Therefore, we propose a critical addition to the CEJST framework: a Community Appeals Process. This process would empower misidentified communities to demonstrate their true disadvantage through the submission of local, quality-checked data, which could be reviewed by experts at the Federal level. This could include community-collected environmental data such as air and water quality measurements or health surveys, as well as proxy data for socioeconomic burdens such as assessed property values to demonstrate relative income.

This Community Appeals Process is not simply a technical adjustment; it is a fundamental step towards transparency, inclusivity, accountability, and environmental justice. By granting communities the opportunity to appeal their misidentification in CEJST and provide compelling evidence of their burden, we can help ensure the promises of Justice40 reach the communities they were designed to empower.

I urge you to consider and adopt these recommendations as quickly as possible. By doing so, we can transform the Climate and Economic Justice Screening Tool into a more inclusive, responsive, and effective instrument for identifying and supporting communities that are most in need of Justice40 funding.

Thank you.

# Region 5

IL, IN, MI, MN, OH, and WI

# Region 6

AR, LA, NM, OK, and TX

**Jose L. Villegas, Sr.**
**El Valle De La Cieneguilla Land Grant Association**

**Full Name (First and Last):** Jose L. Villegas, Sr.
**Name of Organization or Community**: El Valle De La Cieneguilla Land Grant Association
**City and State:** Santa Fe, New Mexico
**Subject of Comment is Relevant to:** Farmworker and Pesticides Charge
**Brief description about your recommendation relevant to your selection above:**
I am an "old-school" farmworker from the days of Cesar Estrada Chavez. On my sacred lands (one acre or more), every year, I plant and harvest of chili, maize, calabasa's, oregano, sonrias, tomatos, and sandias from original seeds. The traditional and customs of keeping our Mexican and Yaqui way of life is part of who I am; however, I have been officially notified that my private well was contaminated with the high concentrations of PFAS levels that was generated by a DoD Army Aviation Facility. This military installation is located approximately two and eight miles downstream from a high minority population and low-income population land-grant that predates the early 1698 period. Currently, the DoD - New Mexico National Guard has not made any effort to inform ("Public Health Advisory) the downstream land-grant community of a possible PFAS Contamination of their private wells since 2019 when they started a PFAS Contamination Investigation of their wells and soils around their DoD facilities. Two Preliminary PFAS Reports were issued in 2020 and the final report was completed in February 2023, yet the public was not included in their PFAS Investigation process for the last four years or so. Currently, my immediate family who have been residing on these sacred lands and pueblo for over forty-five years, can no longer use the potable water that has been sacred for a century or more. We do not have any safe-drinking water at this time, and we have been trying to locate a secondary safe drinking groundwater source to feed my family. The lack of transparency to obtain "emergency management" assistance for our PFAS Contamination of our private wells in an indigenous community between the municipalities, local, tribal, state, and federal governments is unacceptable and deplorable. Frankly, I cannot even obtain a glass of safe drinking water from my own military General who is my boss at this time. What gives? Who cares? Oh well.....Jose

December 16, 2023

Estimado's y Estimada's NEJAC:

Bueno dias de le Dios! On behalf of El Valle De La Cieneguilla Land Grant Association and a Tribal Administrator – Government Affairs with the Texas Band Yaquis Indians, I would like to submit my comments to the NEJAC relating to the "EPA: Environment Justice" topic.

Definitely, the NEJAC objectives should reconsider a new title for one of four involving **"4. Cascading effects of Environmental Justice"** under the original umbrella of "Executive Order 12898 – Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629; February 16, 1994 was issued by President William J. Clinton in 1994.

Yes, I totally understand on what the definitions and terms relating to "1. Cumulative Impacts," "2. Farmworker and Pesticides Charge" and "3. Framework Charge" objectives are define relating to the

NEJAC objectives and mission statements; however, the PFAS threat to public health, welfare and safety in a *high minority population and low-income population* across the country has caused a "*cascading effect* of massive environmental injustice" of all magnitudes to the people of color.

Frankly, a good suggestion for the next NEJAC scheduled meeting to be held in Houston, Texas is - to invite an indigenous leader like myself from a high minority population and low-income population to present a "new finding" of the "walk the talk" from a "boots on ground" perspective of being culturally adversely impacted by a PFAS Contamination (PFOS/PFOA) in their sacred home, sacred agricultural lands, sacred waters, and sacred human body.

In my strongest opinion, the NEJAC can hear all of the virtual testimonies at every scheduled meeting from the general public as part of registering to get on the "Spoken Commenter List in 2024;" however, it is not the same. You all know that to be true as if a real human soul was to be present in the true faces of the NEJAC in March of 2024, from a face-to-face perspective, my testimony can be received with a heartfelt passion of suffering and dignity.

In conclusion, the bottom line question is - "Does the NEJAC want to approve a "live" testimony from a "real-world" perspective which exhibits the tears and fears of an indigenous family that is dealing with a PFAS incident happening right now in their daily lives or not?" Asi es. (It is done.)

Jose L. Villegas, Sr.
El Valle De La Cieneguilla Land Grant Association
Texas Band Yaquis Indians – Tribal Administrator Government Affairs

# Region 7

IA, KS, MO, and NE

# Region 8

## CO, MT, ND, SD, UT, and WY

# Region 9

AZ, CA, HI, NV, American Samoa, Commonwealth of the Northern Mariana Islands, Federal States of Micronesia, Guam, Marshall Islands, and Republic of Palau

**Yejide Olutosin**
**Impact Experience**

**Full Name (First and Last):** Yejide Olutosin
**Name of Organization or Community:** Impact Experience
**City and State:** Oakland, California
**Subject of Comment is Relevant to:** Cumulative Impacts Framework Charge
**Brief description about your recommendation relevant to your selection above:**
The NEJAC should urge the EPA to leverage strategic partnerships with financial institutions to advance equitable climate resilience under the Agency's cumulative impacts framework. Specifically, the Council should recommend that the EPA's framework: (1) mandate climate risk analyses projecting disproportionate racial burdens and community-level impacts; (2) require equitable targeting of climate adaptation funds toward historically disadvantaged communities of color; (3) create incentives and accountability mechanisms to stimulate substantial community reinvestment by banks and investors into climate-vulnerable communities of color; and (4) promote corporate climate transition planning across highly-emitting industry sectors to mitigate energy racism. The NEJAC should highlight that collaborating with the sustainable finance community can unlock significant private capital to scale infrastructure upgrades, accelerate adaptation progress, and promote environmental justice—but only if racial equity considerations are formally centered in the process. Concrete deliverables, quantitative tracking indicators, and accountability mechanisms must be integrated throughout. The Council should underscore that ambitious, race-conscious partnerships are needed to drive financial flows supporting resilient, thriving environmental justice communities nationwide.

# Region 10

AK, ID, OR, WA
and 271 native tribes

December 11, 2023

Good Afternoon RA Sixkiller

Thank you for visiting Yakima. I am the executive director for the Friends of Toppenish Creek, a non-profit from the Yakima Valley that addresses environmental impacts of factory farms. FOTC is entirely run by volunteers who donate hundreds of hours of our time every year, every month and sometimes every week toward environmental protection with not a dime of compensation.

**Who pays?**

While we appreciate your efforts here today to provide funding for NGOs, we observe that this is not free money. Our children and grandchildren will be paying interest on this borrowed money for decades.

We applaud the role of the EPA as protectors of protect the air, the water, and the soil – first and foremost. The role of the EPA is not to toss us a few dollars to help us learn to live with pollution. The role of the EPA is to stop pollution.

**CAFO Regulation**

FOTC focuses on concentrated animal feeding operations, and we want to talk to you today about CAFOs in South Yakima County. The State of Washington barely regulates them. WSDA claims to inspect Yakima dairies but the dairies over apply manure to cropland and continue to use aging manure lagoons that leak huge amounts of pollutants to groundwater. The EPA knows this. You know this.

Less than 10% of Washington CAFOs have NPDES permits. There is a small town in South Yakima County that is unable to deliver drinkable water to residents. That town is surrounded by seven large CAFOs and none of these CAFOs have NPDES permits. The Yakima Regional Clean Air Agency does not gather data on dairy air pollution. The YRCAA does not regulate emissions from dairies and does not collect fees to address dairy air pollution.

**We do the Work**

It appears that government expects local groups to do the work. In fact FOTC, Community Association for Restoration of the Environment, and Center for Food Safety have done some of the work. Beginning in 2020 these three groups sued a corporate conglomerate from the East Coast for groundwater pollution on the Lower Yakima Valley at DBD & SMD dairies. The settlement requires manure lagoon lining, compacted compost yards, and adherence to the dairies' nutrient management plans which WSDA and Ecology have been unable to achieve.

The cost for this litigation was over $1.8 million. Out of pocket costs were over $300,000. We were fortunate to contract the service of law firms that were willing and able to take the case on a contingency basis. To our knowledge only one law firm in the Pacific Northwest is willing to do this. That law firm does not litigate air issues or EJ issues.

**Would EPA Fund Litigation?**

Would the EPA approve a million dollar grant so FOTC can sue our own government to compel enforcement of the laws? I don't think so. What do you think?

**The Yakima Dairy Cluster & Lower Yakima Valley**

Here is how FOTC sees the situation in South Yakima County.

EPA studies since 2010 have found nitrate levels on and around an area commonly called the "Dairy Cluster" that are among the highest in the nation. That study is ongoing. The source of contamination, in large part, is dairy CAFOs where a hundred thousand cows, a third of Washington's dairy cows, defecate on the ground every day, and manure is stored in leaking lagoons. You know this is true.

FOTC estimates that people in South Yakima County spend a million dollars a year on water in plastic bottles. People live with contaminated wells, yet our government funnels millions to the polluters - disproportionately large scale polluters. Why should our grandchildren pay the price because this generation refuses to take action to stop the pollution? It makes no sense to promote pollution and then spend borrowed money telling people about it and pretending that the problem can be solved with government giveaways. It makes no sense to pretend we can continue to abuse the land and expect the food to keep coming. Awareness is not enough. We need action. And we ask for help from the EPA.

The Lower Yakima Valley Groundwater Management Area

Washington State addresses the Yakima nitrate problem through an Implementation Team for the Lower Yakima Groundwater Management Area. The Washington Dairy Federation is a member of this team. Environmentalists and the public are excluded. Does this lack of representation matter? Yes, it does.

**Tetra Tech Maps**

This year the GWMA Implementation Team published a study and mapping of the GWMA target area that says nitrate levels on and around the "Dairy Cluster" are within safe drinking water ranges. This is not true. Here are some maps to explain.

- The first map outlines the "Dairy Cluster" in the north central part of the GWMA. This is the area where the EPA found groundwater nitrate levels as high as 234 mg/L. This is the area where 61% of domestic wells one mile down gradient from the dairies have nitrate levels above the clean drinking water standard of 10 mg/L.
- The second map is from the study published by the LYV GWMA Implementation Team. This map says that nitrate levels on and around the "Dairy Cluster" are less than 10 mg/L. We thought that our state leaders would rescind this study when they learned that it does not accurately display the truth. We were wrong. WA Ecology and the Dept. of Health refused to do so. Instead they tell us they will post a disclaimer next to the study on the

GWMA website. How can anyone write a disclaimer that says maps are not accurate. We are waiting to see how this is done.

- The third map is a contour map of the GWMA area that shows Snipes Mountain near the center. Snipes Mountain is a basalt fold that rises about a thousand feet from the valley floor.
- The fourth map shows groundwater flow in the GWMA area. This map shows that groundwater makes a 90-degree turn when it reaches Snipes Mountain and flows around the basalt.
- The fifth map is a map of land elevation and groundwater flow from the study published by the GWMA Implementation Team. Snipes Mountain does not exist on this map.

How can we engage in fact-based discussions when officials endorse falsehoods like this? Should I give you a chance to respond, or should I continue?

**May Invitation for Poop Tour**

Last May we invited you to a tour of South Yakima County. You accepted with enthusiasm. But now, in December you do not have time. We speculate that you need that time to talk with those who support the CAFO industry. This is wrong. You cannot form a clear picture by only hearing one prejudiced view of an issue.

**CAFO Model doomed to failure**

There is strong evidence that the CAFO model is doomed to failure. It is a waste of public resources to keep propping up this method of food production, an approach that values the stock market over all other considerations. But CAFO dairies get over 70% of their income, not from sale of milk products, but from government subsidies. CAFO based food production degrades the natural processes that sustain us, that give us life. The EPA should acknowledge this fact. CAFOs pollute the ground and surface waters so that the people and animals who drink the water are sickened and die. CAFOs pollute the air so that the people and animals who breathe the air are sickened and die. We are concerned that the current EPA efforts simply seek ways to help us live with CAFO's. FOTC believes that our government should stop funding CAFO operations and instead actively enforce the Clean Water Act and the Clean Air Act with respect to these operations. The EPA mission is to protect the environment – first and foremost.

**Public Engagement – Bio-digester**

The State of Washington pretends to engage the public on issues that impact us. Here is how this plays out on the ground.

The WA State Dept. of Commerce has allocated $5 million to help construct a multi-million dollar manure digester within the city limits of the City of Sunnyside. Dairies will be paid for the manure they produce. The more manure they produce the larger their income. This money was allocated before the residents of Sunnyside were informed of the project, and before there was a public discussion of risks and benefits. As FOTC sees the situation, we now have an opportunity to apply for EPA grants so we can advise the people of Sunnyside and the surrounding area on how to adjust to and live with larger CAFOs and more cows. This is not public engagement. This

is not environmental justice. Bio-digesters are not a solution. Bio-digesters are an extension of the problem.

FOTC has asked the Yakima County Commissioners, the Yakima Regional Clean Air Agency, and the WA State Dept. of Ecology to convene public meetings to explain risks and benefits of a manure bio-digester. The agencies ignored our requests.

FOTC and the social justice group Empowering Latinas in Leadership and Action or ELLA finally presented our own public meeting regarding the proposed digester last November 30. The ELLA team canvassed around the area where the bio-methane project is proposed. Of the almost 250 homes ELLA visited, they only encountered five families that knew about the project.

**How does government see us?**

Which brings the question, how does our government see members of the public? Does our government see us in the same way that producers see farm animals?

- Does our government want to confine us to public housing where our children learn about nature by watching videos of forests and rivers on television, where they only see selected, sanitized shots?
- Does our government propagandize the public with biased information that covers up the damage caused by factory farms? Just look at the Tetra Tech Study that obliterated the high nitrate levels on the "Dairy Custer" and erased Snipes Mountain.
- Does our government see us in the same way that the industry sees cattle in feedlots? Are we merely inputs to be sedated, fattened, and harvested for our labor, our political support, our willingness to purchase plastic?

These are serious questions. Please think about them before you respond with canned answers that are pre-approved by invisible men and women who have lost touch with the land. I will stop for a moment and let you ponder this question. It is a loaded question, but sincere. How much freedom do you have to answer? Will you say, "I will investigate and get back to you?" That is the answer we receive over and over. We could write the script for you.

**What can EPA do?**

The EPA can help improve water and air quality in Yakima by taking these actions:

- Actively listen to groups such as FOTC when we tell you about abuse of the scientific process.
- Actively listen to groups such as FOTC when we send you data about soil, air, and water pollution due to CAFOs.
- Listen to groups such as FOTC when we complain that less than 10% of WA CAFOs have NPDES permits.
- Listen to groups such as FOTC when we point out that the Washington Total Maximum Daily Load program does not achieve its goals.
- Withhold federal funds from the LYV GWMA project when the Implementation team publishes inaccurate pseudoscience.

- Withhold federal funds for state air programs until the Yakima Regional Clean Air Agency acknowledges the massive air pollution from CAFOs in South Yakima County.
- Follow through on promises to enforce CERCLA, EPCRA the Clean Water Act, and the Clean Air Act for CAFOs.
- Return to the Yakima Valley under the Safe Drinking Water Act as requested by FOTC, the Center for Food Safety, and Food & Water Watch.

Thank you for reading.

Jean Mendoza, FOTC

Maps are attached.

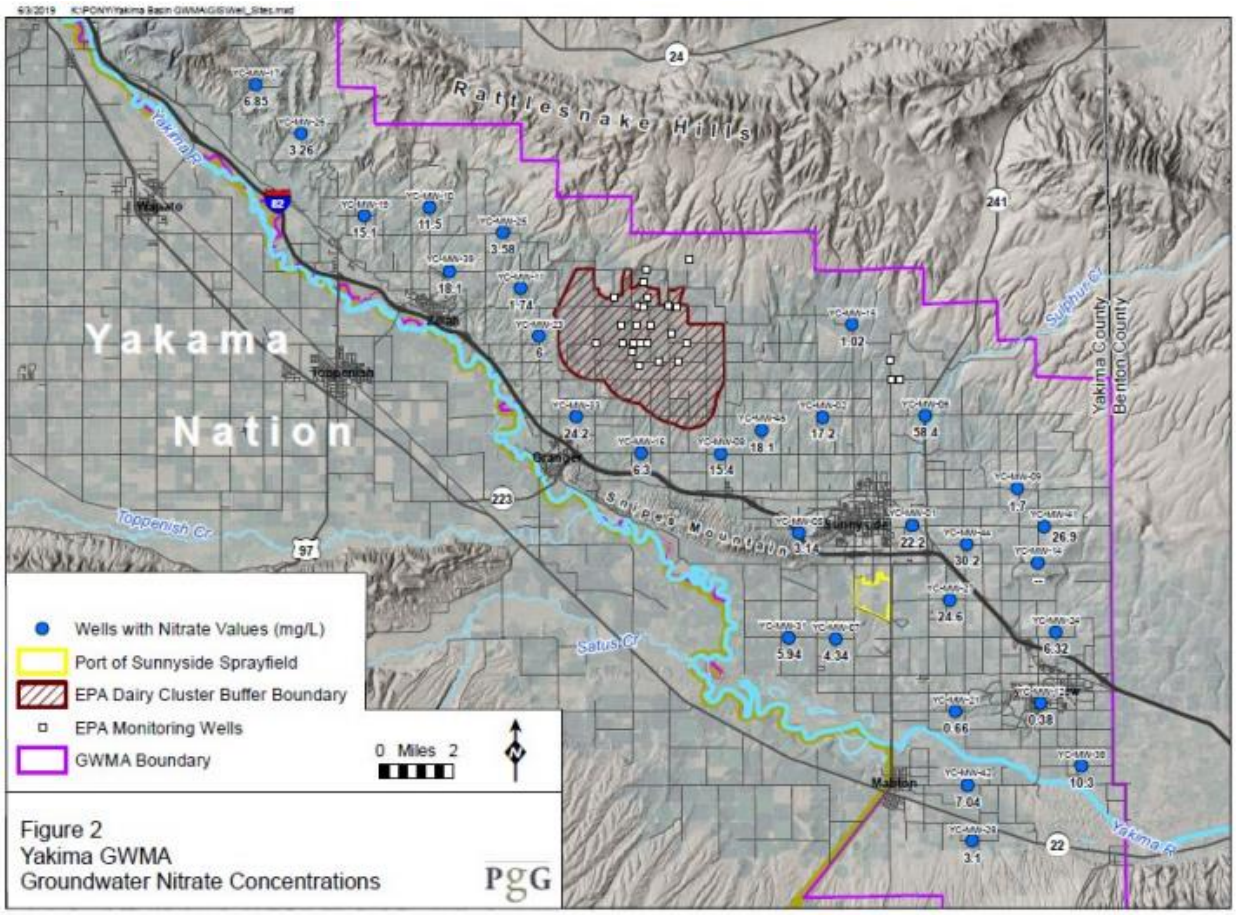


**Figure 3. Locations of the monitoring wells installed by the GWMA and the respective nitrate concentrations (PGG, 2019).**

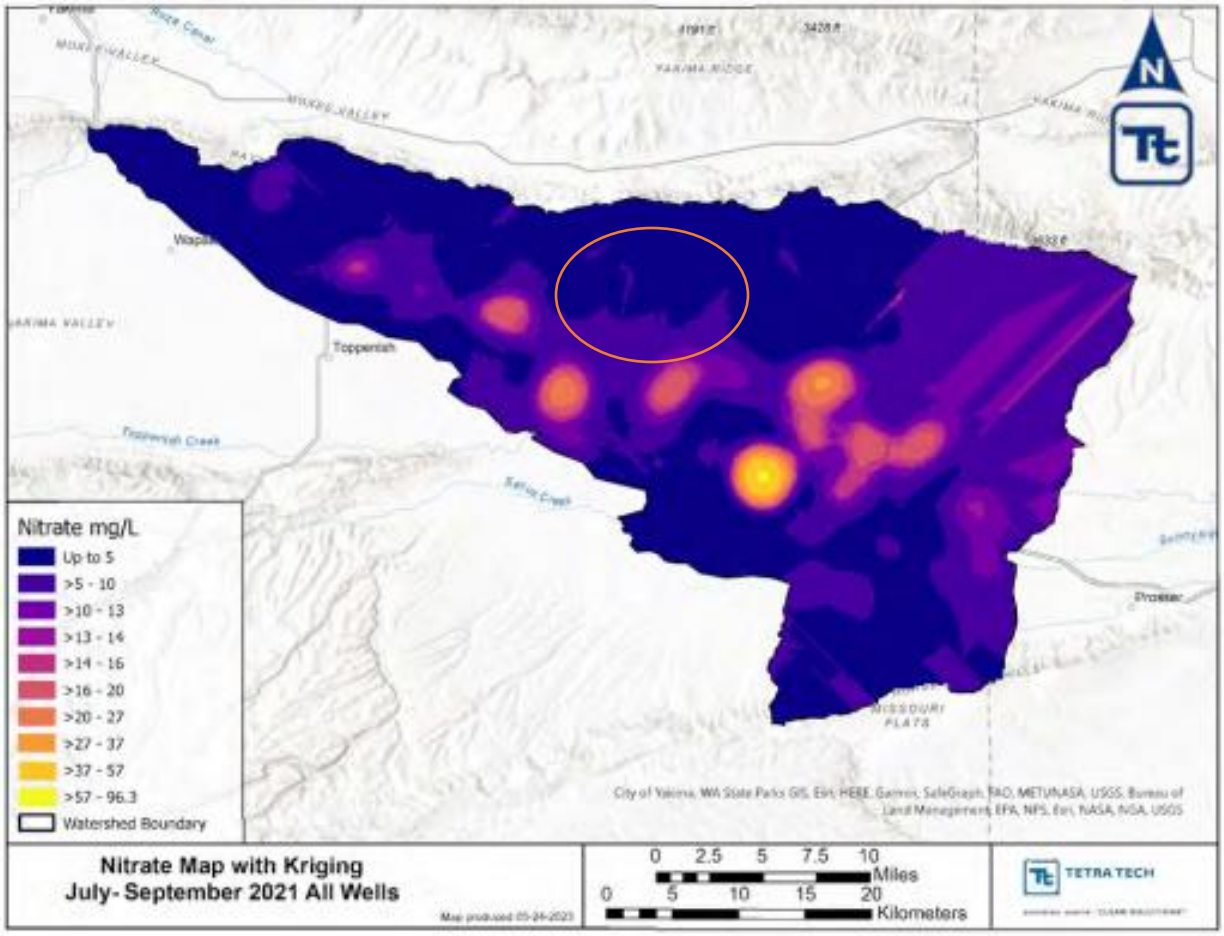


**Figure 5-2. Nitrate Map with Kriging for the July-September 2021 Dataset for All Wells**

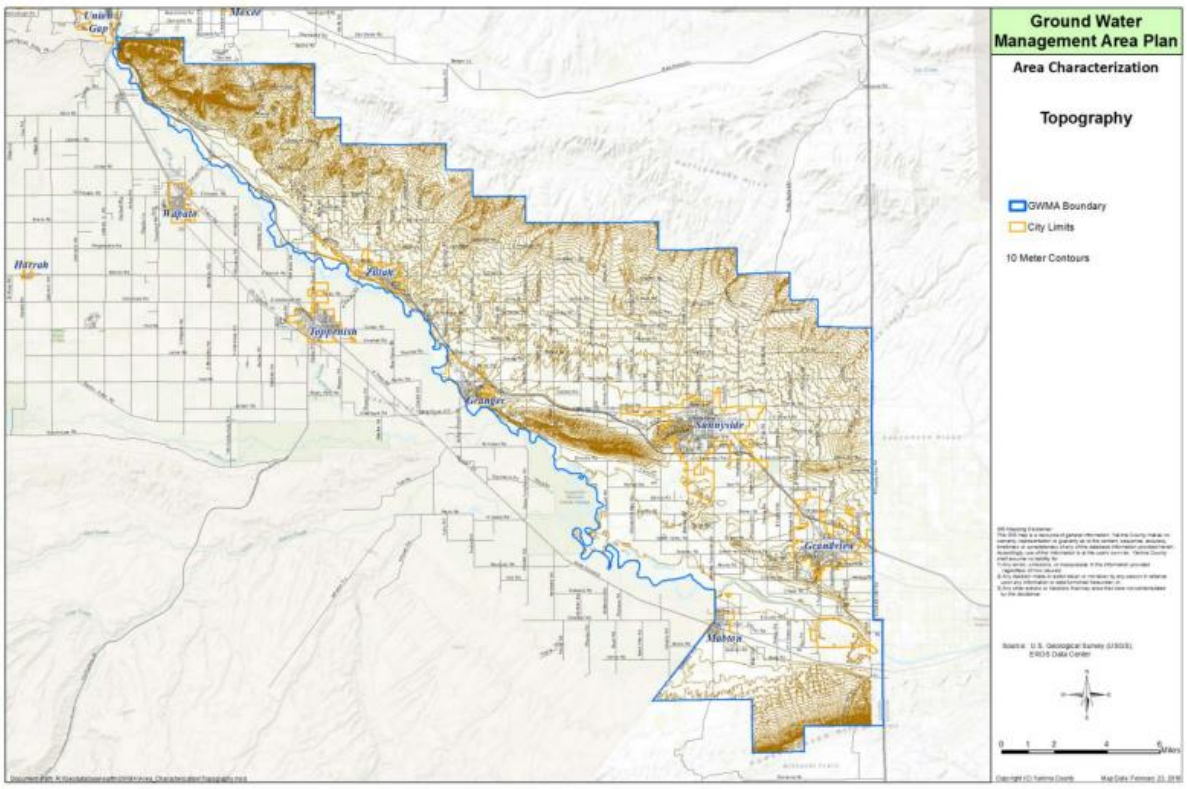


Figure 11 – Ground Surface Contours (Topography) within the GWMA

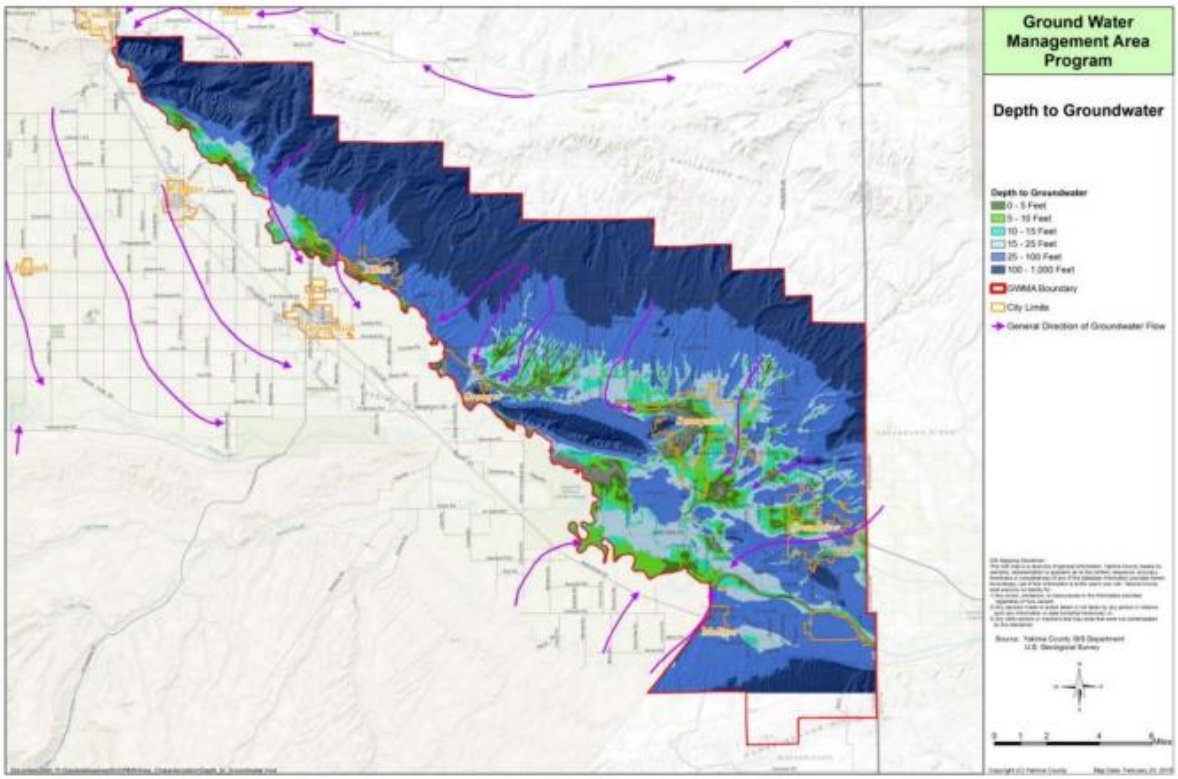


Figure 12 – Depth to Groundwater and Direction of Flow within the GWMA

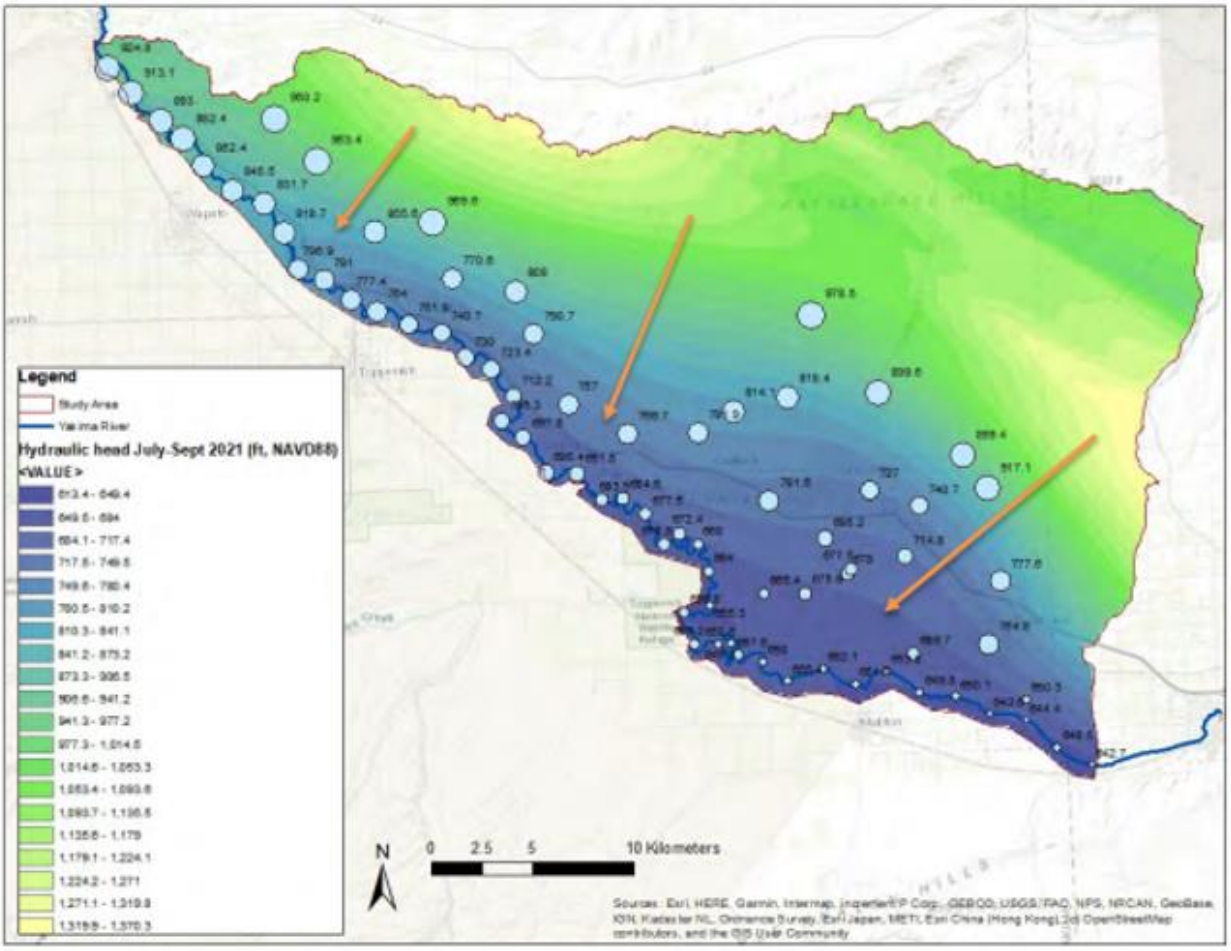


**Figure 4-1. Water Level Map Generated for July-September 2021**

**Rosemary Ahtuangaruak**

NEJAC

12/6/23

5am Alaska

The grandmother's growing goodness would like to submit these comments for the national environmental justice advisory board. The importance of communicating with the people on this committee is very important, each of you has a role in this process. I want to thank you for all you do and the work that this committee is doing.

I come from a small community of just five hundred people, and I ask questions in our local community meeting, but I don't get answers. I listened to the meeting today and I see that you all are asking these important questions. This is building the volume on these issues. Without the people on this committee, we would not have hope. We need to be able to bring our concerns for our community to others who are also asking these questions.

I want to encourage each of you for your work to help communities facing environmental injustices, because I come from Nuiqsut, and I believe we were sacrificed for the national energy policy. We brought questions of life, health and safety to our community meetings and our councils city and tribe opposed the project until the decision was made in support of the project. The Willow project was always about location, location, location. The risk of the movement of caribou for our village was not an issue we were willing to bear. The decision was made, and we have no choice but to work with the process. Communities and our life, health and safety and the importance of our traditions and culture are to be considered in your decisions.

I want to encourage each of you to work out of your comfort zone. We need to develop decision making criteria to educate those that are making decisions that affect communities. We need to elevate the process so that bad planning efforts do not continue to be repeated. We need to prevent the costs to our communities so that sacrifice zones are not being acceptable.

I see the process that has been done and some of the information that is being presented can have the potential to answer some of my questions. Our community can benefit from this process, but we are small and may not be able to apply for these grants. How can a community engage and still affect the decisions if they cannot apply for these grants? Is there a process for communities that will be affected by national decisions?

# Nationwide

**Protect This Planet**

EPA should disclose to the public that diets higher in plant-based foods and lower in animal products can reduce environmental pollutant sources and exposures.

• Black and African Americans are more exposed to fine particulate matter pollution (PM2.5) than white Americans yet are least responsible for it. This pollution is responsible for the majority of deaths from environmental causes in the United States and animal agriculture is the second leading emitter 1. Eighty-three percent of agriculture air-quality related deaths could be avoided annually if the United States adopted a vegan diet 2.

• Concentrated animal feeding operations are disproportionately located near communities of color 3–6, leading to residents suffering from increased air pollution 7, respiratory illness 8–10, water contamination 11–13 (nitrate pollution causes cancer 14), mental health issues 8,15, and elevated blood pressure 16. According to one study, "No regulations address the agrochemical content of feedyard particulate matter emissions." … "Open-air beef cattle feedyards may collectively represent one of the largest unconstrained and unrecognized sources of pesticide, antimicrobial, and endocrine-disrupting chemical emissions on earth" 17.

• Transitioning to a plant-based diet has become more prevalent recently, especially among communities of color. According to surveys, a higher percentage of non-white Americans are voluntarily reducing their meat consumption compared to white Americans 18, while black Americans are over twice as likely to be strict vegetarian or vegan than the general American population 19. Lower income Americans tend to be vegetarian or vegan more than higher income Americans. 20

• A study funded by the U.S Environmental Protection Agency for the purpose of examining behaviors that influence human exposure to environmental chemicals found that “a diet high in fish and animal products results in greater exposure to persistent organic compounds and metals than does a plant-based diet because these compounds bioaccumulate up the food chain” 21. A literature review in the American Journal of Clinical Nutrition also reached the same conclusion 22.

• Diet is the major human exposure pathway for some PFAS 23 and the concentration of several perfluoroalkyl acids (PFAS) in serum appears to be reduced by dietary fiber. 24

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**Linda Karr**
**Residents Against Wood Smoke Emission Particulates**

12/4/2023 Written Testimony, which may also be 12/5/2023 oral testimony.

Outline of Residents Against Wood Smoke Emission Particulates' Points during 12/5/2023 Testimony.
1)Modeling using New Source Performance Standards is not needed for indoor residential wood burning.
2)Real Life Monitoring is needed for indoor residential wood burning.
3)Data Gathering and Decision Making should be made by near neighbors of indoor wood burners whose smoke enters the near neighbors yards and sickens them.
4)If the government can devise a system for downloading 3 day PurpleAir PM2.5 monitor data and analyzing it to show percent of time PM2.5 levels in the near neighbors' yard were above National Ambient Air Quality Standards (NAAQS) using the Environmental Protection Agency (EPA) annual limit of 12 micrograms per cubic meter, the anticipated 24 hour limit of 25 micrograms per cubic meter and the current 24 hour limit of 35 micrograms per cubic meter, this should be enough evidence of harmful air pollution in the yards of near neighbors for local health departments to shut down indoor residential wood burning, stove by stove if necessary.
5)RAWSEP has created such a monitoring system showing percent above NAAQS in a 3 day period. RAWSEP Coast to Coast videos, podcasts, and PDFs of Word Documents on the RAWSEP website, show how this is done every 3 days for 12 resident-owned PurpleAir Monitors in California, Wisconsin, and Maine (hence the name Coast to Coast) and in the Canadian Province of British Columbia.
6)Indoor residential wood burners are often more affluent than their near neighbors who bear the brunt of the wood smoke emissions. If a wood burner does not burn wood to save money, financial incentives to exchange wood stoves for Heat Pumps that work at 40 degrees below zero may have little effect as carrots sparking change.
7)On 12/2/2023 RAWSEP contacted a group of 60 rural farmers who sell produce at a local farmer's market. 27 of the 32 wood burners contacted expressed interest in exchanging their wood stoves for Heat Pumps that work down to 40 degrees below zero, given that in 2024 there will be rebates for Heat Pumps up to $8,000 per household based on a sliding income scale.
8)RAWSEP also told the rural farmers about a RAWSEP grant that is being written to make up any deficit to ensure that exchanging a heat pump for a wood stove will not put the farmer out of pocket, based on a household income sliding scale, up to near 100% rebate for those of modest means.
9)RAWSEP was given an Expert Match from the Department of Energy (DOE) to help write the grant, which is also to hand out PM2.5 monitors to any near neighbor of an indoor residential wood burner whose PM2.5 smoke enters the near neighbor's yard and sickens them.
10)RAWSEP is also planning on contacting urban indoor residential wood burners with the identical offer for heat pumps highly subsidized in exchange for indoor residential wood stoves. It remains to be seen if urban indoor residential wood burners are so affluent that a wood stove exchange for a heat pump would overcome affluent wood stove owner's aesthetic choice of the highly polluting wood stove over the clean Heat Pump for home heating. RAWSEP also aims to educate wood stove owners generally about the health effects of wood burning on both wood burners and near neighbors to overcome wood stove owner's aversion to changing the status quo and learning that they have been fed misinformation disseminated on government sites since 1988, while the government was certifying highly polluting wood stoves as "safe".

Written Comment emailed to NEJAC by 12/19/2023 and to WHEJAC by 12/20/2023.
My name is Linda Karr. The 501c3 nonprofit I represent is Residents Against Wood Smoke Emission Particulates. https://RAWSEPresidents.com with over 625 videos on Youtube and podcasts on Spotify.
Congratulations on NEJAC's 8.8 million dollar grant for assessing emissions from (indoor residential) wood burning devices.
I would like to make 10 points, which are reasons to replace EPA NSPS for wood stoves with a complaint based system for shutting down polluting indoor residential wood stoves, to protect human health and slow climate change. The complaints could be made by near neighbors of indoor residential wood burners, who are sickened when PM2.5 from wood smoke enters their yards and raises the level of PM2.5 in the ambient air. Three Excel Files are also attached. Instructions showing how the Excel Sheet calculations were made is point 11. The attached and downloadable at Coast to Coast at https://RAWSEPresidents.com Excel files demonstrate how the calculation is made (points A, B, C and D)
A)California, Humboldt County, Trinidad PM2.5 above 12 ug/m3 63% of the time in a 3 day period, and above 35 ug/m3 18% of the time in a 3 day period, and
B)Wisconsin, Dane County, Madison, Elinor Street PM2.5 above 12 micrograms per cubic meter 99% of the time in a 3 day period, and above 35 micrograms per cubic meter 59% of the time in a 3 day period, and
C)Maine, Kennebec County, Winslow PM2.5 above 12 micrograms per cubic meter 83% of the time in a 3 day period, and above 35 micrograms per cubic meter 6% of the time in a 3 day period
(A, B & C use PurpleAir PM2.5 data from 7AM 12/6/2023 to 7AM 12/9/2023)
D)Example of 3 day PurpleAir PM2.5 data download 7AM 12/6/2023 to 7AM 12/9/2023, in this case for Madison Wisconsin.
Points 1 to 10.
1)Modeling using New Source Performance Standards (NSPS) is not needed for indoor residential wood burning stoves. Certification of wood stoves by the Environmental Protection Agency (EPA) was described by the Office of the Inspector General (OIG), watchdog of the EPA, in February 2023 as a failed program. The reason certification of wood stoves has failed, and resulted in wood stoves being manufactured and sold which routinely exceed even by lax safety standards of the EPA (2 grams of PM2.5 per hour from a stove burning cord wood) is because of lobbying by the wood stove industry resulting in giant loopholes to compliance in the system.
2)Real Life PM2.5 Monitoring is needed for indoor residential wood burning.
3)Data Gathering and Decision Making should be done by near neighbors of indoor wood burners whose smoke enters the near neighbors yards and sickens them.
4)If the government can devise a system for downloading 3 day PurpleAir PM2.5 monitor data and using Excel files to calculate percent of time PM2.5 levels in the near neighbors' yard were above National Ambient Air Quality Standards (NAAQS) using EPA limits (currently 12 micrograms per cubic meter annually and 35 micrograms per meter cubed average in a 24 hour period), that method of collecting evidence should replace NSPS Modeling overseen by the wood stove industry.
5)RAWSEP has created such a monitoring system showing percentage of time above NAAQS in a 3 day period. RAWSEP Coast to Coast videos show how this is done every 3 days for 23 (and counting) resident-owned PurpleAir Monitors from California to Wisconsin, and on to Maine. Coast to Coast Excel Files are downloadable at https://rawsepresidents.com and three representative Excel Files, for Trinidad, California, Madison, Wisconsin, and Winslow, Maine are attached to this comment. Using the simple mathematical formula used by the Department of Natural Resources (DNR) in Wisconsin to correlate PurpleAir PM2.5 monitor data with data from EPA PM2.5 $100,000 monitors, when PurpleAir and Regulatory PM2.5 monitor data is put side by side on U S E P A AirNow Maps of Smoke and Fire, RAWSEP uses the mathematical formula (PA times 0.504) plus 1.8314, within 3 uploaded Excel Files. All of these three PurpleAir PM2.5 monitor locations are hyper-localized in the back yards of near neighbors of indoor residential wood burners whose wood smoke PM2.5 emissions enter the near neighbors' yards and sicken them. During wood smoke incursions, near neighbors do not venture out their sealed homes and rely on multiple air purifiers to maintain breathable air within their homes. These actions of self-defense were like those advised when Canadian wildfire smoke invaded the United States in June 2023, and areas like New York had a rise in hospitalizations and emergency room visits, and a decline in the number of people making an outdoor commute to work or children to school.
6)Indoor residential wood burners are often more affluent than their near neighbors.
7)On December 2nd RAWSEP contacted a group of 60 rural farmers. 27 of the 32 wood burners contacted expressed interest in exchanging their wood stoves for Heat Pumps, given that in 2024 there will also be Federal rebates for Heat Pumps up to $8,000 per household based on a sliding income scale.

8)RAWSEP also told the rural farmers about a RAWSEP grant that is being written to make up any deficit above the Federal rebate to ensure that exchanging a heat pump for a wood stove will not put the farmer out of pocket, for those of modest means.
9)RAWSEP was given an Expert Match from the Department of Energy (D O E) to help write the grant.
10)RAWSEP will also contact urban indoor residential wood burners with the identical offer for heat pumps highly subsidized in exchange for indoor residential wood stoves. RAWSEP hopes that this will be a demonstration grant to show government how to replace certification of wood stoves with real world PM2.5 monitoring, as a way to regulate and end the wood stove emissions that sicken near neighbors, by shutting down polluting indoor residential wood burning stoves, one by one if necessary, using a complaint based system. Wood smoke is 90% PM2.5, particulate matter of 2.5 micrometer size, the perfect size to infiltrate the human lung, setting off a cascade of human health problems and early deaths. Wood burning emits more PM2.5 and C O 2 than the fossil fuel coal burning. Wood burning emits 450 times the PM2.5 than natural gas burning.
11)Instructions on use of Excel files
5 Excel Pages: 3 day % above NAAQS using PurpleAir PM2.5 calculation in Excel, with correlation to EPA Regulation PM2.5 monitor, using PurpleAir Data download from 1 resident-owned monitor. Example Template Wisconsin, Madison, Elinor Street 12/6/2023
2)Main Excel page. 2A)Paste of download data at A6 using Paste 123  2B)After paste of PurpleAir Download. Auto correlation of PurpleAir to EPA Regulatory PM2.5 Monitor data using simple mathematical formula (PA x 0.504)+ 1.8314 in Columns E through G will Autopopulate 2C)Copy A6:G438, and then paste 123 to YELLOW page at A1, then paste 123 to Orange Page at A1, then paste 123 to RED Page at A1.
3)YELLOW Excel page 3A) 12 micrograms per cubic meter 3B)Conditional Formatting 12 plus is YELLOW cell color 3C)Sorted YELLOW cell color on top) 3D)count of YELLOW cells
4)ORANGE Excel page 3A) 25 micrograms per cubic meter 3B)Conditional Formatting 12 plus is ORANGE cell color 3C)Sorted ORANGE cell color on top) 3D)count of ORANGE cells
5)RED Excel page 3A) 35 micrograms per cubic meter 3B)Conditional Formatting 12 plus is RED cell color 3C)Sorted RED cell color on top) 3D)count of RED cells
6)After number of sorted rows of YELLOW on YELLOW page, number of sorted rows of ORANGE on ORANGE page and number of sorted rows of RED on RED page 6A)entered at Main page E5, 6B)E6, and 6C)E7. This will auto calculate percent above NAAQS at 6D)B4 on Main page 6E)C4 on Main Page and 6F)D4 on Main Page.
7)Copy 7A)A1:D5 on Main Page, then 7B)Paste 123 or paste Link N (most right Paste choice)in to a Word file.
8)This Word file information is used for the chart of all residents owned monitor 3 day percent data on RAWSEP Coast to Coast, which data appears in Youtube videos, Spotify podcasts, and saved as a PDF on the RAWSEP website https://RAWSEPresident.com
9)Excel file Templates and actual calculation files for 23 monitor locations every 3 days can now be downloaded directly from https://rawsepresdents.com Or Email rawsepresidents@gmail.com for Excel Template to be emailed to you, if you own a PurpleAir PM2.5 monitor, and are a near neighbor of an indoor residential wood burner whose PM2.5 smoke enters your yard and sickens you.

Correlation: PurpleAir to EPA (PA x 0.514)+1.8304

12/6/2023 6:40 to 12/9/2023 6:30

California, Trinidad Ewing A PM2.5

| % 3 days >NAAQS | 63.66% | 33.80% | 18.06% | PA x 0.5140 + 1.8304 conversion | | |
|---|---|---|---|---|---|---|
| Ewing A | 12 ug/m3 | 25 ug/m3 | 35 ug/m3 | 275 | 146 | 78 |
| DateTime | Average | Ewing A | Ewing B | above12 | above25 | above35 |
| 12/6/23 6:40 | 34.1 | 116 | 102 | 61.4544 | 61.4544 | 61.4544 |
| 12/6/23 6:50 | | 128 | 116 | 67.6224 | 67.6224 | 67.6224 |
| 12/6/23 7:00 | | 123 | 109 | 65.0524 | 65.0524 | 65.0524 |
| 12/6/23 7:10 | | 80 | 72 | 42.9504 | 42.9504 | 42.9504 |
| 12/6/23 7:20 | | 58 | 48 | 31.6424 | 31.6424 | 31.6424 |
| 12/6/23 7:30 | | 71 | 63 | 38.3244 | 38.3244 | 38.3244 |
| 12/6/23 7:40 | | 73 | 63 | 39.3524 | 39.3524 | 39.3524 |
| 12/6/23 7:50 | | 79 | 69 | 42.4364 | 42.4364 | 42.4364 |
| 12/6/23 8:00 | | 54 | 43 | 29.5864 | 29.5864 | 29.5864 |
| 12/6/23 8:10 | | 50 | 37 | 27.5304 | 27.5304 | 27.5304 |
| 12/6/23 8:20 | | 52 | 40 | 28.5584 | 28.5584 | 28.5584 |
| 12/6/23 8:30 | | 65 | 60 | 35.2404 | 35.2404 | 35.2404 |
| 12/6/23 8:40 | | 42 | 32 | 23.4184 | 23.4184 | 23.4184 |
| 12/6/23 8:50 | | 48 | 41 | 26.5024 | 26.5024 | 26.5024 |
| 12/6/23 9:00 | | 38 | 31 | 21.3624 | 21.3624 | 21.3624 |
| 12/6/23 9:10 | | 86 | 76 | 46.0344 | 46.0344 | 46.0344 |
| 12/6/23 9:20 | | 105 | 94 | 55.8004 | 55.8004 | 55.8004 |
| 12/6/23 9:30 | | 87 | 74 | 46.5484 | 46.5484 | 46.5484 |
| 12/6/23 9:40 | | 86 | 74 | 46.0344 | 46.0344 | 46.0344 |
| 12/6/23 9:50 | | 66 | 57 | 35.7544 | 35.7544 | 35.7544 |
| 12/6/23 10:00 | | 51 | 41 | 28.0444 | 28.0444 | 28.0444 |
| 12/6/23 10:10 | | 30 | 24 | 17.2504 | 17.2504 | 17.2504 |
| 12/6/23 10:20 | | 13 | 12 | 8.5124 | 8.5124 | 8.5124 |
| 12/6/23 10:30 | | 10 | 9 | 6.9704 | 6.9704 | 6.9704 |
| 12/6/23 10:40 | | 8 | 7 | 5.9424 | 5.9424 | 5.9424 |
| 12/6/23 10:50 | | 11 | 9 | 7.4844 | 7.4844 | 7.4844 |
| 12/6/23 11:00 | | 9 | 8 | 6.4564 | 6.4564 | 6.4564 |
| 12/6/23 11:10 | | 8 | 8 | 5.9424 | 5.9424 | 5.9424 |

PA 0.514 1.8304

number 10 minuteperiods in 72 hours,3 sheets

12,25,35 micrograms per cubic meter PM2.5

| California, Trinidad | | Ewing A |
|---|---|---|
| 12/6/2023 6:40 | to | 12/9/2023 6:30 |

Above 12 micrograms per cubic meter PM2.5?

| | | |
|---|---|---|
| 275 | 10 | 2750 |

data periods of 10 minutes equals periods x 10

| | | |
|---|---|---|
| 2750 | 60 | 45.83 |

minutes divided by 60= hours in 3 days 72 hour

| | | |
|---|---|---|
| 45.83 | 72 | 63.66% |

hours divided by 72 = % days > 12ug/m3 PM2.5

Above 25 micrograms per cubic meter PM2.5?

| | | |
|---|---|---|
| 146 | 10 | 1460 |

data periods of 10 minutes equals periods x 10

| | | |
|---|---|---|
| 1460 | 60 | 24.33 |

minutes divided by 60= hours in 3 days 72 hour

| | | |
|---|---|---|
| 24.33 | 72 | 33.80% |

hours divided by 72 = % days > 25ug/m3 PM2.5

Above 35 micrograms per cubic meter PM2.5?

| | | |
|---|---|---|
| 78 | 10 | 780 |

data periods of 10 minutes equals periods x 10

| | | |
|---|---|---|
| 780 | 60 | 13.00 |

minutes divided by 60= hours in 3 days 72 hour

| | | |
|---|---|---|
| 13.00 | 72 | 18.06% |

hours divided by 72 = % days > 12ug/m3 PM2.5

| California, Trinidad | | Ewing A |
|---|---|---|

See all 3 days of Excel data on PDF at

https://rawsepresidents.wordpress.com

Check C4 61.4544

| | | | | | |
|---|---|---|---|---|---|
| 12/6/23 11:20 | 7 | 7 | 5.4284 | 5.4284 | 5.4284 |
| 12/6/23 11:30 | 8 | 8 | 5.9424 | 5.9424 | 5.9424 |
| 12/6/23 11:40 | 9 | 9 | 6.4564 | 6.4564 | 6.4564 |
| 12/6/23 11:50 | 7 | 8 | 5.4284 | 5.4284 | 5.4284 |
| 12/6/23 12:00 | 7 | 7 | 5.4284 | 5.4284 | 5.4284 |
| 12/6/23 12:10 | 5 | 4 | 4.4004 | 4.4004 | 4.4004 |
| 12/6/23 12:20 | 6 | 6 | 4.9144 | 4.9144 | 4.9144 |
| 12/6/23 12:30 | 9 | 8 | 6.4564 | 6.4564 | 6.4564 |
| 12/6/23 12:40 | 9 | 7 | 6.4564 | 6.4564 | 6.4564 |
| 12/6/23 12:50 | 9 | 6 | 6.4564 | 6.4564 | 6.4564 |
| 12/6/23 13:00 | 22 | 19 | 13.1384 | 13.1384 | 13.1384 |
| 12/6/23 13:10 | 43 | 35 | 23.9324 | 23.9324 | 23.9324 |
| 12/6/23 13:20 | 56 | 49 | 30.6144 | 30.6144 | 30.6144 |
| 12/6/23 13:30 | 31 | 28 | 17.7644 | 17.7644 | 17.7644 |
| 12/6/23 13:40 | 41 | 34 | 22.9044 | 22.9044 | 22.9044 |
| 12/6/23 13:50 | 52 | 42 | 28.5584 | 28.5584 | 28.5584 |
| 12/6/23 14:00 | 30 | 22 | 17.2504 | 17.2504 | 17.2504 |
| 12/6/23 14:10 | 17 | 12 | 10.5684 | 10.5684 | 10.5684 |
| 12/6/23 14:20 | 16 | 13 | 10.0544 | 10.0544 | 10.0544 |
| 12/6/23 14:30 | 58 | 52 | 31.6424 | 31.6424 | 31.6424 |
| 12/6/23 14:40 | 76 | 65 | 40.8944 | 40.8944 | 40.8944 |
| 12/6/23 14:50 | 80 | 71 | 42.9504 | 42.9504 | 42.9504 |
| 12/6/23 15:00 | 68 | 62 | 36.7824 | 36.7824 | 36.7824 |
| 12/6/23 15:10 | 72 | 61 | 38.8384 | 38.8384 | 38.8384 |
| 12/6/23 15:20 | 88 | 75 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/23 15:30 | 99 | 91 | 52.7164 | 52.7164 | 52.7164 |
| 12/6/23 15:40 | 97 | 88 | 51.6884 | 51.6884 | 51.6884 |
| 12/6/23 15:50 | 105 | 94 | 55.8004 | 55.8004 | 55.8004 |
| 12/6/23 16:00 | 96 | 88 | 51.1744 | 51.1744 | 51.1744 |
| 12/6/23 16:10 | 123 | 111 | 65.0524 | 65.0524 | 65.0524 |
| 12/6/23 16:20 | 102 | 91 | 54.2584 | 54.2584 | 54.2584 |
| 12/6/23 16:30 | 99 | 87 | 52.7164 | 52.7164 | 52.7164 |
| 12/6/23 16:40 | 117 | 103 | 61.9684 | 61.9684 | 61.9684 |
| 12/6/23 16:50 | 119 | 108 | 62.9964 | 62.9964 | 62.9964 |

| | | | | | |
|---|---|---|---|---|---|
| 12/6/23 17:00 | 77 | 67 | 41.4084 | 41.4084 | 41.4084 |
| 12/6/23 17:10 | 61 | 53 | 33.1844 | 33.1844 | 33.1844 |
| 12/6/23 17:20 | 28 | 21 | 16.2224 | 16.2224 | 16.2224 |
| 12/6/23 17:30 | 63 | 55 | 34.2124 | 34.2124 | 34.2124 |
| 12/6/23 17:40 | 85 | 74 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/23 17:50 | 89 | 78 | 47.5764 | 47.5764 | 47.5764 |
| 12/6/23 18:00 | 85 | 73 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/23 18:10 | 69 | 62 | 37.2964 | 37.2964 | 37.2964 |
| 12/6/23 18:20 | 97 | 88 | 51.6884 | 51.6884 | 51.6884 |
| 12/6/23 18:30 | 102 | 91 | 54.2584 | 54.2584 | 54.2584 |
| 12/6/23 18:40 | 100 | 90 | 53.2304 | 53.2304 | 53.2304 |
| 12/6/23 18:50 | 92 | 83 | 49.1184 | 49.1184 | 49.1184 |
| 12/6/23 19:00 | 81 | 71 | 43.4644 | 43.4644 | 43.4644 |
| 12/6/23 19:10 | 93 | 82 | 49.6324 | 49.6324 | 49.6324 |
| 12/6/23 19:20 | 94 | 85 | 50.1464 | 50.1464 | 50.1464 |
| 12/6/23 19:30 | 88 | 80 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/23 19:40 | 90 | 79 | 48.0904 | 48.0904 | 48.0904 |
| 12/6/23 19:50 | 95 | 88 | 50.6604 | 50.6604 | 50.6604 |
| 12/6/23 20:00 | 92 | 83 | 49.1184 | 49.1184 | 49.1184 |
| 12/6/23 20:10 | 80 | 72 | 42.9504 | 42.9504 | 42.9504 |
| 12/6/23 20:20 | 69 | 61 | 37.2964 | 37.2964 | 37.2964 |
| 12/6/23 20:30 | 61 | 55 | 33.1844 | 33.1844 | 33.1844 |
| 12/6/23 20:40 | 79 | 70 | 42.4364 | 42.4364 | 42.4364 |
| 12/6/23 20:50 | 92 | 81 | 49.1184 | 49.1184 | 49.1184 |
| 12/6/23 21:00 | 83 | 74 | 44.4924 | 44.4924 | 44.4924 |
| 12/6/23 21:10 | 94 | 84 | 50.1464 | 50.1464 | 50.1464 |
| 12/6/23 21:20 | 102 | 92 | 54.2584 | 54.2584 | 54.2584 |
| 12/6/23 21:30 | 109 | 96 | 57.8564 | 57.8564 | 57.8564 |
| 12/6/23 21:40 | 104 | 91 | 55.2864 | 55.2864 | 55.2864 |
| 12/6/23 21:50 | 85 | 72 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/23 22:00 | 78 | 66 | 41.9224 | 41.9224 | 41.9224 |
| 12/6/23 22:10 | 57 | 49 | 31.1284 | 31.1284 | 31.1284 |
| 12/6/23 22:20 | 85 | 74 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/23 22:30 | 73 | 64 | 39.3524 | 39.3524 | 39.3524 |

| | | | | | |
|---|---|---|---|---|---|
| 12/6/23 22:40 | 67 | 57 | 36.2684 | 36.2684 | 36.2684 |
| 12/6/23 22:50 | 83 | 71 | 44.4924 | 44.4924 | 44.4924 |
| 12/6/23 23:00 | 103 | 93 | 54.7724 | 54.7724 | 54.7724 |
| 12/6/23 23:10 | 81 | 74 | 43.4644 | 43.4644 | 43.4644 |
| 12/6/23 23:20 | 26 | 20 | 15.1944 | 15.1944 | 15.1944 |
| 12/6/23 23:30 | 10 | 9 | 6.9704 | 6.9704 | 6.9704 |
| 12/6/23 23:40 | 7 | 6 | 5.4284 | 5.4284 | 5.4284 |
| 12/6/23 23:50 | 5 | 3 | 4.4004 | 4.4004 | 4.4004 |
| 12/7/23 0:00 | 62 | 53 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/23 0:10 | 54 | 44 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/23 0:20 | 68 | 56 | 36.7824 | 36.7824 | 36.7824 |
| 12/7/23 0:30 | 71 | 59 | 38.3244 | 38.3244 | 38.3244 |
| 12/7/23 0:40 | 51 | 40 | 28.0444 | 28.0444 | 28.0444 |
| 12/7/23 0:50 | 53 | 39 | 29.0724 | 29.0724 | 29.0724 |
| 12/7/23 1:00 | 55 | 44 | 30.1004 | 30.1004 | 30.1004 |
| 12/7/23 1:10 | 57 | 49 | 31.1284 | 31.1284 | 31.1284 |
| 12/7/23 1:20 | 56 | 43 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/23 1:30 | 54 | 42 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/23 1:40 | 47 | 38 | 25.9884 | 25.9884 | 25.9884 |
| 12/7/23 1:50 | 32 | 27 | 18.2784 | 18.2784 | 18.2784 |
| 12/7/23 2:00 | 57 | 46 | 31.1284 | 31.1284 | 31.1284 |
| 12/7/23 2:10 | 30 | 21 | 17.2504 | 17.2504 | 17.2504 |
| 12/7/23 2:20 | 43 | 32 | 23.9324 | 23.9324 | 23.9324 |
| 12/7/23 2:30 | 45 | 30 | 24.9604 | 24.9604 | 24.9604 |
| 12/7/23 2:40 | 55 | 44 | 30.1004 | 30.1004 | 30.1004 |
| 12/7/23 2:50 | 58 | 48 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/23 3:00 | 59 | 51 | 32.1564 | 32.1564 | 32.1564 |
| 12/7/23 3:10 | 52 | 35 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/23 3:20 | 52 | 39 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/23 3:30 | 44 | 29 | 24.4464 | 24.4464 | 24.4464 |
| 12/7/23 3:40 | 50 | 33 | 27.5304 | 27.5304 | 27.5304 |
| 12/7/23 3:50 | 26 | 18 | 15.1944 | 15.1944 | 15.1944 |
| 12/7/23 4:00 | 30 | 25 | 17.2504 | 17.2504 | 17.2504 |
| 12/7/23 4:10 | 41 | 29 | 22.9044 | 22.9044 | 22.9044 |

| | | | | | |
|---|---|---|---|---|---|
| 12/7/23 4:20 | 36 | 28 | 20.3344 | 20.3344 | 20.3344 |
| 12/7/23 4:30 | 39 | 28 | 21.8764 | 21.8764 | 21.8764 |
| 12/7/23 4:40 | 35 | 26 | 19.8204 | 19.8204 | 19.8204 |
| 12/7/23 4:50 | 31 | 23 | 17.7644 | 17.7644 | 17.7644 |
| 12/7/23 5:00 | 29 | 22 | 16.7364 | 16.7364 | 16.7364 |
| 12/7/23 5:10 | 28 | 18 | 16.2224 | 16.2224 | 16.2224 |
| 12/7/23 5:20 | 21 | 15 | 12.6244 | 12.6244 | 12.6244 |
| 12/7/23 5:30 | 22 | 17 | 13.1384 | 13.1384 | 13.1384 |
| 12/7/23 5:40 | 22 | 15 | 13.1384 | 13.1384 | 13.1384 |
| 12/7/23 5:50 | 30 | 20 | 17.2504 | 17.2504 | 17.2504 |
| 12/7/23 6:00 | 32 | 21 | 18.2784 | 18.2784 | 18.2784 |
| 12/7/23 6:10 | 21 | 16 | 12.6244 | 12.6244 | 12.6244 |
| 12/7/23 6:20 | 27 | 22 | 15.7084 | 15.7084 | 15.7084 |
| 12/7/23 6:30 | 36 | 24 | 20.3344 | 20.3344 | 20.3344 |
| 12/7/23 6:40 | 37 | 26 | 20.8484 | 20.8484 | 20.8484 |
| 12/7/23 6:50 | 31 | 23 | 17.7644 | 17.7644 | 17.7644 |
| 12/7/23 7:00 | 35 | 27 | 19.8204 | 19.8204 | 19.8204 |
| 12/7/23 7:10 | 35 | 26 | 19.8204 | 19.8204 | 19.8204 |
| 12/7/23 7:20 | 18 | 13 | 11.0824 | 11.0824 | 11.0824 |
| 12/7/23 7:30 | 20 | 14 | 12.1104 | 12.1104 | 12.1104 |
| 12/7/23 7:40 | 13 | 9 | 8.5124 | 8.5124 | 8.5124 |
| 12/7/23 7:50 | 18 | 13 | 11.0824 | 11.0824 | 11.0824 |
| 12/7/23 8:00 | 10 | 9 | 6.9704 | 6.9704 | 6.9704 |
| 12/7/23 8:10 | 10 | 8 | 6.9704 | 6.9704 | 6.9704 |
| 12/7/23 8:20 | 13 | 8 | 8.5124 | 8.5124 | 8.5124 |
| 12/7/23 8:30 | 16 | 11 | 10.0544 | 10.0544 | 10.0544 |
| 12/7/23 8:40 | 16 | 13 | 10.0544 | 10.0544 | 10.0544 |
| 12/7/23 8:50 | 19 | 14 | 11.5964 | 11.5964 | 11.5964 |
| 12/7/23 9:00 | 15 | 14 | 9.5404 | 9.5404 | 9.5404 |
| 12/7/23 9:10 | 43 | 33 | 23.9324 | 23.9324 | 23.9324 |
| 12/7/23 9:20 | 58 | 52 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/23 9:30 | 14 | 11 | 9.0264 | 9.0264 | 9.0264 |
| 12/7/23 9:40 | 35 | 26 | 19.8204 | 19.8204 | 19.8204 |
| 12/7/23 9:50 | 23 | 18 | 13.6524 | 13.6524 | 13.6524 |

| | | | | | |
|---|---|---|---|---|---|
| 12/7/23 10:00 | 14 | 10 | 9.0264 | 9.0264 | 9.0264 |
| 12/7/23 10:10 | 16 | 11 | 10.0544 | 10.0544 | 10.0544 |
| 12/7/23 10:20 | 23 | 19 | 13.6524 | 13.6524 | 13.6524 |
| 12/7/23 10:30 | 27 | 18 | 15.7084 | 15.7084 | 15.7084 |
| 12/7/23 10:40 | 49 | 35 | 27.0164 | 27.0164 | 27.0164 |
| 12/7/23 10:50 | 41 | 28 | 22.9044 | 22.9044 | 22.9044 |
| 12/7/23 11:00 | 33 | 24 | 18.7924 | 18.7924 | 18.7924 |
| 12/7/23 11:10 | 40 | 29 | 22.3904 | 22.3904 | 22.3904 |
| 12/7/23 11:20 | 56 | 43 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/23 11:30 | 40 | 30 | 22.3904 | 22.3904 | 22.3904 |
| 12/7/23 11:40 | 10 | 8 | 6.9704 | 6.9704 | 6.9704 |
| 12/7/23 11:50 | 7 | 6 | 5.4284 | 5.4284 | 5.4284 |
| 12/7/23 12:00 | 7 | 4 | 5.4284 | 5.4284 | 5.4284 |
| 12/7/23 12:10 | 10 | 7 | 6.9704 | 6.9704 | 6.9704 |
| 12/7/23 12:20 | 57 | 46 | 31.1284 | 31.1284 | 31.1284 |
| 12/7/23 12:30 | 68 | 55 | 36.7824 | 36.7824 | 36.7824 |
| 12/7/23 12:40 | 54 | 45 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/23 12:50 | 50 | 40 | 27.5304 | 27.5304 | 27.5304 |
| 12/7/23 13:00 | 47 | 34 | 25.9884 | 25.9884 | 25.9884 |
| 12/7/23 13:10 | 46 | 36 | 25.4744 | 25.4744 | 25.4744 |
| 12/7/23 13:20 | 63 | 52 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/23 13:30 | 65 | 54 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/23 13:40 | 67 | 58 | 36.2684 | 36.2684 | 36.2684 |
| 12/7/23 13:50 | 50 | 39 | 27.5304 | 27.5304 | 27.5304 |
| 12/7/23 14:00 | 56 | 49 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/23 14:10 | 48 | 33 | 26.5024 | 26.5024 | 26.5024 |
| 12/7/23 14:20 | 55 | 49 | 30.1004 | 30.1004 | 30.1004 |
| 12/7/23 14:30 | 24 | 20 | 14.1664 | 14.1664 | 14.1664 |
| 12/7/23 14:40 | 38 | 27 | 21.3624 | 21.3624 | 21.3624 |
| 12/7/23 14:50 | 31 | 26 | 17.7644 | 17.7644 | 17.7644 |
| 12/7/23 15:00 | 35 | 29 | 19.8204 | 19.8204 | 19.8204 |
| 12/7/23 15:10 | 54 | 42 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/23 15:20 | 40 | 33 | 22.3904 | 22.3904 | 22.3904 |
| 12/7/23 15:30 | 36 | 26 | 20.3344 | 20.3344 | 20.3344 |

| | | | | | |
|---|---|---|---|---|---|
| 12/7/23 15:40 | 28 | 21 | 16.2224 | 16.2224 | 16.2224 |
| 12/7/23 15:50 | 20 | 17 | 12.1104 | 12.1104 | 12.1104 |
| 12/7/23 16:00 | 25 | 21 | 14.6804 | 14.6804 | 14.6804 |
| 12/7/23 16:10 | 28 | 23 | 16.2224 | 16.2224 | 16.2224 |
| 12/7/23 16:20 | 30 | 22 | 17.2504 | 17.2504 | 17.2504 |
| 12/7/23 16:30 | 28 | 18 | 16.2224 | 16.2224 | 16.2224 |
| 12/7/23 16:40 | 26 | 19 | 15.1944 | 15.1944 | 15.1944 |
| 12/7/23 16:50 | 25 | 22 | 14.6804 | 14.6804 | 14.6804 |
| 12/7/23 17:00 | 23 | 17 | 13.6524 | 13.6524 | 13.6524 |
| 12/7/23 17:10 | 19 | 16 | 11.5964 | 11.5964 | 11.5964 |
| 12/7/23 17:20 | 16 | 12 | 10.0544 | 10.0544 | 10.0544 |
| 12/7/23 17:30 | 9 | 6 | 6.4564 | 6.4564 | 6.4564 |
| 12/7/23 17:40 | 6 | 6 | 4.9144 | 4.9144 | 4.9144 |
| 12/7/23 17:50 | 9 | 8 | 6.4564 | 6.4564 | 6.4564 |
| 12/7/23 18:00 | 13 | 10 | 8.5124 | 8.5124 | 8.5124 |
| 12/7/23 18:10 | 14 | 11 | 9.0264 | 9.0264 | 9.0264 |
| 12/7/23 18:20 | 16 | 13 | 10.0544 | 10.0544 | 10.0544 |
| 12/7/23 18:30 | 17 | 12 | 10.5684 | 10.5684 | 10.5684 |
| 12/7/23 18:40 | 17 | 13 | 10.5684 | 10.5684 | 10.5684 |
| 12/7/23 18:50 | 31 | 23 | 17.7644 | 17.7644 | 17.7644 |
| 12/7/23 19:00 | 46 | 32 | 25.4744 | 25.4744 | 25.4744 |
| 12/7/23 19:10 | 27 | 19 | 15.7084 | 15.7084 | 15.7084 |
| 12/7/23 19:20 | 19 | 13 | 11.5964 | 11.5964 | 11.5964 |
| 12/7/23 19:30 | 13 | 9 | 8.5124 | 8.5124 | 8.5124 |
| 12/7/23 19:40 | 17 | 13 | 10.5684 | 10.5684 | 10.5684 |
| 12/7/23 19:50 | 21 | 15 | 12.6244 | 12.6244 | 12.6244 |
| 12/7/23 20:00 | 15 | 10 | 9.5404 | 9.5404 | 9.5404 |
| 12/7/23 20:10 | 8 | 6 | 5.9424 | 5.9424 | 5.9424 |
| 12/7/23 20:20 | 7 | 5 | 5.4284 | 5.4284 | 5.4284 |
| 12/7/23 20:30 | 21 | 15 | 12.6244 | 12.6244 | 12.6244 |
| 12/7/23 20:40 | 67 | 56 | 36.2684 | 36.2684 | 36.2684 |
| 12/7/23 20:50 | 97 | 88 | 51.6884 | 51.6884 | 51.6884 |
| 12/7/23 21:00 | 77 | 68 | 41.4084 | 41.4084 | 41.4084 |
| 12/7/23 21:10 | 62 | 53 | 33.6984 | 33.6984 | 33.6984 |

| | | | | | |
|---|---|---|---|---|---|
| 12/7/23 21:20 | 27 | 19 | 15.7084 | 15.7084 | 15.7084 |
| 12/7/23 21:30 | 17 | 13 | 10.5684 | 10.5684 | 10.5684 |
| 12/7/23 21:40 | 11 | 9 | 7.4844 | 7.4844 | 7.4844 |
| 12/7/23 21:50 | 4 | 3 | 3.8864 | 3.8864 | 3.8864 |
| 12/7/23 22:00 | 3 | 2 | 3.3724 | 3.3724 | 3.3724 |
| 12/7/23 22:10 | 2 | 3 | 2.8584 | 2.8584 | 2.8584 |
| 12/7/23 22:20 | 2 | 1 | 2.8584 | 2.8584 | 2.8584 |
| 12/7/23 22:30 | 0 | 1 | 1.8304 | 1.8304 | 1.8304 |
| 12/7/23 22:40 | 1 | 2 | 2.3444 | 2.3444 | 2.3444 |
| 12/7/23 22:50 | 4 | 3 | 3.8864 | 3.8864 | 3.8864 |
| 12/7/23 23:00 | 7 | 6 | 5.4284 | 5.4284 | 5.4284 |
| 12/7/23 23:10 | 13 | 10 | 8.5124 | 8.5124 | 8.5124 |
| 12/7/23 23:20 | 5 | 5 | 4.4004 | 4.4004 | 4.4004 |
| 12/7/23 23:30 | 5 | 3 | 4.4004 | 4.4004 | 4.4004 |
| 12/7/23 23:40 | 7 | 6 | 5.4284 | 5.4284 | 5.4284 |
| 12/7/23 23:50 | 10 | 7 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 0:00 | 66 | 58 | 35.7544 | 35.7544 | 35.7544 |
| 12/8/23 0:10 | 39 | 33 | 21.8764 | 21.8764 | 21.8764 |
| 12/8/23 0:20 | 60 | 54 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/23 0:30 | 39 | 33 | 21.8764 | 21.8764 | 21.8764 |
| 12/8/23 0:40 | 50 | 41 | 27.5304 | 27.5304 | 27.5304 |
| 12/8/23 0:50 | 36 | 28 | 20.3344 | 20.3344 | 20.3344 |
| 12/8/23 1:00 | 19 | 14 | 11.5964 | 11.5964 | 11.5964 |
| 12/8/23 1:10 | 22 | 18 | 13.1384 | 13.1384 | 13.1384 |
| 12/8/23 1:20 | 21 | 17 | 12.6244 | 12.6244 | 12.6244 |
| 12/8/23 1:30 | 13 | 10 | 8.5124 | 8.5124 | 8.5124 |
| 12/8/23 1:40 | 14 | 12 | 9.0264 | 9.0264 | 9.0264 |
| 12/8/23 1:50 | 14 | 12 | 9.0264 | 9.0264 | 9.0264 |
| 12/8/23 2:00 | 13 | 11 | 8.5124 | 8.5124 | 8.5124 |
| 12/8/23 2:10 | 13 | 9 | 8.5124 | 8.5124 | 8.5124 |
| 12/8/23 2:20 | 16 | 13 | 10.0544 | 10.0544 | 10.0544 |
| 12/8/23 2:30 | 16 | 11 | 10.0544 | 10.0544 | 10.0544 |
| 12/8/23 2:40 | 11 | 8 | 7.4844 | 7.4844 | 7.4844 |
| 12/8/23 2:50 | 22 | 17 | 13.1384 | 13.1384 | 13.1384 |

| | | | | | |
|---|---|---|---|---|---|
| 12/8/23 3:00 | 17 | 14 | 10.5684 | 10.5684 | 10.5684 |
| 12/8/23 3:10 | 10 | 7 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 3:20 | 10 | 8 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 3:30 | 8 | 7 | 5.9424 | 5.9424 | 5.9424 |
| 12/8/23 3:40 | 5 | 4 | 4.4004 | 4.4004 | 4.4004 |
| 12/8/23 3:50 | 3 | 3 | 3.3724 | 3.3724 | 3.3724 |
| 12/8/23 4:00 | 3 | 2 | 3.3724 | 3.3724 | 3.3724 |
| 12/8/23 4:10 | 1 | 2 | 2.3444 | 2.3444 | 2.3444 |
| 12/8/23 4:20 | 5 | 4 | 4.4004 | 4.4004 | 4.4004 |
| 12/8/23 4:30 | 2 | 2 | 2.8584 | 2.8584 | 2.8584 |
| 12/8/23 4:40 | 4 | 4 | 3.8864 | 3.8864 | 3.8864 |
| 12/8/23 4:50 | 4 | 3 | 3.8864 | 3.8864 | 3.8864 |
| 12/8/23 5:00 | 2 | 2 | 2.8584 | 2.8584 | 2.8584 |
| 12/8/23 5:10 | 2 | 2 | 2.8584 | 2.8584 | 2.8584 |
| 12/8/23 5:20 | 1 | 2 | 2.3444 | 2.3444 | 2.3444 |
| 12/8/23 5:30 | 3 | 3 | 3.3724 | 3.3724 | 3.3724 |
| 12/8/23 5:40 | 6 | 4 | 4.9144 | 4.9144 | 4.9144 |
| 12/8/23 5:50 | 5 | 4 | 4.4004 | 4.4004 | 4.4004 |
| 12/8/23 6:00 | 9 | 8 | 6.4564 | 6.4564 | 6.4564 |
| 12/8/23 6:10 | 7 | 6 | 5.4284 | 5.4284 | 5.4284 |
| 12/8/23 6:20 | 9 | 7 | 6.4564 | 6.4564 | 6.4564 |
| 12/8/23 6:30 | 18 | 16 | 11.0824 | 11.0824 | 11.0824 |
| 12/8/23 6:40 | 43 | 30 | 23.9324 | 23.9324 | 23.9324 |
| 12/8/23 6:50 | 38 | 32 | 21.3624 | 21.3624 | 21.3624 |
| 12/8/23 7:00 | 26 | 20 | 15.1944 | 15.1944 | 15.1944 |
| 12/8/23 7:10 | 19 | 14 | 11.5964 | 11.5964 | 11.5964 |
| 12/8/23 7:20 | 40 | 38 | 22.3904 | 22.3904 | 22.3904 |
| 12/8/23 7:30 | 11 | 8 | 7.4844 | 7.4844 | 7.4844 |
| 12/8/23 7:40 | 11 | 8 | 7.4844 | 7.4844 | 7.4844 |
| 12/8/23 7:50 | 11 | 8 | 7.4844 | 7.4844 | 7.4844 |
| 12/8/23 8:00 | 14 | 10 | 9.0264 | 9.0264 | 9.0264 |
| 12/8/23 8:10 | 14 | 10 | 9.0264 | 9.0264 | 9.0264 |
| 12/8/23 8:20 | 7 | 5 | 5.4284 | 5.4284 | 5.4284 |
| 12/8/23 8:30 | 4 | 3 | 3.8864 | 3.8864 | 3.8864 |

| | | | | | |
|---|---|---|---|---|---|
| 12/8/23 8:40 | 3 | 4 | 3.3724 | 3.3724 | 3.3724 |
| 12/8/23 8:50 | 5 | 5 | 4.4004 | 4.4004 | 4.4004 |
| 12/8/23 9:00 | 10 | 7 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 9:10 | 8 | 6 | 5.9424 | 5.9424 | 5.9424 |
| 12/8/23 9:20 | 5 | 4 | 4.4004 | 4.4004 | 4.4004 |
| 12/8/23 9:30 | 42 | 35 | 23.4184 | 23.4184 | 23.4184 |
| 12/8/23 9:40 | 10 | 8 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 9:50 | 32 | 25 | 18.2784 | 18.2784 | 18.2784 |
| 12/8/23 10:00 | 38 | 32 | 21.3624 | 21.3624 | 21.3624 |
| 12/8/23 10:10 | 28 | 22 | 16.2224 | 16.2224 | 16.2224 |
| 12/8/23 10:20 | 10 | 7 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 10:30 | 10 | 8 | 6.9704 | 6.9704 | 6.9704 |
| 12/8/23 10:40 | 16 | 12 | 10.0544 | 10.0544 | 10.0544 |
| 12/8/23 10:50 | 29 | 23 | 16.7364 | 16.7364 | 16.7364 |
| 12/8/23 11:00 | 28 | 23 | 16.2224 | 16.2224 | 16.2224 |
| 12/8/23 11:10 | 27 | 23 | 15.7084 | 15.7084 | 15.7084 |
| 12/8/23 11:20 | 29 | 22 | 16.7364 | 16.7364 | 16.7364 |
| 12/8/23 11:30 | 44 | 35 | 24.4464 | 24.4464 | 24.4464 |
| 12/8/23 11:40 | 41 | 31 | 22.9044 | 22.9044 | 22.9044 |
| 12/8/23 11:50 | 43 | 28 | 23.9324 | 23.9324 | 23.9324 |
| 12/8/23 12:00 | 46 | 33 | 25.4744 | 25.4744 | 25.4744 |
| 12/8/23 12:10 | 80 | 68 | 42.9504 | 42.9504 | 42.9504 |
| 12/8/23 12:20 | 83 | 71 | 44.4924 | 44.4924 | 44.4924 |
| 12/8/23 12:30 | 79 | 67 | 42.4364 | 42.4364 | 42.4364 |
| 12/8/23 12:40 | 62 | 56 | 33.6984 | 33.6984 | 33.6984 |
| 12/8/23 12:50 | 60 | 55 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/23 13:00 | 53 | 40 | 29.0724 | 29.0724 | 29.0724 |
| 12/8/23 13:10 | 53 | 38 | 29.0724 | 29.0724 | 29.0724 |
| 12/8/23 13:20 | 42 | 30 | 23.4184 | 23.4184 | 23.4184 |
| 12/8/23 13:30 | 44 | 41 | 24.4464 | 24.4464 | 24.4464 |
| 12/8/23 13:40 | 50 | 36 | 27.5304 | 27.5304 | 27.5304 |
| 12/8/23 13:50 | 43 | 29 | 23.9324 | 23.9324 | 23.9324 |
| 12/8/23 14:00 | 28 | 23 | 16.2224 | 16.2224 | 16.2224 |
| 12/8/23 14:10 | 31 | 22 | 17.7644 | 17.7644 | 17.7644 |

| | | | | | |
|---|---|---|---|---|---|
| 12/8/23 20:00 | 9 | 8 | 6.4564 | 6.4564 | 6.4564 |
| 12/8/23 20:10 | 12 | 10 | 7.9984 | 7.9984 | 7.9984 |
| 12/8/23 20:20 | 19 | 14 | 11.5964 | 11.5964 | 11.5964 |
| 12/8/23 20:30 | 22 | 17 | 13.1384 | 13.1384 | 13.1384 |
| 12/8/23 20:40 | 21 | 17 | 12.6244 | 12.6244 | 12.6244 |
| 12/8/23 20:50 | 15 | 10 | 9.5404 | 9.5404 | 9.5404 |
| 12/8/23 21:00 | 8 | 7 | 5.9424 | 5.9424 | 5.9424 |
| 12/8/23 21:10 | 59 | 52 | 32.1564 | 32.1564 | 32.1564 |
| 12/8/23 21:20 | 48 | 38 | 26.5024 | 26.5024 | 26.5024 |
| 12/8/23 21:30 | 26 | 20 | 15.1944 | 15.1944 | 15.1944 |
| 12/8/23 21:40 | 34 | 28 | 19.3064 | 19.3064 | 19.3064 |
| 12/8/23 21:50 | 39 | 30 | 21.8764 | 21.8764 | 21.8764 |
| 12/8/23 22:00 | 36 | 28 | 20.3344 | 20.3344 | 20.3344 |
| 12/8/23 22:10 | 22 | 17 | 13.1384 | 13.1384 | 13.1384 |
| 12/8/23 22:20 | 53 | 43 | 29.0724 | 29.0724 | 29.0724 |
| 12/8/23 22:30 | 42 | 32 | 23.4184 | 23.4184 | 23.4184 |
| 12/8/23 22:40 | 50 | 39 | 27.5304 | 27.5304 | 27.5304 |
| 12/8/23 22:50 | 44 | 34 | 24.4464 | 24.4464 | 24.4464 |
| 12/8/23 23:00 | 18 | 13 | 11.0824 | 11.0824 | 11.0824 |
| 12/8/23 23:10 | 21 | 16 | 12.6244 | 12.6244 | 12.6244 |
| 12/8/23 23:20 | 20 | 16 | 12.1104 | 12.1104 | 12.1104 |
| 12/8/23 23:30 | 60 | 54 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/23 23:40 | 64 | 56 | 34.7264 | 34.7264 | 34.7264 |
| 12/8/23 23:50 | 68 | 59 | 36.7824 | 36.7824 | 36.7824 |
| 12/9/23 0:00 | 55 | 48 | 30.1004 | 30.1004 | 30.1004 |
| 12/9/23 0:10 | 57 | 50 | 31.1284 | 31.1284 | 31.1284 |
| 12/9/23 0:20 | 50 | 43 | 27.5304 | 27.5304 | 27.5304 |
| 12/9/23 0:30 | 60 | 53 | 32.6704 | 32.6704 | 32.6704 |
| 12/9/23 0:40 | 32 | 23 | 18.2784 | 18.2784 | 18.2784 |
| 12/9/23 0:50 | 19 | 16 | 11.5964 | 11.5964 | 11.5964 |
| 12/9/23 1:00 | 40 | 32 | 22.3904 | 22.3904 | 22.3904 |
| 12/9/23 1:10 | 39 | 30 | 21.8764 | 21.8764 | 21.8764 |
| 12/9/23 1:20 | 55 | 48 | 30.1004 | 30.1004 | 30.1004 |
| 12/9/23 1:30 | 65 | 57 | 35.2404 | 35.2404 | 35.2404 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12/9/23 1:40 | | 59 | 54 | 32.1564 | 32.1564 | 32.1564 |
| 12/9/23 1:50 | | 96 | 85 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/23 2:00 | | 66 | 61 | 35.7544 | 35.7544 | 35.7544 |
| 12/9/23 2:10 | | 40 | 28 | 22.3904 | 22.3904 | 22.3904 |
| 12/9/23 2:20 | | 36 | 28 | 20.3344 | 20.3344 | 20.3344 |
| 12/9/23 2:30 | | 56 | 49 | 30.6144 | 30.6144 | 30.6144 |
| 12/9/23 2:40 | | 71 | 62 | 38.3244 | 38.3244 | 38.3244 |
| 12/9/23 2:50 | | 22 | 18 | 13.1384 | 13.1384 | 13.1384 |
| 12/9/23 3:00 | | 32 | 27 | 18.2784 | 18.2784 | 18.2784 |
| 12/9/23 3:10 | | 60 | 54 | 32.6704 | 32.6704 | 32.6704 |
| 12/9/23 3:20 | | 66 | 59 | 35.7544 | 35.7544 | 35.7544 |
| 12/9/23 3:30 | | 62 | 56 | 33.6984 | 33.6984 | 33.6984 |
| 12/9/23 3:40 | | 35 | 27 | 19.8204 | 19.8204 | 19.8204 |
| 12/9/23 3:50 | | 32 | 25 | 18.2784 | 18.2784 | 18.2784 |
| 12/9/23 4:00 | | 29 | 23 | 16.7364 | 16.7364 | 16.7364 |
| 12/9/23 4:10 | | 29 | 23 | 16.7364 | 16.7364 | 16.7364 |
| 12/9/23 4:20 | | 22 | 18 | 13.1384 | 13.1384 | 13.1384 |
| 12/9/23 4:30 | | 17 | 14 | 10.5684 | 10.5684 | 10.5684 |
| 12/9/23 4:40 | | 22 | 17 | 13.1384 | 13.1384 | 13.1384 |
| 12/9/23 4:50 | | 25 | 18 | 14.6804 | 14.6804 | 14.6804 |
| 12/9/23 5:00 | | 28 | 22 | 16.2224 | 16.2224 | 16.2224 |
| 12/9/23 5:10 | | 24 | 18 | 14.1664 | 14.1664 | 14.1664 |
| 12/9/23 5:20 | | 24 | 21 | 14.1664 | 14.1664 | 14.1664 |
| 12/9/23 5:30 | | 16 | 13 | 10.0544 | 10.0544 | 10.0544 |
| 12/9/23 5:40 | | 16 | 12 | 10.0544 | 10.0544 | 10.0544 |
| 12/9/23 5:50 | | 19 | 15 | 11.5964 | 11.5964 | 11.5964 |
| 12/9/23 6:00 | | 23 | 18 | 13.6524 | 13.6524 | 13.6524 |
| 12/9/23 6:10 | | 15 | 13 | 9.5404 | 9.5404 | 9.5404 |
| 12/9/23 6:20 | | 15 | 11 | 9.5404 | 9.5404 | 9.5404 |
| 12/9/23 6:30 | 34.1 | 15 | 12 | 9.5404 | 9.5404 | 9.5404 |

Correlation: PurpleAir to EPA (PA x 0.514)+1.8304

12/6/2023 6:40 to 12/9/2023 6:30

Wisconsin,Elinor,Madison Elinor and Gary A

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| % 3 days >NAAQS | | 99.77% | 98.38% | 59.26% | PA x 0.514 | 0 + 1.8304 | conversion | PA | 0.514 | 1.8304 |
| Elinor and Gary A | | 12 ug/m3 | 25 ug/m3 | 35 ug/m3 | 431 | 425 | 256 | number10minuteperiods in 72hours, 3 sheets | | |
| DateTime | Average | Elinor and | Elinor and | | above12 | above25 | above35 | 12,25,35 micrograms per cubic meter PM2.5 | | |
| 12/6/2023 6:40 | 77.8 | 89 | 87 | | 47.5764 | 47.5764 | 47.5764 | Wisconsin,Elinor,Madison | | Elinor and Gary A |
| 12/6/2023 6:50 | | 89 | 91 | | 47.5764 | 47.5764 | 47.5764 | 12/6/2023 6:40 | to | 12/9/2023 6:30 |
| 12/6/2023 7:00 | | 93 | 95 | | 49.6324 | 49.6324 | 49.6324 | Above 12 micrograms per cubic meter PM2.5? | | |
| 12/6/2023 7:10 | | 94 | 94 | | 50.1464 | 50.1464 | 50.1464 | 431 | 10 | 4310 |
| 12/6/2023 7:20 | | 96 | 94 | | 51.1744 | 51.1744 | 51.1744 | data periods of 10 minutes equals periods x 10 | | |
| 12/6/2023 7:30 | | 97 | 96 | | 51.6884 | 51.6884 | 51.6884 | 4310 | 60 | 71.83 |
| 12/6/2023 7:40 | | 95 | 95 | | 50.6604 | 50.6604 | 50.6604 | minutes divided by 60= | hours in 3 days | 72 hour |
| 12/6/2023 7:50 | | 98 | 97 | | 52.2024 | 52.2024 | 52.2024 | 71.83 | 72 | 99.77% |
| 12/6/2023 8:00 | | 103 | 102 | | 54.7724 | 54.7724 | 54.7724 | hours divided by 72 = % days > 12ug/m3 PM2.5 | | |
| 12/6/2023 8:10 | | 103 | 101 | | 54.7724 | 54.7724 | 54.7724 | Above 25 micrograms per cubic meter PM2.5? | | |
| 12/6/2023 8:20 | | 103 | 103 | | 54.7724 | 54.7724 | 54.7724 | 425 | 10 | 4250 |
| 12/6/2023 8:30 | | 105 | 103 | | 55.8004 | 55.8004 | 55.8004 | data periods of 10 minutes equals periods x 10 | | |
| 12/6/2023 8:40 | | 106 | 103 | | 56.3144 | 56.3144 | 56.3144 | 4250 | 60 | 70.83333333 |
| 12/6/2023 8:50 | | 104 | 104 | | 55.2864 | 55.2864 | 55.2864 | minutes divided by 60= | hours in 3 days | 72 hour |
| 12/6/2023 9:00 | | 100 | 102 | | 53.2304 | 53.2304 | 53.2304 | 70.83333333 | 72 | 98.38% |
| 12/6/2023 9:10 | | 101 | 99 | | 53.7444 | 53.7444 | 53.7444 | hours divided by 72 = % days > 25ug/m3 PM2.5 | | |
| 12/6/2023 9:20 | | 96 | 98 | | 51.1744 | 51.1744 | 51.1744 | Above 35 micrograms per cubic meter PM2.5? | | |
| 12/6/2023 9:30 | | 93 | 95 | | 49.6324 | 49.6324 | 49.6324 | 256 | 10 | 2560 |
| 12/6/2023 9:40 | | 95 | 93 | | 50.6604 | 50.6604 | 50.6604 | data periods of 10 minutes equals periods x 10 | | |
| 12/6/2023 9:50 | | 96 | 93 | | 51.1744 | 51.1744 | 51.1744 | 2560 | 60 | 42.67 |
| 12/6/2023 10:00 | | 93 | 94 | | 49.6324 | 49.6324 | 49.6324 | minutes divided by 60= | hours in 3 days | 72 hour |
| 12/6/2023 10:10 | | 96 | 94 | | 51.1744 | 51.1744 | 51.1744 | 42.67 | 72 | 59.26% |
| 12/6/2023 10:20 | | 99 | 97 | | 52.7164 | 52.7164 | 52.7164 | hours divided by 72 = % days > 12ug/m3 PM2.5 | | |
| 12/6/2023 10:30 | | 99 | 97 | | 52.7164 | 52.7164 | 52.7164 | Wisconsin,Elinor,Madison | | Elinor and Gary A |
| 12/6/2023 10:40 | | 94 | 93 | | 50.1464 | 50.1464 | 50.1464 | See all 3 days of Excel data on PDF at | | |
| 12/6/2023 10:50 | | 98 | 96 | | 52.2024 | 52.2024 | 52.2024 | https://rawsepresidents.wordpress.com | | |
| 12/6/2023 11:00 | | 96 | 97 | | 51.1744 | 51.1744 | 51.1744 | Check C4 | 47.5764 | |
| 12/6/2023 11:10 | | 93 | 94 | | 49.6324 | 49.6324 | 49.6324 | | | |

| | | | | | |
|---|---|---|---|---|---|
| 12/6/2023 11:20 | 92 | 91 | 49.1184 | 49.1184 | 49.1184 |
| 12/6/2023 11:30 | 97 | 97 | 51.6884 | 51.6884 | 51.6884 |
| 12/6/2023 11:40 | 93 | 91 | 49.6324 | 49.6324 | 49.6324 |
| 12/6/2023 11:50 | 88 | 88 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/2023 12:00 | 88 | 89 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/2023 12:10 | 87 | 86 | 46.5484 | 46.5484 | 46.5484 |
| 12/6/2023 12:20 | 87 | 86 | 46.5484 | 46.5484 | 46.5484 |
| 12/6/2023 12:30 | 82 | 84 | 43.9784 | 43.9784 | 43.9784 |
| 12/6/2023 12:40 | 81 | 80 | 43.4644 | 43.4644 | 43.4644 |
| 12/6/2023 12:50 | 82 | 84 | 43.9784 | 43.9784 | 43.9784 |
| 12/6/2023 13:00 | 88 | 86 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/2023 13:10 | 101 | 102 | 53.7444 | 53.7444 | 53.7444 |
| 12/6/2023 13:20 | 105 | 104 | 55.8004 | 55.8004 | 55.8004 |
| 12/6/2023 13:30 | 88 | 87 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/2023 13:40 | 85 | 83 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/2023 13:50 | 86 | 84 | 46.0344 | 46.0344 | 46.0344 |
| 12/6/2023 14:00 | 85 | 83 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/2023 14:10 | 77 | 76 | 41.4084 | 41.4084 | 41.4084 |
| 12/6/2023 14:20 | 76 | 75 | 40.8944 | 40.8944 | 40.8944 |
| 12/6/2023 14:30 | 72 | 73 | 38.8384 | 38.8384 | 38.8384 |
| 12/6/2023 14:40 | 80 | 76 | 42.9504 | 42.9504 | 42.9504 |
| 12/6/2023 14:50 | 77 | 77 | 41.4084 | 41.4084 | 41.4084 |
| 12/6/2023 15:00 | 79 | 76 | 42.4364 | 42.4364 | 42.4364 |
| 12/6/2023 15:10 | 74 | 75 | 39.8664 | 39.8664 | 39.8664 |
| 12/6/2023 15:20 | 80 | 81 | 42.9504 | 42.9504 | 42.9504 |
| 12/6/2023 15:30 | 116 | 115 | 61.4544 | 61.4544 | 61.4544 |
| 12/6/2023 15:40 | 124 | 126 | 65.5664 | 65.5664 | 65.5664 |
| 12/6/2023 15:50 | 112 | 112 | 59.3984 | 59.3984 | 59.3984 |
| 12/6/2023 16:00 | 110 | 110 | 58.3704 | 58.3704 | 58.3704 |
| 12/6/2023 16:10 | 106 | 106 | 56.3144 | 56.3144 | 56.3144 |
| 12/6/2023 16:20 | 112 | 110 | 59.3984 | 59.3984 | 59.3984 |
| 12/6/2023 16:30 | 98 | 98 | 52.2024 | 52.2024 | 52.2024 |
| 12/6/2023 16:40 | 102 | 99 | 54.2584 | 54.2584 | 54.2584 |
| 12/6/2023 16:50 | 101 | 100 | 53.7444 | 53.7444 | 53.7444 |

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|---|---|---|---|---|---|
| 12/6/2023 17:00 | 106 | 105 | 56.3144 | 56.3144 | 56.3144 |
| 12/6/2023 17:10 | 104 | 103 | 55.2864 | 55.2864 | 55.2864 |
| 12/6/2023 17:20 | 108 | 108 | 57.3424 | 57.3424 | 57.3424 |
| 12/6/2023 17:30 | 111 | 108 | 58.8844 | 58.8844 | 58.8844 |
| 12/6/2023 17:40 | 103 | 101 | 54.7724 | 54.7724 | 54.7724 |
| 12/6/2023 17:50 | 111 | 112 | 58.8844 | 58.8844 | 58.8844 |
| 12/6/2023 18:00 | 100 | 101 | 53.2304 | 53.2304 | 53.2304 |
| 12/6/2023 18:10 | 95 | 95 | 50.6604 | 50.6604 | 50.6604 |
| 12/6/2023 18:20 | 93 | 94 | 49.6324 | 49.6324 | 49.6324 |
| 12/6/2023 18:30 | 93 | 94 | 49.6324 | 49.6324 | 49.6324 |
| 12/6/2023 18:40 | 97 | 95 | 51.6884 | 51.6884 | 51.6884 |
| 12/6/2023 18:50 | 95 | 96 | 50.6604 | 50.6604 | 50.6604 |
| 12/6/2023 19:00 | 95 | 95 | 50.6604 | 50.6604 | 50.6604 |
| 12/6/2023 19:10 | 93 | 91 | 49.6324 | 49.6324 | 49.6324 |
| 12/6/2023 19:20 | 89 | 90 | 47.5764 | 47.5764 | 47.5764 |
| 12/6/2023 19:30 | 87 | 88 | 46.5484 | 46.5484 | 46.5484 |
| 12/6/2023 19:40 | 84 | 87 | 45.0064 | 45.0064 | 45.0064 |
| 12/6/2023 19:50 | 83 | 86 | 44.4924 | 44.4924 | 44.4924 |
| 12/6/2023 20:00 | 87 | 86 | 46.5484 | 46.5484 | 46.5484 |
| 12/6/2023 20:10 | 85 | 87 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/2023 20:20 | 90 | 90 | 48.0904 | 48.0904 | 48.0904 |
| 12/6/2023 20:30 | 84 | 83 | 45.0064 | 45.0064 | 45.0064 |
| 12/6/2023 20:40 | 84 | 83 | 45.0064 | 45.0064 | 45.0064 |
| 12/6/2023 20:50 | 81 | 81 | 43.4644 | 43.4644 | 43.4644 |
| 12/6/2023 21:00 | 82 | 83 | 43.9784 | 43.9784 | 43.9784 |
| 12/6/2023 21:10 | 82 | 82 | 43.9784 | 43.9784 | 43.9784 |
| 12/6/2023 21:20 | 116 | 115 | 61.4544 | 61.4544 | 61.4544 |
| 12/6/2023 21:30 | 91 | 93 | 48.6044 | 48.6044 | 48.6044 |
| 12/6/2023 21:40 | 93 | 92 | 49.6324 | 49.6324 | 49.6324 |
| 12/6/2023 21:50 | 85 | 85 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/2023 22:00 | 85 | 89 | 45.5204 | 45.5204 | 45.5204 |
| 12/6/2023 22:10 | 105 | 105 | 55.8004 | 55.8004 | 55.8004 |
| 12/6/2023 22:20 | 92 | 91 | 49.1184 | 49.1184 | 49.1184 |
| 12/6/2023 22:30 | 106 | 105 | 56.3144 | 56.3144 | 56.3144 |

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|---|---|---|---|---|---|
| 12/6/2023 22:40 | 115 | 114 | 60.9404 | 60.9404 | 60.9404 |
| 12/6/2023 22:50 | 82 | 80 | 43.9784 | 43.9784 | 43.9784 |
| 12/6/2023 23:00 | 84 | 86 | 45.0064 | 45.0064 | 45.0064 |
| 12/6/2023 23:10 | 88 | 90 | 47.0624 | 47.0624 | 47.0624 |
| 12/6/2023 23:20 | 79 | 82 | 42.4364 | 42.4364 | 42.4364 |
| 12/6/2023 23:30 | 79 | 78 | 42.4364 | 42.4364 | 42.4364 |
| 12/6/2023 23:40 | 71 | 72 | 38.3244 | 38.3244 | 38.3244 |
| 12/6/2023 23:50 | 70 | 68 | 37.8104 | 37.8104 | 37.8104 |
| 12/7/2023 0:00 | 67 | 69 | 36.2684 | 36.2684 | 36.2684 |
| 12/7/2023 0:10 | 67 | 68 | 36.2684 | 36.2684 | 36.2684 |
| 12/7/2023 0:20 | 67 | 68 | 36.2684 | 36.2684 | 36.2684 |
| 12/7/2023 0:30 | 67 | 67 | 36.2684 | 36.2684 | 36.2684 |
| 12/7/2023 0:40 | 65 | 66 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 0:50 | 64 | 62 | 34.7264 | 34.7264 | 34.7264 |
| 12/7/2023 1:00 | 63 | 63 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 1:10 | 63 | 63 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 1:20 | 65 | 61 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 1:30 | 64 | 61 | 34.7264 | 34.7264 | 34.7264 |
| 12/7/2023 1:40 | 65 | 62 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 1:50 | 63 | 63 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 2:00 | 65 | 63 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 2:10 | 65 | 62 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 2:20 | 64 | 63 | 34.7264 | 34.7264 | 34.7264 |
| 12/7/2023 2:30 | 64 | 63 | 34.7264 | 34.7264 | 34.7264 |
| 12/7/2023 2:40 | 65 | 65 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 2:50 | 65 | 63 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 3:00 | 65 | 62 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 3:10 | 63 | 62 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 3:20 | 62 | 63 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 3:30 | 66 | 62 | 35.7544 | 35.7544 | 35.7544 |
| 12/7/2023 3:40 | 62 | 63 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 3:50 | 62 | 63 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 4:00 | 61 | 60 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 4:10 | 61 | 61 | 33.1844 | 33.1844 | 33.1844 |

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|---|---|---|---|---|---|
| 12/7/2023 4:20 | 61 | 60 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 4:30 | 62 | 60 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 4:40 | 60 | 58 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 4:50 | 62 | 60 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 5:00 | 63 | 59 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 5:10 | 61 | 60 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 5:20 | 63 | 62 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 5:30 | 63 | 62 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 5:40 | 63 | 62 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 5:50 | 62 | 62 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 6:00 | 61 | 62 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 6:10 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 6:20 | 57 | 57 | 31.1284 | 31.1284 | 31.1284 |
| 12/7/2023 6:30 | 57 | 59 | 31.1284 | 31.1284 | 31.1284 |
| 12/7/2023 6:40 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 6:50 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 7:00 | 65 | 63 | 35.2404 | 35.2404 | 35.2404 |
| 12/7/2023 7:10 | 60 | 61 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 7:20 | 61 | 59 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 7:30 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 7:40 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 7:50 | 66 | 64 | 35.7544 | 35.7544 | 35.7544 |
| 12/7/2023 8:00 | 66 | 65 | 35.7544 | 35.7544 | 35.7544 |
| 12/7/2023 8:10 | 63 | 63 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 8:20 | 61 | 60 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 8:30 | 61 | 59 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 8:40 | 60 | 63 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 8:50 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 9:00 | 61 | 58 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 9:10 | 60 | 58 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 9:20 | 58 | 58 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/2023 9:30 | 59 | 58 | 32.1564 | 32.1564 | 32.1564 |
| 12/7/2023 9:40 | 56 | 55 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/2023 9:50 | 55 | 53 | 30.1004 | 30.1004 | 30.1004 |

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|---|---|---|---|---|---|
| 12/7/2023 10:00 | 54 | 53 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 10:10 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 10:20 | 55 | 54 | 30.1004 | 30.1004 | 30.1004 |
| 12/7/2023 10:30 | 54 | 53 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 10:40 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 10:50 | 55 | 57 | 30.1004 | 30.1004 | 30.1004 |
| 12/7/2023 11:00 | 56 | 54 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/2023 11:10 | 53 | 53 | 29.0724 | 29.0724 | 29.0724 |
| 12/7/2023 11:20 | 51 | 50 | 28.0444 | 28.0444 | 28.0444 |
| 12/7/2023 11:30 | 52 | 49 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 11:40 | 52 | 51 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 11:50 | 53 | 52 | 29.0724 | 29.0724 | 29.0724 |
| 12/7/2023 12:00 | 52 | 52 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 12:10 | 52 | 52 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 12:20 | 52 | 52 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 12:30 | 52 | 51 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 12:40 | 51 | 49 | 28.0444 | 28.0444 | 28.0444 |
| 12/7/2023 12:50 | 49 | 48 | 27.0164 | 27.0164 | 27.0164 |
| 12/7/2023 13:00 | 52 | 51 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 13:10 | 52 | 49 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 13:20 | 54 | 52 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 13:30 | 54 | 54 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 13:40 | 53 | 52 | 29.0724 | 29.0724 | 29.0724 |
| 12/7/2023 13:50 | 52 | 52 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 14:00 | 52 | 51 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 14:10 | 46 | 47 | 25.4744 | 25.4744 | 25.4744 |
| 12/7/2023 14:20 | 50 | 47 | 27.5304 | 27.5304 | 27.5304 |
| 12/7/2023 14:30 | 48 | 47 | 26.5024 | 26.5024 | 26.5024 |
| 12/7/2023 14:40 | 49 | 49 | 27.0164 | 27.0164 | 27.0164 |
| 12/7/2023 14:50 | 44 | 46 | 24.4464 | 24.4464 | 24.4464 |
| 12/7/2023 15:00 | 46 | 45 | 25.4744 | 25.4744 | 25.4744 |
| 12/7/2023 15:10 | 46 | 42 | 25.4744 | 25.4744 | 25.4744 |
| 12/7/2023 15:20 | 44 | 44 | 24.4464 | 24.4464 | 24.4464 |
| 12/7/2023 15:30 | 44 | 45 | 24.4464 | 24.4464 | 24.4464 |

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|---|---|---|---|---|---|
| 12/7/2023 15:40 | 48 | 48 | 26.5024 | 26.5024 | 26.5024 |
| 12/7/2023 15:50 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 16:00 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 16:10 | 53 | 54 | 29.0724 | 29.0724 | 29.0724 |
| 12/7/2023 16:20 | 52 | 50 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 16:30 | 49 | 52 | 27.0164 | 27.0164 | 27.0164 |
| 12/7/2023 16:40 | 58 | 58 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/2023 16:50 | 63 | 64 | 34.2124 | 34.2124 | 34.2124 |
| 12/7/2023 17:00 | 58 | 59 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/2023 17:10 | 54 | 57 | 29.5864 | 29.5864 | 29.5864 |
| 12/7/2023 17:20 | 52 | 53 | 28.5584 | 28.5584 | 28.5584 |
| 12/7/2023 17:30 | 55 | 54 | 30.1004 | 30.1004 | 30.1004 |
| 12/7/2023 17:40 | 56 | 54 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/2023 17:50 | 57 | 58 | 31.1284 | 31.1284 | 31.1284 |
| 12/7/2023 18:00 | 56 | 57 | 30.6144 | 30.6144 | 30.6144 |
| 12/7/2023 18:10 | 59 | 57 | 32.1564 | 32.1564 | 32.1564 |
| 12/7/2023 18:20 | 58 | 56 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/2023 18:30 | 58 | 58 | 31.6424 | 31.6424 | 31.6424 |
| 12/7/2023 18:40 | 60 | 58 | 32.6704 | 32.6704 | 32.6704 |
| 12/7/2023 18:50 | 62 | 60 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 19:00 | 61 | 59 | 33.1844 | 33.1844 | 33.1844 |
| 12/7/2023 19:10 | 62 | 62 | 33.6984 | 33.6984 | 33.6984 |
| 12/7/2023 19:20 | 149 | 150 | 78.4164 | 78.4164 | 78.4164 |
| 12/7/2023 19:30 | 138 | 141 | 72.7624 | 72.7624 | 72.7624 |
| 12/7/2023 19:40 | 129 | 131 | 68.1364 | 68.1364 | 68.1364 |
| 12/7/2023 19:50 | 162 | 164 | 85.0984 | 85.0984 | 85.0984 |
| 12/7/2023 20:00 | 155 | 156 | 81.5004 | 81.5004 | 81.5004 |
| 12/7/2023 20:10 | 102 | 100 | 54.2584 | 54.2584 | 54.2584 |
| 12/7/2023 20:20 | 119 | 120 | 62.9964 | 62.9964 | 62.9964 |
| 12/7/2023 20:30 | 87 | 86 | 46.5484 | 46.5484 | 46.5484 |
| 12/7/2023 20:40 | 95 | 99 | 50.6604 | 50.6604 | 50.6604 |
| 12/7/2023 20:50 | 125 | 126 | 66.0804 | 66.0804 | 66.0804 |
| 12/7/2023 21:00 | 104 | 104 | 55.2864 | 55.2864 | 55.2864 |
| 12/7/2023 21:10 | 121 | 121 | 64.0244 | 64.0244 | 64.0244 |

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|---|---|---|---|---|---|
| 12/7/2023 21:20 | 134 | 133 | 70.7064 | 70.7064 | 70.7064 |
| 12/7/2023 21:30 | 132 | 133 | 69.6784 | 69.6784 | 69.6784 |
| 12/7/2023 21:40 | 153 | 153 | 80.4724 | 80.4724 | 80.4724 |
| 12/7/2023 21:50 | 89 | 89 | 47.5764 | 47.5764 | 47.5764 |
| 12/7/2023 22:00 | 93 | 93 | 49.6324 | 49.6324 | 49.6324 |
| 12/7/2023 22:10 | 123 | 125 | 65.0524 | 65.0524 | 65.0524 |
| 12/7/2023 22:20 | 153 | 154 | 80.4724 | 80.4724 | 80.4724 |
| 12/7/2023 22:30 | 104 | 107 | 55.2864 | 55.2864 | 55.2864 |
| 12/7/2023 22:40 | 113 | 113 | 59.9124 | 59.9124 | 59.9124 |
| 12/7/2023 22:50 | 145 | 146 | 76.3604 | 76.3604 | 76.3604 |
| 12/7/2023 23:00 | 115 | 115 | 60.9404 | 60.9404 | 60.9404 |
| 12/7/2023 23:10 | 113 | 112 | 59.9124 | 59.9124 | 59.9124 |
| 12/7/2023 23:20 | 101 | 102 | 53.7444 | 53.7444 | 53.7444 |
| 12/7/2023 23:30 | 106 | 104 | 56.3144 | 56.3144 | 56.3144 |
| 12/7/2023 23:40 | 107 | 105 | 56.8284 | 56.8284 | 56.8284 |
| 12/7/2023 23:50 | 130 | 129 | 68.6504 | 68.6504 | 68.6504 |
| 12/8/2023 0:00 | 115 | 114 | 60.9404 | 60.9404 | 60.9404 |
| 12/8/2023 0:10 | 113 | 112 | 59.9124 | 59.9124 | 59.9124 |
| 12/8/2023 0:20 | 105 | 106 | 55.8004 | 55.8004 | 55.8004 |
| 12/8/2023 0:30 | 109 | 110 | 57.8564 | 57.8564 | 57.8564 |
| 12/8/2023 0:40 | 109 | 108 | 57.8564 | 57.8564 | 57.8564 |
| 12/8/2023 0:50 | 106 | 106 | 56.3144 | 56.3144 | 56.3144 |
| 12/8/2023 1:00 | 98 | 98 | 52.2024 | 52.2024 | 52.2024 |
| 12/8/2023 1:10 | 87 | 87 | 46.5484 | 46.5484 | 46.5484 |
| 12/8/2023 1:20 | 91 | 89 | 48.6044 | 48.6044 | 48.6044 |
| 12/8/2023 1:30 | 93 | 91 | 49.6324 | 49.6324 | 49.6324 |
| 12/8/2023 1:40 | 91 | 90 | 48.6044 | 48.6044 | 48.6044 |
| 12/8/2023 1:50 | 91 | 89 | 48.6044 | 48.6044 | 48.6044 |
| 12/8/2023 2:00 | 92 | 90 | 49.1184 | 49.1184 | 49.1184 |
| 12/8/2023 2:10 | 95 | 96 | 50.6604 | 50.6604 | 50.6604 |
| 12/8/2023 2:20 | 96 | 95 | 51.1744 | 51.1744 | 51.1744 |
| 12/8/2023 2:30 | 103 | 103 | 54.7724 | 54.7724 | 54.7724 |
| 12/8/2023 2:40 | 95 | 94 | 50.6604 | 50.6604 | 50.6604 |
| 12/8/2023 2:50 | 83 | 81 | 44.4924 | 44.4924 | 44.4924 |

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|---|---|---|---|---|---|
| 12/8/2023 3:00 | 83 | 83 | 44.4924 | 44.4924 | 44.4924 |
| 12/8/2023 3:10 | 70 | 72 | 37.8104 | 37.8104 | 37.8104 |
| 12/8/2023 3:20 | 65 | 64 | 35.2404 | 35.2404 | 35.2404 |
| 12/8/2023 3:30 | 75 | 75 | 40.3804 | 40.3804 | 40.3804 |
| 12/8/2023 3:40 | 72 | 69 | 38.8384 | 38.8384 | 38.8384 |
| 12/8/2023 3:50 | 68 | 65 | 36.7824 | 36.7824 | 36.7824 |
| 12/8/2023 4:00 | 67 | 67 | 36.2684 | 36.2684 | 36.2684 |
| 12/8/2023 4:10 | 64 | 63 | 34.7264 | 34.7264 | 34.7264 |
| 12/8/2023 4:20 | 63 | 65 | 34.2124 | 34.2124 | 34.2124 |
| 12/8/2023 4:30 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 4:40 | 74 | 73 | 39.8664 | 39.8664 | 39.8664 |
| 12/8/2023 4:50 | 61 | 59 | 33.1844 | 33.1844 | 33.1844 |
| 12/8/2023 5:00 | 69 | 71 | 37.2964 | 37.2964 | 37.2964 |
| 12/8/2023 5:10 | 69 | 70 | 37.2964 | 37.2964 | 37.2964 |
| 12/8/2023 5:20 | 65 | 68 | 35.2404 | 35.2404 | 35.2404 |
| 12/8/2023 5:30 | 78 | 75 | 41.9224 | 41.9224 | 41.9224 |
| 12/8/2023 5:40 | 63 | 65 | 34.2124 | 34.2124 | 34.2124 |
| 12/8/2023 5:50 | 60 | 59 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 6:00 | 57 | 55 | 31.1284 | 31.1284 | 31.1284 |
| 12/8/2023 6:10 | 57 | 57 | 31.1284 | 31.1284 | 31.1284 |
| 12/8/2023 6:20 | 58 | 56 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 6:30 | 58 | 58 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 6:40 | 58 | 58 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 6:50 | 59 | 59 | 32.1564 | 32.1564 | 32.1564 |
| 12/8/2023 7:00 | 58 | 57 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 7:10 | 60 | 60 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 7:20 | 62 | 61 | 33.6984 | 33.6984 | 33.6984 |
| 12/8/2023 7:30 | 60 | 60 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 7:40 | 61 | 61 | 33.1844 | 33.1844 | 33.1844 |
| 12/8/2023 7:50 | 62 | 60 | 33.6984 | 33.6984 | 33.6984 |
| 12/8/2023 8:00 | 60 | 60 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 8:10 | 59 | 60 | 32.1564 | 32.1564 | 32.1564 |
| 12/8/2023 8:20 | 61 | 60 | 33.1844 | 33.1844 | 33.1844 |
| 12/8/2023 8:30 | 62 | 60 | 33.6984 | 33.6984 | 33.6984 |

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|---|---|---|---|---|---|
| 12/8/2023 8:40 | 62 | 61 | 33.6984 | 33.6984 | 33.6984 |
| 12/8/2023 8:50 | 60 | 62 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 9:00 | 61 | 62 | 33.1844 | 33.1844 | 33.1844 |
| 12/8/2023 9:10 | 62 | 62 | 33.6984 | 33.6984 | 33.6984 |
| 12/8/2023 9:20 | 58 | 61 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 9:30 | 61 | 63 | 33.1844 | 33.1844 | 33.1844 |
| 12/8/2023 9:40 | 70 | 72 | 37.8104 | 37.8104 | 37.8104 |
| 12/8/2023 9:50 | 101 | 104 | 53.7444 | 53.7444 | 53.7444 |
| 12/8/2023 10:00 | 86 | 88 | 46.0344 | 46.0344 | 46.0344 |
| 12/8/2023 10:10 | 79 | 82 | 42.4364 | 42.4364 | 42.4364 |
| 12/8/2023 10:20 | 85 | 85 | 45.5204 | 45.5204 | 45.5204 |
| 12/8/2023 10:30 | 66 | 66 | 35.7544 | 35.7544 | 35.7544 |
| 12/8/2023 10:40 | 65 | 66 | 35.2404 | 35.2404 | 35.2404 |
| 12/8/2023 10:50 | 61 | 60 | 33.1844 | 33.1844 | 33.1844 |
| 12/8/2023 11:00 | 65 | 67 | 35.2404 | 35.2404 | 35.2404 |
| 12/8/2023 11:10 | 60 | 62 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 11:20 | 62 | 62 | 33.6984 | 33.6984 | 33.6984 |
| 12/8/2023 11:30 | 66 | 68 | 35.7544 | 35.7544 | 35.7544 |
| 12/8/2023 11:40 | 70 | 69 | 37.8104 | 37.8104 | 37.8104 |
| 12/8/2023 11:50 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/8/2023 12:00 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/8/2023 12:10 | 50 | 48 | 27.5304 | 27.5304 | 27.5304 |
| 12/8/2023 12:20 | 63 | 64 | 34.2124 | 34.2124 | 34.2124 |
| 12/8/2023 12:30 | 66 | 66 | 35.7544 | 35.7544 | 35.7544 |
| 12/8/2023 12:40 | 63 | 63 | 34.2124 | 34.2124 | 34.2124 |
| 12/8/2023 12:50 | 57 | 59 | 31.1284 | 31.1284 | 31.1284 |
| 12/8/2023 13:00 | 53 | 54 | 29.0724 | 29.0724 | 29.0724 |
| 12/8/2023 13:10 | 48 | 46 | 26.5024 | 26.5024 | 26.5024 |
| 12/8/2023 13:20 | 55 | 58 | 30.1004 | 30.1004 | 30.1004 |
| 12/8/2023 13:30 | 53 | 52 | 29.0724 | 29.0724 | 29.0724 |
| 12/8/2023 13:40 | 46 | 45 | 25.4744 | 25.4744 | 25.4744 |
| 12/8/2023 13:50 | 46 | 49 | 25.4744 | 25.4744 | 25.4744 |
| 12/8/2023 14:00 | 52 | 50 | 28.5584 | 28.5584 | 28.5584 |
| 12/8/2023 14:10 | 55 | 51 | 30.1004 | 30.1004 | 30.1004 |

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|---|---|---|---|---|---|
| 12/8/2023 14:20 | 56 | 56 | 30.6144 | 30.6144 | 30.6144 |
| 12/8/2023 14:30 | 52 | 53 | 28.5584 | 28.5584 | 28.5584 |
| 12/8/2023 14:40 | 57 | 55 | 31.1284 | 31.1284 | 31.1284 |
| 12/8/2023 14:50 | 58 | 60 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 15:00 | 56 | 58 | 30.6144 | 30.6144 | 30.6144 |
| 12/8/2023 15:10 | 54 | 55 | 29.5864 | 29.5864 | 29.5864 |
| 12/8/2023 15:20 | 55 | 56 | 30.1004 | 30.1004 | 30.1004 |
| 12/8/2023 15:30 | 43 | 43 | 23.9324 | 23.9324 | 23.9324 |
| 12/8/2023 15:40 | 59 | 59 | 32.1564 | 32.1564 | 32.1564 |
| 12/8/2023 15:50 | 53 | 52 | 29.0724 | 29.0724 | 29.0724 |
| 12/8/2023 16:00 | 50 | 49 | 27.5304 | 27.5304 | 27.5304 |
| 12/8/2023 16:10 | 57 | 55 | 31.1284 | 31.1284 | 31.1284 |
| 12/8/2023 16:20 | 64 | 65 | 34.7264 | 34.7264 | 34.7264 |
| 12/8/2023 16:30 | 58 | 58 | 31.6424 | 31.6424 | 31.6424 |
| 12/8/2023 16:40 | 67 | 67 | 36.2684 | 36.2684 | 36.2684 |
| 12/8/2023 16:50 | 59 | 58 | 32.1564 | 32.1564 | 32.1564 |
| 12/8/2023 17:00 | 59 | 57 | 32.1564 | 32.1564 | 32.1564 |
| 12/8/2023 17:10 | 60 | 60 | 32.6704 | 32.6704 | 32.6704 |
| 12/8/2023 17:20 | 63 | 64 | 34.2124 | 34.2124 | 34.2124 |
| 12/8/2023 17:30 | 64 | 64 | 34.7264 | 34.7264 | 34.7264 |
| 12/8/2023 17:40 | 77 | 77 | 41.4084 | 41.4084 | 41.4084 |
| 12/8/2023 17:50 | 71 | 73 | 38.3244 | 38.3244 | 38.3244 |
| 12/8/2023 18:00 | 67 | 69 | 36.2684 | 36.2684 | 36.2684 |
| 12/8/2023 18:10 | 90 | 92 | 48.0904 | 48.0904 | 48.0904 |
| 12/8/2023 18:20 | 117 | 118 | 61.9684 | 61.9684 | 61.9684 |
| 12/8/2023 18:30 | 123 | 123 | 65.0524 | 65.0524 | 65.0524 |
| 12/8/2023 18:40 | 133 | 139 | 70.1924 | 70.1924 | 70.1924 |
| 12/8/2023 18:50 | 104 | 106 | 55.2864 | 55.2864 | 55.2864 |
| 12/8/2023 19:00 | 105 | 104 | 55.8004 | 55.8004 | 55.8004 |
| 12/8/2023 19:10 | 109 | 109 | 57.8564 | 57.8564 | 57.8564 |
| 12/8/2023 19:20 | 84 | 86 | 45.0064 | 45.0064 | 45.0064 |
| 12/8/2023 19:30 | 95 | 96 | 50.6604 | 50.6604 | 50.6604 |
| 12/8/2023 19:40 | 73 | 75 | 39.3524 | 39.3524 | 39.3524 |
| 12/8/2023 19:50 | 106 | 107 | 56.3144 | 56.3144 | 56.3144 |

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|---|---|---|---|---|---|
| 12/8/2023 20:00 | 81 | 82 | 43.4644 | 43.4644 | 43.4644 |
| 12/8/2023 20:10 | 72 | 72 | 38.8384 | 38.8384 | 38.8384 |
| 12/8/2023 20:20 | 76 | 75 | 40.8944 | 40.8944 | 40.8944 |
| 12/8/2023 20:30 | 79 | 79 | 42.4364 | 42.4364 | 42.4364 |
| 12/8/2023 20:40 | 79 | 82 | 42.4364 | 42.4364 | 42.4364 |
| 12/8/2023 20:50 | 75 | 75 | 40.3804 | 40.3804 | 40.3804 |
| 12/8/2023 21:00 | 81 | 80 | 43.4644 | 43.4644 | 43.4644 |
| 12/8/2023 21:10 | 79 | 82 | 42.4364 | 42.4364 | 42.4364 |
| 12/8/2023 21:20 | 82 | 83 | 43.9784 | 43.9784 | 43.9784 |
| 12/8/2023 21:30 | 86 | 83 | 46.0344 | 46.0344 | 46.0344 |
| 12/8/2023 21:40 | 97 | 96 | 51.6884 | 51.6884 | 51.6884 |
| 12/8/2023 21:50 | 100 | 99 | 53.2304 | 53.2304 | 53.2304 |
| 12/8/2023 22:00 | 101 | 102 | 53.7444 | 53.7444 | 53.7444 |
| 12/8/2023 22:10 | 109 | 110 | 57.8564 | 57.8564 | 57.8564 |
| 12/8/2023 22:20 | 100 | 102 | 53.2304 | 53.2304 | 53.2304 |
| 12/8/2023 22:30 | 108 | 110 | 57.3424 | 57.3424 | 57.3424 |
| 12/8/2023 22:40 | 88 | 88 | 47.0624 | 47.0624 | 47.0624 |
| 12/8/2023 22:50 | 83 | 87 | 44.4924 | 44.4924 | 44.4924 |
| 12/8/2023 23:00 | 92 | 91 | 49.1184 | 49.1184 | 49.1184 |
| 12/8/2023 23:10 | 91 | 91 | 48.6044 | 48.6044 | 48.6044 |
| 12/8/2023 23:20 | 89 | 91 | 47.5764 | 47.5764 | 47.5764 |
| 12/8/2023 23:30 | 89 | 89 | 47.5764 | 47.5764 | 47.5764 |
| 12/8/2023 23:40 | 87 | 88 | 46.5484 | 46.5484 | 46.5484 |
| 12/8/2023 23:50 | 86 | 90 | 46.0344 | 46.0344 | 46.0344 |
| 12/9/2023 0:00 | 89 | 90 | 47.5764 | 47.5764 | 47.5764 |
| 12/9/2023 0:10 | 88 | 90 | 47.0624 | 47.0624 | 47.0624 |
| 12/9/2023 0:20 | 89 | 90 | 47.5764 | 47.5764 | 47.5764 |
| 12/9/2023 0:30 | 90 | 91 | 48.0904 | 48.0904 | 48.0904 |
| 12/9/2023 0:40 | 93 | 93 | 49.6324 | 49.6324 | 49.6324 |
| 12/9/2023 0:50 | 93 | 95 | 49.6324 | 49.6324 | 49.6324 |
| 12/9/2023 1:00 | 90 | 91 | 48.0904 | 48.0904 | 48.0904 |
| 12/9/2023 1:10 | 89 | 89 | 47.5764 | 47.5764 | 47.5764 |
| 12/9/2023 1:20 | 92 | 93 | 49.1184 | 49.1184 | 49.1184 |
| 12/9/2023 1:30 | 93 | 93 | 49.6324 | 49.6324 | 49.6324 |

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|---|---|---|---|---|---|---|
| 12/9/2023 1:40 | | 86 | 88 | 46.0344 | 46.0344 | 46.0344 |
| 12/9/2023 1:50 | | 92 | 94 | 49.1184 | 49.1184 | 49.1184 |
| 12/9/2023 2:00 | | 96 | 96 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/2023 2:10 | | 96 | 96 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/2023 2:20 | | 96 | 95 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/2023 2:30 | | 95 | 95 | 50.6604 | 50.6604 | 50.6604 |
| 12/9/2023 2:40 | | 96 | 96 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/2023 2:50 | | 97 | 98 | 51.6884 | 51.6884 | 51.6884 |
| 12/9/2023 3:00 | | 95 | 97 | 50.6604 | 50.6604 | 50.6604 |
| 12/9/2023 3:10 | | 96 | 96 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/2023 3:20 | | 96 | 97 | 51.1744 | 51.1744 | 51.1744 |
| 12/9/2023 3:30 | | 98 | 99 | 52.2024 | 52.2024 | 52.2024 |
| 12/9/2023 3:40 | | 98 | 98 | 52.2024 | 52.2024 | 52.2024 |
| 12/9/2023 3:50 | | 98 | 98 | 52.2024 | 52.2024 | 52.2024 |
| 12/9/2023 4:00 | | 91 | 94 | 48.6044 | 48.6044 | 48.6044 |
| 12/9/2023 4:10 | | 84 | 86 | 45.0064 | 45.0064 | 45.0064 |
| 12/9/2023 4:20 | | 74 | 79 | 39.8664 | 39.8664 | 39.8664 |
| 12/9/2023 4:30 | | 72 | 72 | 38.8384 | 38.8384 | 38.8384 |
| 12/9/2023 4:40 | | 64 | 68 | 34.7264 | 34.7264 | 34.7264 |
| 12/9/2023 4:50 | | 59 | 60 | 32.1564 | 32.1564 | 32.1564 |
| 12/9/2023 5:00 | | 56 | 57 | 30.6144 | 30.6144 | 30.6144 |
| 12/9/2023 5:10 | | 58 | 57 | 31.6424 | 31.6424 | 31.6424 |
| 12/9/2023 5:20 | | 58 | 57 | 31.6424 | 31.6424 | 31.6424 |
| 12/9/2023 5:30 | | 54 | 54 | 29.5864 | 29.5864 | 29.5864 |
| 12/9/2023 5:40 | | 52 | 54 | 28.5584 | 28.5584 | 28.5584 |
| 12/9/2023 5:50 | | 51 | 52 | 28.0444 | 28.0444 | 28.0444 |
| 12/9/2023 6:00 | | 47 | 47 | 25.9884 | 25.9884 | 25.9884 |
| 12/9/2023 6:10 | | 38 | 39 | 21.3624 | 21.3624 | 21.3624 |
| 12/9/2023 6:20 | | 23 | 26 | 13.6524 | 13.6524 | 13.6524 |
| 12/9/2023 6:30 | 77.8 | 19 | 20 | 11.5964 | 11.5964 | 11.5964 |

| DateTime | Average | Elinor and | Elinor and Gary B |
|---|---|---|---|
| 12/6/2023 6:40 | 77.8 | 89 | 87 |
| 12/6/2023 6:50 | | 89 | 91 |
| 12/6/2023 7:00 | | 93 | 95 |
| 12/6/2023 7:10 | | 94 | 94 |
| 12/6/2023 7:20 | | 96 | 94 |
| 12/6/2023 7:30 | | 97 | 96 |
| 12/6/2023 7:40 | | 95 | 95 |
| 12/6/2023 7:50 | | 98 | 97 |
| 12/6/2023 8:00 | | 103 | 102 |
| 12/6/2023 8:10 | | 103 | 101 |
| 12/6/2023 8:20 | | 103 | 103 |
| 12/6/2023 8:30 | | 105 | 103 |
| 12/6/2023 8:40 | | 106 | 103 |
| 12/6/2023 8:50 | | 104 | 104 |
| 12/6/2023 9:00 | | 100 | 102 |
| 12/6/2023 9:10 | | 101 | 99 |
| 12/6/2023 9:20 | | 96 | 98 |
| 12/6/2023 9:30 | | 93 | 95 |
| 12/6/2023 9:40 | | 95 | 93 |
| 12/6/2023 9:50 | | 96 | 93 |
| 12/6/2023 10:00 | | 93 | 94 |
| 12/6/2023 10:10 | | 96 | 94 |
| 12/6/2023 10:20 | | 99 | 97 |
| 12/6/2023 10:30 | | 99 | 97 |
| 12/6/2023 10:40 | | 94 | 93 |
| 12/6/2023 10:50 | | 98 | 96 |
| 12/6/2023 11:00 | | 96 | 97 |
| 12/6/2023 11:10 | | 93 | 94 |
| 12/6/2023 11:20 | | 92 | 91 |
| 12/6/2023 11:30 | | 97 | 97 |
| 12/6/2023 11:40 | | 93 | 91 |
| 12/6/2023 11:50 | | 88 | 88 |
| 12/6/2023 12:00 | | 88 | 89 |
| 12/6/2023 12:10 | | 87 | 86 |
| 12/6/2023 12:20 | | 87 | 86 |
| 12/6/2023 12:30 | | 82 | 84 |
| 12/6/2023 12:40 | | 81 | 80 |
| 12/6/2023 12:50 | | 82 | 84 |
| 12/6/2023 13:00 | | 88 | 86 |
| 12/6/2023 13:10 | | 101 | 102 |
| 12/6/2023 13:20 | | 105 | 104 |
| 12/6/2023 13:30 | | 88 | 87 |
| 12/6/2023 13:40 | | 85 | 83 |
| 12/6/2023 13:50 | | 86 | 84 |
| 12/6/2023 14:00 | | 85 | 83 |
| 12/6/2023 14:10 | | 77 | 76 |

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| 12/6/2023 14:20 | 76 | 75 |
| 12/6/2023 14:30 | 72 | 73 |
| 12/6/2023 14:40 | 80 | 76 |
| 12/6/2023 14:50 | 77 | 77 |
| 12/6/2023 15:00 | 79 | 76 |
| 12/6/2023 15:10 | 74 | 75 |
| 12/6/2023 15:20 | 80 | 81 |
| 12/6/2023 15:30 | 116 | 115 |
| 12/6/2023 15:40 | 124 | 126 |
| 12/6/2023 15:50 | 112 | 112 |
| 12/6/2023 16:00 | 110 | 110 |
| 12/6/2023 16:10 | 106 | 106 |
| 12/6/2023 16:20 | 112 | 110 |
| 12/6/2023 16:30 | 98 | 98 |
| 12/6/2023 16:40 | 102 | 99 |
| 12/6/2023 16:50 | 101 | 100 |
| 12/6/2023 17:00 | 106 | 105 |
| 12/6/2023 17:10 | 104 | 103 |
| 12/6/2023 17:20 | 108 | 108 |
| 12/6/2023 17:30 | 111 | 108 |
| 12/6/2023 17:40 | 103 | 101 |
| 12/6/2023 17:50 | 111 | 112 |
| 12/6/2023 18:00 | 100 | 101 |
| 12/6/2023 18:10 | 95 | 95 |
| 12/6/2023 18:20 | 93 | 94 |
| 12/6/2023 18:30 | 93 | 94 |
| 12/6/2023 18:40 | 97 | 95 |
| 12/6/2023 18:50 | 95 | 96 |
| 12/6/2023 19:00 | 95 | 95 |
| 12/6/2023 19:10 | 93 | 91 |
| 12/6/2023 19:20 | 89 | 90 |
| 12/6/2023 19:30 | 87 | 88 |
| 12/6/2023 19:40 | 84 | 87 |
| 12/6/2023 19:50 | 83 | 86 |
| 12/6/2023 20:00 | 87 | 86 |
| 12/6/2023 20:10 | 85 | 87 |
| 12/6/2023 20:20 | 90 | 90 |
| 12/6/2023 20:30 | 84 | 83 |
| 12/6/2023 20:40 | 84 | 83 |
| 12/6/2023 20:50 | 81 | 81 |
| 12/6/2023 21:00 | 82 | 83 |
| 12/6/2023 21:10 | 82 | 82 |
| 12/6/2023 21:20 | 116 | 115 |
| 12/6/2023 21:30 | 91 | 93 |
| 12/6/2023 21:40 | 93 | 92 |
| 12/6/2023 21:50 | 85 | 85 |
| 12/6/2023 22:00 | 85 | 89 |

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| 12/6/2023 22:10 | 105 | 105 |
| 12/6/2023 22:20 | 92 | 91 |
| 12/6/2023 22:30 | 106 | 105 |
| 12/6/2023 22:40 | 115 | 114 |
| 12/6/2023 22:50 | 82 | 80 |
| 12/6/2023 23:00 | 84 | 86 |
| 12/6/2023 23:10 | 88 | 90 |
| 12/6/2023 23:20 | 79 | 82 |
| 12/6/2023 23:30 | 79 | 78 |
| 12/6/2023 23:40 | 71 | 72 |
| 12/6/2023 23:50 | 70 | 68 |
| 12/7/2023 0:00 | 67 | 69 |
| 12/7/2023 0:10 | 67 | 68 |
| 12/7/2023 0:20 | 67 | 68 |
| 12/7/2023 0:30 | 67 | 67 |
| 12/7/2023 0:40 | 65 | 66 |
| 12/7/2023 0:50 | 64 | 62 |
| 12/7/2023 1:00 | 63 | 63 |
| 12/7/2023 1:10 | 63 | 63 |
| 12/7/2023 1:20 | 65 | 61 |
| 12/7/2023 1:30 | 64 | 61 |
| 12/7/2023 1:40 | 65 | 62 |
| 12/7/2023 1:50 | 63 | 63 |
| 12/7/2023 2:00 | 65 | 63 |
| 12/7/2023 2:10 | 65 | 62 |
| 12/7/2023 2:20 | 64 | 63 |
| 12/7/2023 2:30 | 64 | 63 |
| 12/7/2023 2:40 | 65 | 65 |
| 12/7/2023 2:50 | 65 | 63 |
| 12/7/2023 3:00 | 65 | 62 |
| 12/7/2023 3:10 | 63 | 62 |
| 12/7/2023 3:20 | 62 | 63 |
| 12/7/2023 3:30 | 66 | 62 |
| 12/7/2023 3:40 | 62 | 63 |
| 12/7/2023 3:50 | 62 | 63 |
| 12/7/2023 4:00 | 61 | 60 |
| 12/7/2023 4:10 | 61 | 61 |
| 12/7/2023 4:20 | 61 | 60 |
| 12/7/2023 4:30 | 62 | 60 |
| 12/7/2023 4:40 | 60 | 58 |
| 12/7/2023 4:50 | 62 | 60 |
| 12/7/2023 5:00 | 63 | 59 |
| 12/7/2023 5:10 | 61 | 60 |
| 12/7/2023 5:20 | 63 | 62 |
| 12/7/2023 5:30 | 63 | 62 |
| 12/7/2023 5:40 | 63 | 62 |
| 12/7/2023 5:50 | 62 | 62 |

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| 12/7/2023 6:00 | 61 | 62 |
| 12/7/2023 6:10 | 60 | 59 |
| 12/7/2023 6:20 | 57 | 57 |
| 12/7/2023 6:30 | 57 | 59 |
| 12/7/2023 6:40 | 60 | 59 |
| 12/7/2023 6:50 | 60 | 59 |
| 12/7/2023 7:00 | 65 | 63 |
| 12/7/2023 7:10 | 60 | 61 |
| 12/7/2023 7:20 | 61 | 59 |
| 12/7/2023 7:30 | 60 | 59 |
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| 12/7/2023 7:50 | 66 | 64 |
| 12/7/2023 8:00 | 66 | 65 |
| 12/7/2023 8:10 | 63 | 63 |
| 12/7/2023 8:20 | 61 | 60 |
| 12/7/2023 8:30 | 61 | 59 |
| 12/7/2023 8:40 | 60 | 63 |
| 12/7/2023 8:50 | 60 | 59 |
| 12/7/2023 9:00 | 61 | 58 |
| 12/7/2023 9:10 | 60 | 58 |
| 12/7/2023 9:20 | 58 | 58 |
| 12/7/2023 9:30 | 59 | 58 |
| 12/7/2023 9:40 | 56 | 55 |
| 12/7/2023 9:50 | 55 | 53 |
| 12/7/2023 10:00 | 54 | 53 |
| 12/7/2023 10:10 | 54 | 55 |
| 12/7/2023 10:20 | 55 | 54 |
| 12/7/2023 10:30 | 54 | 53 |
| 12/7/2023 10:40 | 54 | 55 |
| 12/7/2023 10:50 | 55 | 57 |
| 12/7/2023 11:00 | 56 | 54 |
| 12/7/2023 11:10 | 53 | 53 |
| 12/7/2023 11:20 | 51 | 50 |
| 12/7/2023 11:30 | 52 | 49 |
| 12/7/2023 11:40 | 52 | 51 |
| 12/7/2023 11:50 | 53 | 52 |
| 12/7/2023 12:00 | 52 | 52 |
| 12/7/2023 12:10 | 52 | 52 |
| 12/7/2023 12:20 | 52 | 52 |
| 12/7/2023 12:30 | 52 | 51 |
| 12/7/2023 12:40 | 51 | 49 |
| 12/7/2023 12:50 | 49 | 48 |
| 12/7/2023 13:00 | 52 | 51 |
| 12/7/2023 13:10 | 52 | 49 |
| 12/7/2023 13:20 | 54 | 52 |
| 12/7/2023 13:30 | 54 | 54 |
| 12/7/2023 13:40 | 53 | 52 |

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| 12/7/2023 13:50 | 52 | 52 |
| 12/7/2023 14:00 | 52 | 51 |
| 12/7/2023 14:10 | 46 | 47 |
| 12/7/2023 14:20 | 50 | 47 |
| 12/7/2023 14:30 | 48 | 47 |
| 12/7/2023 14:40 | 49 | 49 |
| 12/7/2023 14:50 | 44 | 46 |
| 12/7/2023 15:00 | 46 | 45 |
| 12/7/2023 15:10 | 46 | 42 |
| 12/7/2023 15:20 | 44 | 44 |
| 12/7/2023 15:30 | 44 | 45 |
| 12/7/2023 15:40 | 48 | 48 |
| 12/7/2023 15:50 | 54 | 55 |
| 12/7/2023 16:00 | 54 | 55 |
| 12/7/2023 16:10 | 53 | 54 |
| 12/7/2023 16:20 | 52 | 50 |
| 12/7/2023 16:30 | 49 | 52 |
| 12/7/2023 16:40 | 58 | 58 |
| 12/7/2023 16:50 | 63 | 64 |
| 12/7/2023 17:00 | 58 | 59 |
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| 12/7/2023 17:20 | 52 | 53 |
| 12/7/2023 17:30 | 55 | 54 |
| 12/7/2023 17:40 | 56 | 54 |
| 12/7/2023 17:50 | 57 | 58 |
| 12/7/2023 18:00 | 56 | 57 |
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| 12/7/2023 19:10 | 62 | 62 |
| 12/7/2023 19:20 | 149 | 150 |
| 12/7/2023 19:30 | 138 | 141 |
| 12/7/2023 19:40 | 129 | 131 |
| 12/7/2023 19:50 | 162 | 164 |
| 12/7/2023 20:00 | 155 | 156 |
| 12/7/2023 20:10 | 102 | 100 |
| 12/7/2023 20:20 | 119 | 120 |
| 12/7/2023 20:30 | 87 | 86 |
| 12/7/2023 20:40 | 95 | 99 |
| 12/7/2023 20:50 | 125 | 126 |
| 12/7/2023 21:00 | 104 | 104 |
| 12/7/2023 21:10 | 121 | 121 |
| 12/7/2023 21:20 | 134 | 133 |
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| 12/7/2023 21:40 | 153 | 153 |
| 12/7/2023 21:50 | 89 | 89 |
| 12/7/2023 22:00 | 93 | 93 |
| 12/7/2023 22:10 | 123 | 125 |
| 12/7/2023 22:20 | 153 | 154 |
| 12/7/2023 22:30 | 104 | 107 |
| 12/7/2023 22:40 | 113 | 113 |
| 12/7/2023 22:50 | 145 | 146 |
| 12/7/2023 23:00 | 115 | 115 |
| 12/7/2023 23:10 | 113 | 112 |
| 12/7/2023 23:20 | 101 | 102 |
| 12/7/2023 23:30 | 106 | 104 |
| 12/7/2023 23:40 | 107 | 105 |
| 12/7/2023 23:50 | 130 | 129 |
| 12/8/2023 0:00 | 115 | 114 |
| 12/8/2023 0:10 | 113 | 112 |
| 12/8/2023 0:20 | 105 | 106 |
| 12/8/2023 0:30 | 109 | 110 |
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| 12/8/2023 2:10 | 95 | 96 |
| 12/8/2023 2:20 | 96 | 95 |
| 12/8/2023 2:30 | 103 | 103 |
| 12/8/2023 2:40 | 95 | 94 |
| 12/8/2023 2:50 | 83 | 81 |
| 12/8/2023 3:00 | 83 | 83 |
| 12/8/2023 3:10 | 70 | 72 |
| 12/8/2023 3:20 | 65 | 64 |
| 12/8/2023 3:30 | 75 | 75 |
| 12/8/2023 3:40 | 72 | 69 |
| 12/8/2023 3:50 | 68 | 65 |
| 12/8/2023 4:00 | 67 | 67 |
| 12/8/2023 4:10 | 64 | 63 |
| 12/8/2023 4:20 | 63 | 65 |
| 12/8/2023 4:30 | 60 | 59 |
| 12/8/2023 4:40 | 74 | 73 |
| 12/8/2023 4:50 | 61 | 59 |
| 12/8/2023 5:00 | 69 | 71 |
| 12/8/2023 5:10 | 69 | 70 |
| 12/8/2023 5:20 | 65 | 68 |

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| 12/8/2023 6:00 | 57 | 55 |
| 12/8/2023 6:10 | 57 | 57 |
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| 12/8/2023 9:30 | 61 | 63 |
| 12/8/2023 9:40 | 70 | 72 |
| 12/8/2023 9:50 | 101 | 104 |
| 12/8/2023 10:00 | 86 | 88 |
| 12/8/2023 10:10 | 79 | 82 |
| 12/8/2023 10:20 | 85 | 85 |
| 12/8/2023 10:30 | 66 | 66 |
| 12/8/2023 10:40 | 65 | 66 |
| 12/8/2023 10:50 | 61 | 60 |
| 12/8/2023 11:00 | 65 | 67 |
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| 12/8/2023 11:30 | 66 | 68 |
| 12/8/2023 11:40 | 70 | 69 |
| 12/8/2023 11:50 | 54 | 55 |
| 12/8/2023 12:00 | 54 | 55 |
| 12/8/2023 12:10 | 50 | 48 |
| 12/8/2023 12:20 | 63 | 64 |
| 12/8/2023 12:30 | 66 | 66 |
| 12/8/2023 12:40 | 63 | 63 |
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| 12/8/2023 13:10 | 48 | 46 |

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| 12/8/2023 13:40 | 46 | 45 |
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| 12/8/2023 14:00 | 52 | 50 |
| 12/8/2023 14:10 | 55 | 51 |
| 12/8/2023 14:20 | 56 | 56 |
| 12/8/2023 14:30 | 52 | 53 |
| 12/8/2023 14:40 | 57 | 55 |
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| 12/8/2023 18:10 | 90 | 92 |
| 12/8/2023 18:20 | 117 | 118 |
| 12/8/2023 18:30 | 123 | 123 |
| 12/8/2023 18:40 | 133 | 139 |
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| 12/9/2023 5:40 | | 52 | 54 |
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| 12/9/2023 6:00 | | 47 | 47 |
| 12/9/2023 6:10 | | 38 | 39 |
| 12/9/2023 6:20 | | 23 | 26 |
| 12/9/2023 6:30 | 77.8 | 19 | 20 |

Episode 56Nj December 19, 2023. 2nd comment to NEJAC & WHEJAC with steps for calculating percent of PM2.5

December 19, 2023. Dear NEJAC & WHEJAC, This is my 2nd comment to you before the submission deadline for written comments. My name is Linda Karr and the organization is Residents Against Wood Smoke Emission Particulates, a 501c3 nonprofit organization. The organization email is rawsepresidents@gmail.com and my personal email is lindakarr2@gmail.com. I live in Madison, Wisconsin. I have been a research scientist studying the effect of metabotropic glutamate receptor inhibition on epilepsy, but I am currently a financial specialist at the University of Wisconsin-Madison. I am attaching calculation of PM2.5 levels exceeding EPA NAAQS limits from wood smoke entering the yards of near neighbors of indoor residential wood burners. The 5 calculations are evidence of PM2.5 levels from 3 locations, using 1)download of 3 days of PM2.5 data from each of the 5 resident owned PM2.5 monitors located on the PurpleAir map, 2)an Excel worksheet for each, and 3)a simple mathematical formula currently used by the EPA to correlate the data from PurpleAir monitors to $100,000 EPA monitors, which is (PA times 0.514) plus 1.8304, so that correlated PurpleAir PM2.5 data can be put side by side on U S AirNow Maps of Smoke and Fire alongside data from $100,000 EPA PM2.5 monitors. The data from U S E P A Maps of Smoke and Fire was used during the incursion of Canadian wildfire smoke into the United States in June 2023 that sickened many and caused disruption of normal business and school activities. Residents Against Wood Smoke Emission Particulates found that this incident sparked interest in the harm of simple wood smoke, and gave the organization hope that recognition of the harm of wood smoke would translate to a move toward treating wood smoke pollution as the hazard that it is to near neighbors of indoor residential wood burners on a daily basis. Congratulations to NEJAC for receiving an 8.8 million dollar grant for assessing emissions from (indoor residential) wood burning devices. I suggest that using data from resident-owned monitors hyper-localized next to indoor residential wood burners is an efficient, low cost way to assess emissions from indoor residential wood burning devices. Using the attached 5 Excel files as templates, a near neighbor of an indoor residential wood burner can present 3 days of evidence to their local Health Department or to the Federal Government itself to show that there is a problem with air pollution from use of this archaic home heating source, or from use of indoor residential wood burning merely for recreation. Since PurpleAir maps are publicly available, so Health Departments or other government agencies can download, during normal government working hours, the data themselves and analyze it using the Excel templates themselves to double check that there is indeed PM2.5 from wood smoke entering the yards of near neighbors that exceeds the EPA's own NAAQS limits. On the RAWSEPresidents site Excel files for 25 locations across the United States and Canada are stored and can be downloaded and used as templates for other locations. There are Youtube videos by RAWSEPresidents showing step by step how to use these templates. The general steps are 1)Download 3 days of data from the PurpleAir map. 2)Copy the download and paste it into cell A6 of the Main Page of the Excel Sheet. Correlation to $100,000 EPA monitor will automatically populate in columns E F and G for 432 rows representing 10 minute periods over a 72 hour (3 day) period.3)Select and Copy the 432 rows of 7 columns of data A7:G438 from the Main Excel Page 4)Paste 1 2 3 the data into cell A1 of the Yellow Sheet, 5)Paste 1 2 3 the data into cell A1 of the Orange Sheet 6)Paste 1 2 3 into the data into cell A1 of the Red Sheet. Then sort the 3 color sheets so that the colored cells are at the top of each sheet. Color sheets Yellow, Orange and Red have conditional formatting that makes 6A)cells in column E turn yellow when a number is above 12, 6B)cells in column F turn orange when a number is above 25, and 6C)cells in column G turn light red when a number is above 35 so 7a)In the Yellow Sheet choose the pre made Custom Sort of Column E by cell color Yellow on Top and Click OK 7b) In the Orange Sheet choose the pre made Custom Sort of Column F by cell color Orange on Top and click OK. 7c) In the Red Sheet choose the pre made Custom Sort of Column G by cell color Red on Top and click OK. 8a)Go to the Yellow Sheet and scroll down to get to the last row colored Yellow. Note the last Yellow row number and type that row number into E5 on the main sheet. 8b)Go to the Orange Sheet and scroll down to get to the last row colored Orange. Note the last Orange row number and type that row number into F5 on the main sheet. 8c)Go to the Red Sheet and scroll down to get to the last row colored Red. Note the last Red row number and type that row number into G5 on the main sheet. 9)Percentage of time for 3 days (72 hours) in 10 minute intervals that PM2.5 has been above 12 micrograms per meter cubed, above 25 micrograms per meter cubed and above 35 micrograms per meter cubed PM2.5 in the yard of the near neighbor will autocalculate in cells B4, C4 and D4 of the main page. In this way, air pollution affecting near neighbors of indoor residential wood burners can be assessed. This method of assessment will be transparent and understandable to near neighbors themselves and to the general public concerned about PM2.5 pollution from wood burning. The other method of regulating air pollution from indoor residential wood

stoves has been a failure, according to the February 2023 report of the Office of the Inspector General (O I G) watchdog of the EPA, due to lobbying by the wood stove industry that resulted in huge loopholes to compliance to even the lax standards for indoor residential wood stoves (NSPS) which have been in place only since 1988, but have never been complied with to any extent. Wood burning, like all solid fuel burning, is also inherently polluting. Just don't burn wood to begin with since the alternative means of heating homes are cheaper in 2023 and becoming more widely available. Wood burning is not physically addictive to humans, unlike cigarette smoking or alcohol consumption. Indoor residential wood burners can just stop. RAWSEP is writing a grant with Expert Match from the Department of Energy (D O E) to hand out Heat Pumps that work down to 40 degrees below zero to current indoor residential wood burners that hand in their wood burning stoves. This RAWSEP grant would supplement the expected Federal rebates for Heat Pumps for up to $8,000 per household on a sliding income scale in 2024. RAWSEP's grant would also pay for handing out PurpleAir PM2.5 monitors to any near neighbor of an indoor residential wood burner whose wood smoke invades the near neighbors' yard and sickens them. Currently, if a wood stove is certified safe by EPA NSPS standards the local Health Department acts as if their hands are tied, and no action is taken to stop the polluting wood burning affecting the health and curbing the daily activities of near neighbors. Warnings that it was unsafe to exercise outdoors were made when the Canadian wildfire smoke invaded the United States in June 2023. Daily threats to health when going outside make near neighbors of indoor residential wood burners spend their winters (and year round in many cases) staying inside their sealed homes with multiple air purifiers running in order to maintain their health. Wood smoke is 90% PM2.5, particulate matter of 2.5 micrometer size, the perfect size to infiltrate the human lung, setting off a cascade of human health problems and early deaths. Wood smoke emits more C O 2 and PM2.5 than the fossil fuel coal burning. Wood smoke emits 450 times the PM2.5 as the fossil fuel natural gas burning. Excel file Templates and actual calculation files for 25 monitor locations every 3 days can now be downloaded directly from https://rawsepresidents.com Or Email rawsepresidents@gmail.com for Excel Template to be emailed to you, if you own a PurpleAir PM2.5 monitor, and are a near neighbor of an indoor residential wood burner whose PM2.5 smoke enters your yard and sickens you. The chart of the PM2.5 levels above NAAQS limits on 12/18/2023, using this RAWSEP Excel method, follows. Attached to this comment are five Excel sheets of 5 locations for a 3 day period ending in 12/18/2023, 1)Kensington, California; 2)Lewiston, Maine; 3)Black Earth, Wisconsin; 4)Madison, Wisconsin on Elinor Street, and 5)Half Moon Lake, Wisconsin.

12/15/2023 to 12/18/2023

| | Location PM2.5 over 3 days | % above 12ug/m3 PM2.5 | % above 25ug/m3 PM2.5 | % above 35ug/m3 PM2.5 | Average PM2.5 at one monitor over 3 days | PM2.5 average in 3 days |
|---|---|---|---|---|---|---|
| 1 | California, Contra Costa County, Kensington | 100% | 80% | 21% | Average PM2.5 | 29 |
| 2 | California, Humboldt County, Trinidad | 73% | 40% | 17% | Average PM2.5 | 21 |
| 3 | Maine, Androscoggin County, Lewiston, Echo Road | 86% | 47% | 22% | Average PM2.5 | 23 |
| 4 | Maine, Kennebec County, Winslow | 64% | 37% | 23% | Average PM2.5 | 22 |
| 5 | Maine, Sagadohoc County, Topsham | 66% | 25% | 20% | Average PM2.5 | 19 |
| 6 | Wisconsin, Dane County, Town of Berry, Turner | 95% | 90% | 54% | Average PM2.5 | 35 |
| 7 | Wisconsin, Dane County, Black Earth, Daniel | 94% | 90% | 56% | Average PM2.5 | 36 |
| 8 | Wisconsin, Dane County, Madison, 950 Clarence | 96% | 93% | 55% | Average PM2.5 | 34 |
| 9 | Wisconsin, Dane County, Madison, Dudgeon | 96% | 94% | 57% | Average PM2.5 | 35 |

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| 10 | Wisconsin, Dane County, Madison, Elinor Street | 96% | 91% | 65% | Average PM2.5 | 40 |
| 11 | Wisconsin, Dane County, Madison, Faircrest | 95% | 90% | 52% | Average PM2.5 | 34 |
| 12 | Wisconsin, Dane County, Madison, LaFollette | 78% | 20% | 0% | Average PM2.5 | 21 |
| 13 | Wisconsin, Dane County, Madison, Sasy1 | 96% | 73% | 12% | Average PM2.5 | 31 |
| 14 | Wisconsin, Dane County, Madison, Wexford Village | 92% | 34% | 0% | Average PM2.5 | 21 |
| 15 | Wisconsin, Dane County, Maple Bluff, GoPackGo | 94% | 83% | 20% | Average PM2.5 | 29 |
| 16 | Wisconsin, Dane County, Mount Horeb | 92% | 61% | 31% | Average PM2.5 | 26 |
| 17 | Wisconsin, Marathon County, Wausau | 88% | 76% | 64% | Average PM2.5 | 35 |
| 18 | Wisconsin, Oneida County, Rhinelander | 74% | 60% | 41% | Average PM2.5 | 25 |
| 19 | Wisconsin, Polk County, Half Moon Lake | 87% | 77% | 64% | Average PM2.5 | 39 |
| 20 | Wisconsin, Polk County, Milltown, Manor A | 81% | 74% | 63% | Average PM2.5 | 41 |
| 21 | Wisconsin, Sauk County, Spring Green | 94% | 92% | 59% | Average PM2.5 | 34 |
| 22 | Wisconsin, Vernon County, LaFarge | 88% | 49% | 5% | Average PM2.5 | 31 |
| 23 | Canada, BC Parksville, Acacia N | 84% | 66% | 31% | Average PM2.5 | 30 |
| 24 | Canada, BC Shulus, Office | 28% | 6% | 1% | Average PM2.5 | 11 |
| 25 | Canada, BC, Vancouver, Woodland | 84% | 38% | 6% | Average PM2.5 | 25 |
| 26 | Average of all locations | 85% | 63% | 34% | Average PM2.5 | 29 |