



# Air and Energy (A-E) Environmental Justice Considerations

BOSC Subcommittee Meeting, February 19, 2021  
Presenter: Bryan Hubbell, A-E National Program Director

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*From Day 1: While air quality has improved across the U.S., the health burdens of air pollution are still disproportionately borne by communities with environmental justice concerns.*

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*Impacts from climate change on extreme weather and climate-related events, air quality, and the transmission of disease through insects and pests, food, and water increasingly threaten the health and well-being of the American people, particularly populations that are already vulnerable.*

*4<sup>th</sup> National Climate Assessment*

*Achieve air quality that meets the fine particle pollution national ambient air quality standards in all areas of the country, with special emphasis on communities with poor air quality and low-income populations.*

*EJ 2020 Action Agenda: the EPA's Environmental Justice Strategic Plan for 2016-2020*



## Securing Environmental Justice and Spurring Economic Opportunity

*Agencies shall make achieving environmental justice part of their missions by developing programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts. It is therefore the policy of my Administration to secure environmental justice and spur economic opportunity for disadvantaged communities that have been historically marginalized and overburdened by pollution and underinvestment in housing, transportation, water and wastewater infrastructure, and health care.*

*Executive Order on Tackling the Climate Crisis at Home and Abroad, Section 219, January 27, 2021*

## Vulnerable communities and communities with environmental justice concerns

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**Research Area 3** “. . . the identification of factors that put people or ecosystems at risk from exposure to air pollution (e.g., life-stage, pre-existing disease, and genetics/epigenetics; **environmental justice factors such as social, economic, cultural, and race**; behavioral, and other factors that may confer vulnerability) must be considered to fully assess impacts and inform air quality and public health management decisions.”

**Research Area 3 Priority:** Factors affecting vulnerability of people and ecosystems including biological, exposure/deposition characteristics, and **environmental justice**.

**Research Area 4** “. . . coordinate efforts with those of other ORD research programs to develop a cross-media understanding of [PFAS] and the potential impacts on health and the environment, with a focus on **vulnerable populations**.”

**Research Area 6** “. . . **Engagement with community representatives** have generated ideas about how information can be most effectively developed and communicated and increased the understanding of the science at the community level.”

**Research Area 7** “. . . new, real-time advanced monitoring approaches and lower-cost devices [can be used] to identify pollution hotspots, to determine locations for siting regulatory monitors, [and] for **community awareness** about air quality. . . .”

**Research Area 9** “This integrated approach will help us better understand the growing importance of wildland fires; identify vulnerable ecosystems and human populations and the biological, geological, **and environmental justice characteristics that confer vulnerability**; and develop effective risk communication and mitigation strategies.”





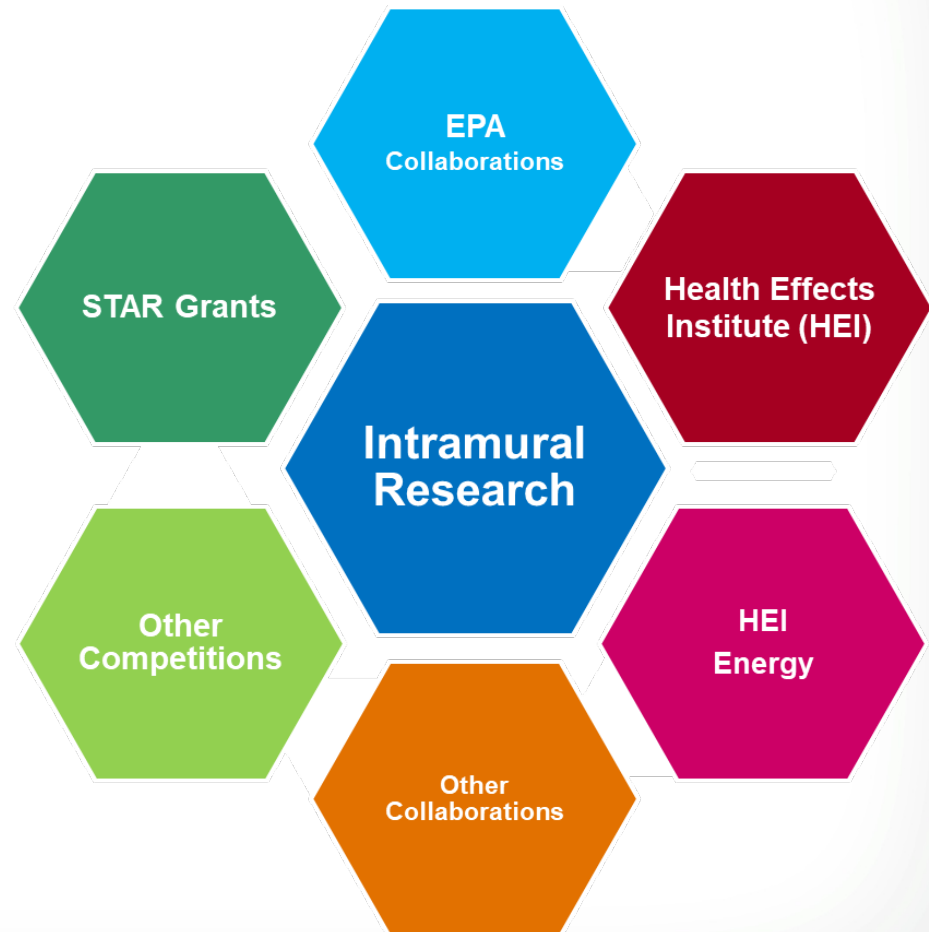
# Engagement in Research

- Collaborating with a community
  - Building partnerships with specific communities and working together to find solutions to challenging environmental problems
- Networking and broadening awareness through larger groups
  - Public Health Agencies
  - National Environmental Justice organizations
  - Academic institutions



There are opportunities across the research portfolio to connect with communities with EJ concerns.

- **EPA Collaborations** with other national research programs, POs and ROs (e.g., RARE, R2P2)
- **HEI Air/Energy**: unique public-private partnerships
- **Other Collaborations** with other agencies, industry, academia (e.g., CRADAs, MOUs/MOAs)
- **Other Competitions** e.g., Pathfinder Innovation Projects (PIPs), challenge and prize competitions, citizen science, SBIR, P3
- **Star Grants**: single principal investigator, Interdisciplinary Centers





### Analysis of VOCs using passive samplers in Rubbertown



- Rubbertown is an industrial area of Louisville and VOCs emitted in this area are of particular concern due to nearby communities, including substantial EJ populations.
  - **Transparency:** Six community meetings throughout the project.
  - **Longer-term:** Field work was extended at two sites.
- Persistent odors (some due to HAPs and VOCs) can be a nuisance and may cause a health concern.
  - **Community input/Citizen Science:** Mobile Odor Explore app for citizens to use in reporting odors.
  - **Actions driven by Community input:** Remotely trigger odor canisters (based on data from mobile app) to understand what is in the air.
  - **Feedback:** Compare odor reports to measurements and provide info to interested parties.



## Example 2: Wildfire ASPIRE Study

*ASPIRE = Advancing Science Partnerships for Indoor Reductions of Smoke Exposures*

How air cleaning and ventilation practices impact indoor air quality during wildfire events.

- Common recommendation to reduce exposure is to go indoors, but wildfire smoke (PM<sub>2.5</sub>) can infiltrate.
- Two locations: Missoula, MT and Hoopa Valley Tribe, CA.
  - **Community input:** Missoula and Hoopa Valley Tribe identified outputs, obtained local permissions, sited equipment, and collected data.
  - **Community interest:** Missoula health department wanted to understand clean air spaces in public and commercial buildings.
  - **Community interest:** Hoopa tribe wanted to learn more about clean air spaces in their community to address exposures to smoke from home heating and wildfires.





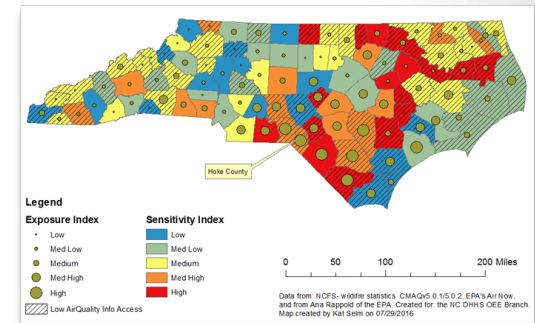


## Example 3: Community Health Vulnerability Index



Tool for public health officials to identify communities at higher risk from wildfire smoke.

- Considers factors known to define susceptibility to air pollutant-related health effects
- Can be combined with air quality forecast data generated by models to develop maps of counties, regions, or other areas where at-risk populations live
- Translated for use in North Carolina
  - **Community interest:** Utilized CHVI to identify NC community most at risk to smoke health impacts
  - **Community input:** Engaged Hoke County stakeholders (e.g., local fire departments) with CHVI to discuss vulnerability to smoke health impacts.



*Courtesy of Lauren Thie,  
NC Department of Public Health*

- Communities with environmental justice issues are recognized as stakeholders for our research.
- Engagement can:
  - Better define the scientific questions.
  - Inform how the research can offer solutions to problems important to both the researchers and the stakeholder.
- Connections with larger organizations may help:
  - Increase awareness of A-E research.
  - Provide opportunities for collaborations at broader (i.e., regional or national) scales.
- As implementation continues, A-E is exploring opportunities to improve outreach to groups focused on addressing environmental justice issues.



# Questions for Discussion

- Looking at past experiences, we see that intentional stakeholder engagement takes time and commitment and **adds great value**.
- As A-E implements the research, we are interested in enhancing our ability to conduct it to be useful to communities with EJ issues.



- How can we explore opportunities to apply (or modify) national tools and make them relevant at a local/community scale?
- How can we translate what we learn from one community to help another faced with similar challenges?
- How can we use our time and resources wisely to effectively engage with communities with EJ issues?
- How can we improve on defining the scientific question and conducting the science so that we can offer solutions to environmental and health concerns important to the community?



# Air and Energy (A-E) Engagement Strategy

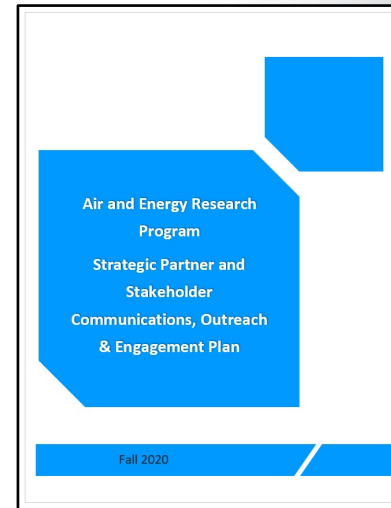
BOSC Subcommittee Meeting, February 17-19, 2021  
Sherri Hunt, A-E Principal Associate National Program Director



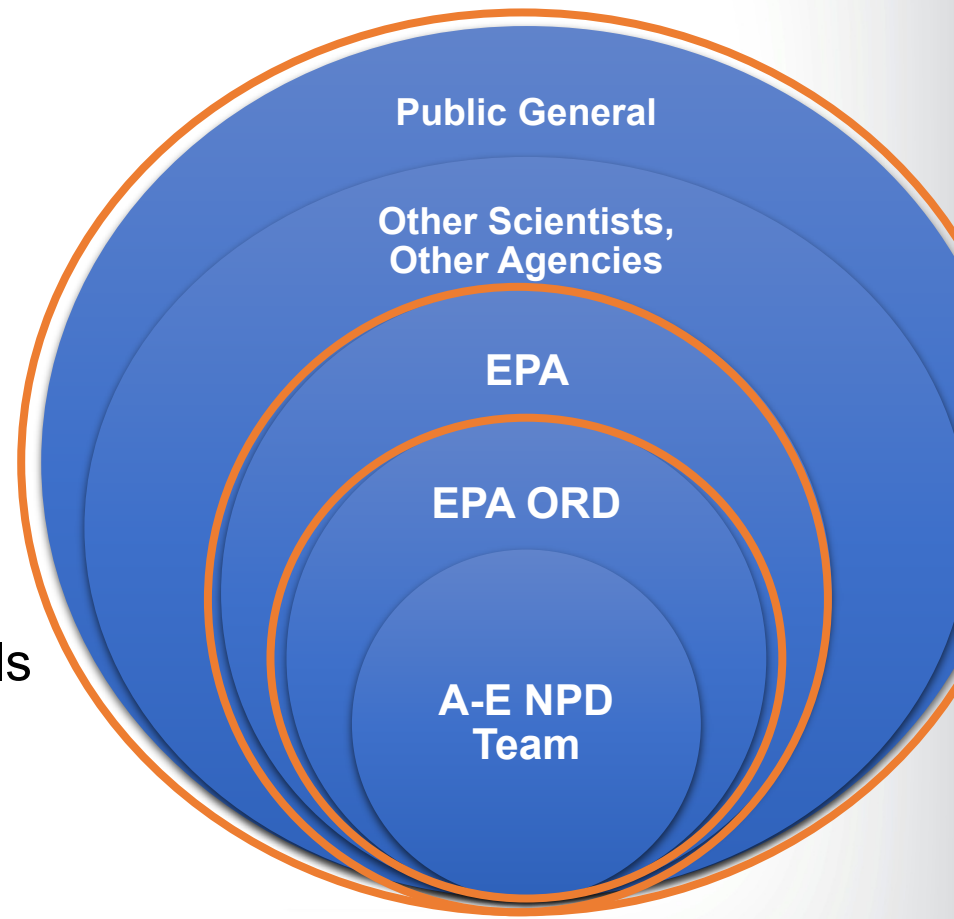
- Since April 2020, we have:
  - ✓ Continued our A-E Team discussions
  - ✓ Met with individuals and groups who use our research to discuss:
    - ✓ Communication and engagement goals
    - ✓ Preferences for communication and engagement methods
  - ✓ Completed an interest group identification and classification
  - ✓ Created a comprehensive menu of outreach and engagement activities
  - ✓ Completed the 2020 A-E Research Program Strategic Communications, Outreach, and Engagement Plan document
  - ✓ Started implementing A-E Engagement Plan



- Our document includes:
  - Background on past engagement
  - Definitions of key terms
  - Goals for communications, outreach, and engagement
  - Identification and classification of interested groups within ORD, within EPA, and with the broader community
  - Examples of measurable objectives for tracking and evaluation
  - Catalog of current and potential tactics and activities
- Discussed past engagement previously
- This presentation will focus on goals, and objectives



- Previously discussed spheres of engagement
- Grouped audiences into three categories:
  - ORD (“inreach”)
  - Within EPA broadly
  - Beyond EPA
- Current Strategy focuses on goals for audiences within EPA
- Outreach beyond EPA is coordinated with existing infrastructure beyond the A-E Team





- For the ORD research community, increase awareness and understanding of A-E research activities and where appropriate, their connection to research in other National Research Programs (NRPs) (“inreach”)
- For deliverables, effectively translate and synthesize research results to help make them more accessible and usable
- For partners and stakeholders, increase awareness, use, and support of the full portfolio of Air and Energy research activities and deliverables





# Outreach and Engagement within EPA (1)

## Continued and Initiated in 2020

- Regular meetings open to anyone in EPA, focused leadership groups, scientist-to-scientist
- Research Area Coordination Teams\* (slide 9)
- Internal newsletter with research updates
- FY Product and Output summary tables
- A-E Partner Survey
  - Which Products would you like more information on?
  - Which outreach, communication, and engagement activities are most useful?



\* During implementation, these Teams were organized around a slightly different set of Outputs than during the planning process.



# Outreach and Engagement within EPA (2)

## Continuing in 2021:

- Participate in regular meetings
- Strengthen and refine the RACTs (slide 9)
- Recognize reports, syntheses, presentations, etc. as equal accomplishments to journal articles
- FY20 Product and Output Delivery Webinar
- FY20 Product and Output webinar series
- Distribute quarterly internal newsletter with research updates

**Comparison of Ozone Measurement Methods in Biomass Burning Smoke**

**Product:** AE-2.2.1  
Russell W. Long, CEMM

**Product Type:** Journal Article

**Description:** Evaluates O<sub>3</sub> Federal Reference Methods (FRMs) and Federal Equivalent Methods (FEMs) in ambient and lab-based evaluations to assess capabilities for accurate, interference-free monitoring of O<sub>3</sub> in biomass smoke.


**Agency Driver:** Improved O<sub>3</sub> ambient monitoring methods for sites impacted by wildfire smoke.

**Results:**

- Operation of multiple ultraviolet (UV)-photometric instruments in heavy smoke events results in interference and irreversible damage to the internal components.
- The nitrogen oxide chemiluminescence FRM showed to have no measurement interference during heavy smoke events.

**Expected Use:** Newly approved methods will improve the capability of state and local monitoring agencies to measure O<sub>3</sub> during wildfire smoke events.

[Read the Product Summary](#)



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**Air and Energy Newsletter**

Updates from the EPA/ORD Air and Energy National Research Program: February 2021

**Note from Bryan Hubbell, A-E National Program Director**

Hello, Air Climate and Energy Community!


Welcome to 2021 and the winter edition of our internal newsletter. We are excited to work with our new Administration to address the key priorities of climate change and environmental justice, as well as continuing to support air quality management, improve understanding of health and environmental impacts, and address the challenges of wildland fires. As we begin this new year and learn more about this administration, we are focusing on opportunities to recognize the talented scientists working in the air, climate, and energy arenas. While it hasn't been easy, the persistence and scientific integrity displayed by our scientists to maintain technical capacity has prepared us to present a vision for the future while responding to multiple near-term scientific needs in the decision-making process.

We hope that you were able to attend and enjoy our [overview](#) of the A-E FY20 products and outputs, and encourage you to answer our [FY20 products and outputs survey](#) so we can follow up with webinars and outreach on products and outputs that you would like to know more about. In another transition, we are welcoming Angie Shatas to the team as our new Associate National Program Director—see our [Spotlight](#) section to learn more about Angie.

**Recent Research Highlights by Topic**

**Air Pollution and Ecosystem Impacts**

EPA scientists developed a behavioral decision tree simulator to assess the conditions that diadromous fish encounter during migration, including hazardous conditions such as poor water quality





## Outreach and Engagement within EPA (3)

### Research Area Coordination Teams (RACTs)

- RACTs bring together lead scientists for ongoing and planned research efforts with anticipated users of their work and those with similar technical interest for engagement around research results and deliverables (e.g. Products and Outputs).
- **The goals of the RACTs are to:**
  - a) refine and understand how best to deliver and translate research products and outputs;
  - b) identify longer-term future research needs and potential collaborations; and
  - c) strengthen familiarity, comradery, and trust among EPA staff with the goal of finding common research objectives and improving current and future collaborations.



# Outreach and Engagement within EPA (4)

- **Research Area Coordination Teams:**

- ❖ Air Pollution and Ecosystem Impacts
- ❖ Air Pollution and Health Impacts
- ❖ Air Quality Modeling
- ❖ Climate Impacts, Adaptation, and Mitigation
- ❖ Emissions Measurement and Methods Development to Support Regulatory Action
- ❖ Ambient Air Measurements: Regulatory-Grade Methods and Air Sensors and Pollutants
- ❖ Wildland Fires

- **Participants:**

- ~ 46 from ORD
- ~ 28 from 8 Regional Offices
- ~ 69 from Program Offices



\* During implementation, these Teams were organized around a slightly different set of Outputs than during the planning process.



# Outreach and Engagement Beyond EPA (1)

## Completed in 2020:

- Presentations at Tribal meetings:
- Public Webinars focused on synthesis and translation for specific target audiences
  - Air Quality and Healthy Hearts, May 28, 2020
  - Household Energy Webinar, Sept 22, 2020
- Meetings with states and multi-jurisdictional organizations – groups from 4 EPA regions were coordinated by ORD leadership
- Kickoff meeting for new STAR grants on Chemical Mechanisms

**Air & Energy Research Webinar Series**  
Hosted by EPA's Office of Research and Development  
Recording and slides will be posted at [epa.gov/air-research/healthy-heart-toolkit-and-research](https://epa.gov/air-research/healthy-heart-toolkit-and-research)

**Air Quality and Healthy Hearts:  
Progress and Remaining Challenges**

May 28, 2020 from 2:00-3:30 pm ET

**Webinar Slides:** Located under "Handouts" in the right navigation bar of your screen.  
**To Ask a Question:** Type in the "Questions" box located in right navigation bar on your screen.  
**Webinar Support:** Send email to [webcastinfo@cadmusgroup.com](mailto:webcastinfo@cadmusgroup.com)

*Disclaimer: This presentation is based on information provided in the Final Integrated Science Assessment for Particulate Matter. The views expressed are those of the author and do not necessarily reflect the views or policies of the U.S. EPA. Any mention of trade names or commercial products does not constitute EPA endorsement or recommendation for use.*

A certificate of attendance will be provided for this webinar

**Five Years of Progress in Household Energy Research and Future Directions**

September 22, 2020  
1 p.m. – 3 p.m. Coordinated Universal Time (UTC)  
9 a.m. – 11 a.m. EDT, USA

**Register for the free webinar now!**

**Description**  
This webinar will summarize and synthesize research progress between 2015-2020 by the U.S. Environmental Protection Agency and grantees of the EPA's Science to Achieve Results (STAR) Program to address the global public health and environmental impacts from the burning of solid fuels (wood, charcoal, coal, dung, crop residues, and other biomass) used for meeting basic household energy needs for cooking, heating, and lighting.

Nearly three billion people depend on the combustion of solid fuels for household energy needs. According to the World Health Organization, household air pollution from inefficient cooking practices using open fires or rudimentary stoves causes 3 to 4 million premature deaths annually and a wide range of illnesses. In the U.S., approximately a half million people, mostly in low-income areas, are directly affected by household air pollution from the burning of solid fuels. Worldwide emissions contribute to increases in air pollutants that circulate the globe.

EPA has partnered with the Clean Cooking Alliance, other U.S. government agencies, university researchers, and many international partners to conduct research to better understand potential benefits of interventions, develop international standards for cookstoves, evaluate the performance of cookstoves to encourage the development of sustainable technologies, and improve understanding of the impacts to public health and the environment, among other objectives.

Researchers will share the results of their research and perspectives on the continued challenges to address



# Outreach and Engagement Beyond EPA (2)

## Continuing in 2021:

- Major updates of Air Research and Climate Research websites
- State and Tribal listening sessions regarding wildland fires in Jan - Feb 2021
- Two webinars in April in the EJ and Tribal Indigenous Peoples series coordinated by ORD
- Four Public Webinars
- Articles
- Email lists
- ...





## We Want Your Input

- The A-E Strategic Engagement Plan will continue to evolve and will extend beyond the current Strategic Research Action Plan.
- We are asking for feedback and suggestions on how to identify opportunities to make A-E research results most valuable to air-quality policymakers and managers at multiple levels during implementation of the research program
  - Within the Agency including Program and Regional Offices
  - With other Federal agencies
  - With state and local agencies and tribes
  - With communities







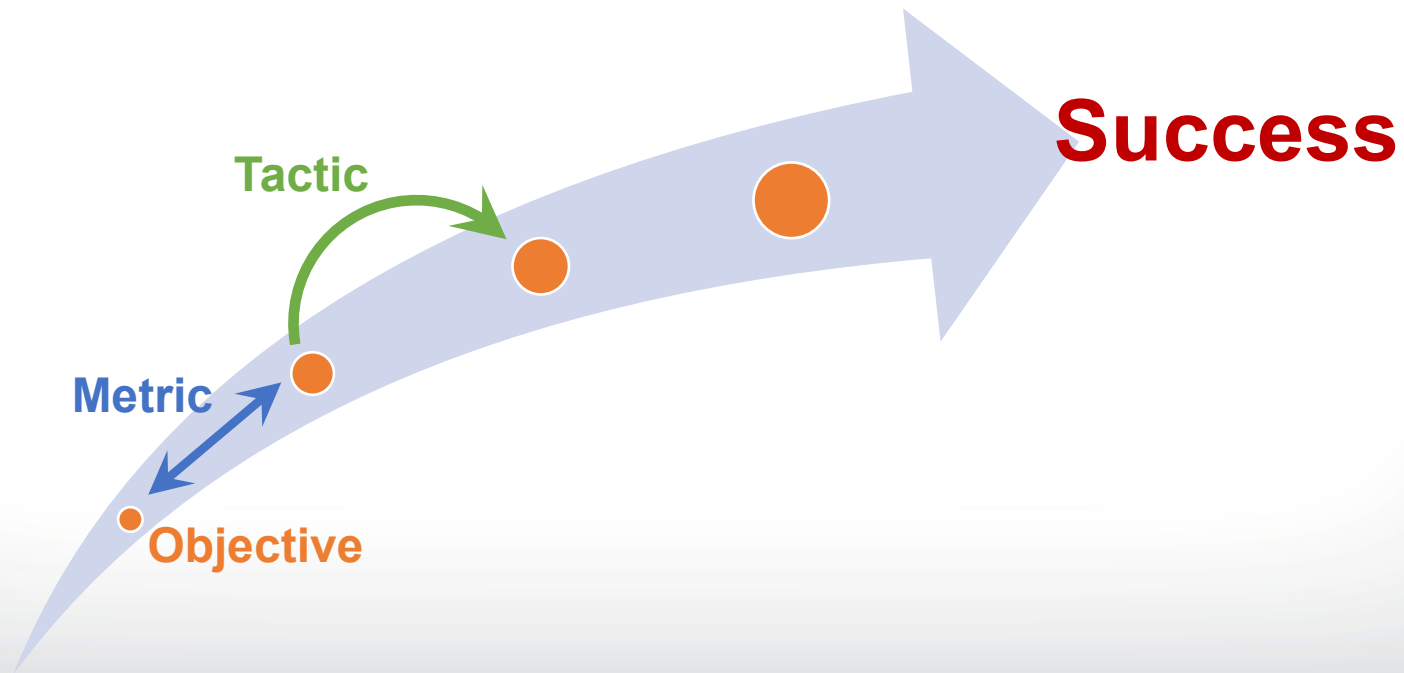
# Outreach and Engagement within EPA

## Excerpt from Activity Menu:

Activity	Frequency	Purpose
EPA intranet page	As needed	Provide information about current air, energy and climate related research to ORD staff, Program and Region partners; Provide resources, links to internal webinars with information about the research
Webinar	Bimonthly	Describe research plans, progress, results, or demonstration of a new tool; may be broad or extremely focused (e.g. FY19 Product Webinar Series)
Moment of Science on the A-E Connections Call	Twice monthly	Short format presentation for A-E community within ORD and partner offices to share overview of topic or research results
Update meetings with Program Office Center Directors, Division Directors or senior staff	Quarterly	Provide updates on AE products most relevant to the office and to learn about program activities and new needs or potential shifts in priorities

## Defining A-E Team Goals

- For each goal, we have a vision of **success**.
- **Objectives** are the steps along the way to achieving the goal.
- **Metrics** are the units that measure progress toward the goal.
- **Tactics** are the actions that help us to achieve objectives.



## Considering a Goal (1)

- **Goal:** For deliverables, effectively translate and synthesize research results to help make them more accessible and usable
- Vision of **success**:

The A-E Team will provide information:

- In a manner that ensures users can understand the value of research results and apply them in planning and decision making
- With a clear explanation of why a research project, product, or output is important – what it adds to existing scientific knowledge or how it can be used
- In a format that can be used by partners and stakeholders without significant investment of their resources. ...scientists should be able to state why the work matters and how it can be used.



## Considering a Goal (2)

- Potential **Metric**:
  - Percentage of Products/Outputs for the year that are presented in a webinar, seminar, or workshop
- Potential **Objective**:
  - Increase the percent of Outputs and Products that are in the form of synthesis reports or webinars from X in 2021 to Y in 2022
- Potential **Tactics**:
  - Work with Center leadership to increase recognition of synthesis documents in promotion packages
  - Identify related sets of deliverables (Products and/or Outputs from StRAP and/or related non-StRAP funded work) and work with communications team to identify synthesis webinar topics

