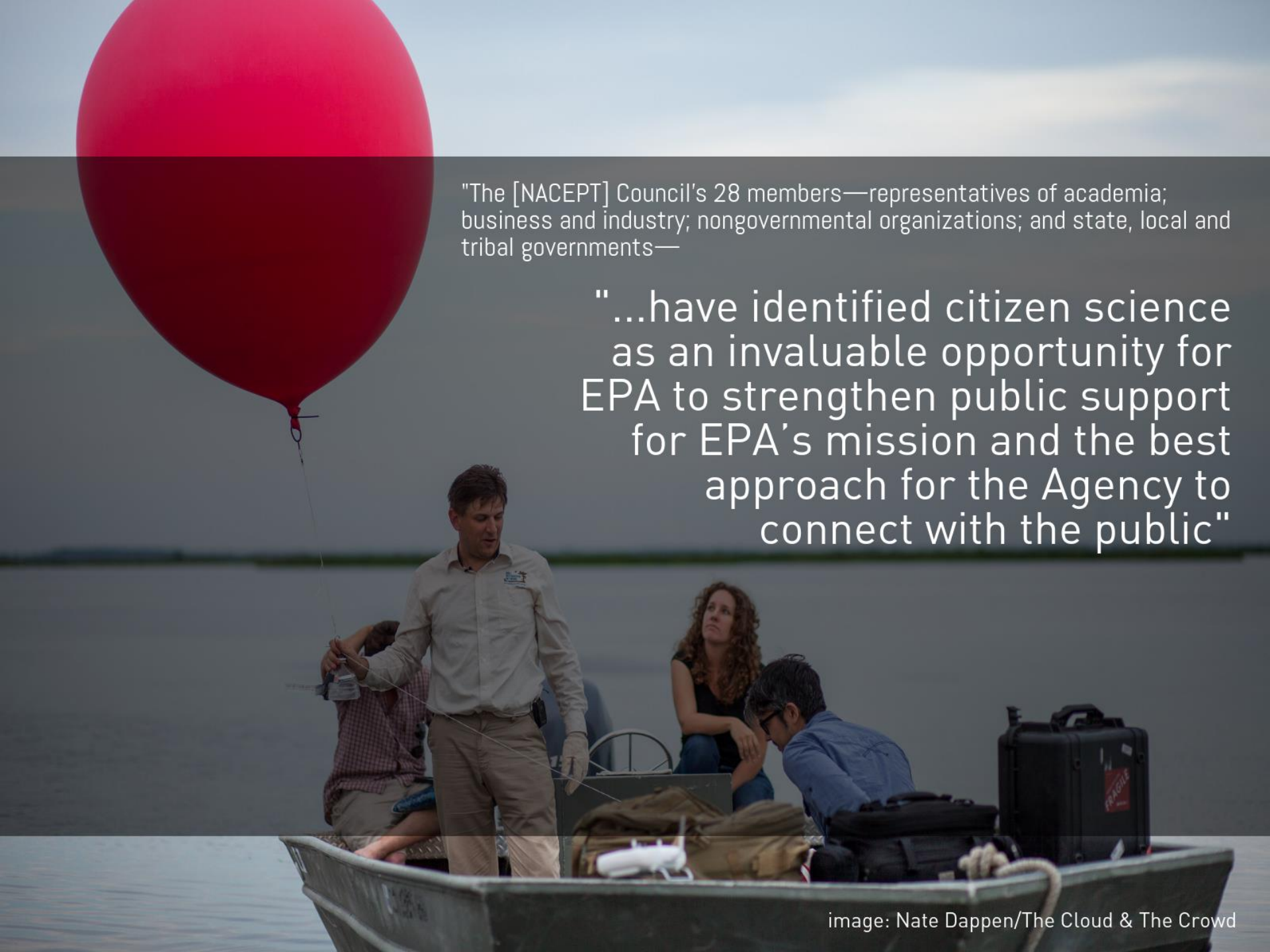# Environmental Protection Belongs to the Public

A Vision for Citizen Science at EPA

images: New York Harbor SEALS, Gowanus Canal Conservancy/Gowanus Low Altitude Mappers, Chicago Botanic Garden

National Advisory Council for Environmental Policy and Technology (NACEPT)

December 2016

"The [NACEPT] Council's 28 members—representatives of academia; business and industry; nongovernmental organizations; and state, local and tribal governments—

"...have identified citizen science as an invaluable opportunity for EPA to strengthen public support for EPA's mission and the best approach for the Agency to connect with the public"

image: Nate Dappen/The Cloud & The Crowd

Citizen science

the public participates voluntarily in the scientific process, addressing real-world problems in ways that may include formulating research questions, conducting scientific experiments, collecting and analyzing data, interpreting results, making new discoveries, developing technologies and applications, and solving complex problems.

I WANT YOU
FOR CITIZEN SCIENCE
NEAREST RECRUITING STATION

community (citizen) science

collaboratively-led scientific investigation and exploration to address community-defined questions, allowing for engagement in the entirety of the scientific process.

Dosemagon and Gehrke 2016

01 EMBRACE

citizen science as a core tenet of environmental protection

image: Gowanus Canal Conservancy/Gowanus Low Altitude Mappers

Articulate and implement a vision for citizen science at EPA.

Take a collaborative approach to citizen science.

Define and communicate EPA's role in citizen science.

Emphasize place-based approaches to citizen science

INVEST

in citizen science for communities, partners, and the Agency

Dedicate funding for citizen science.

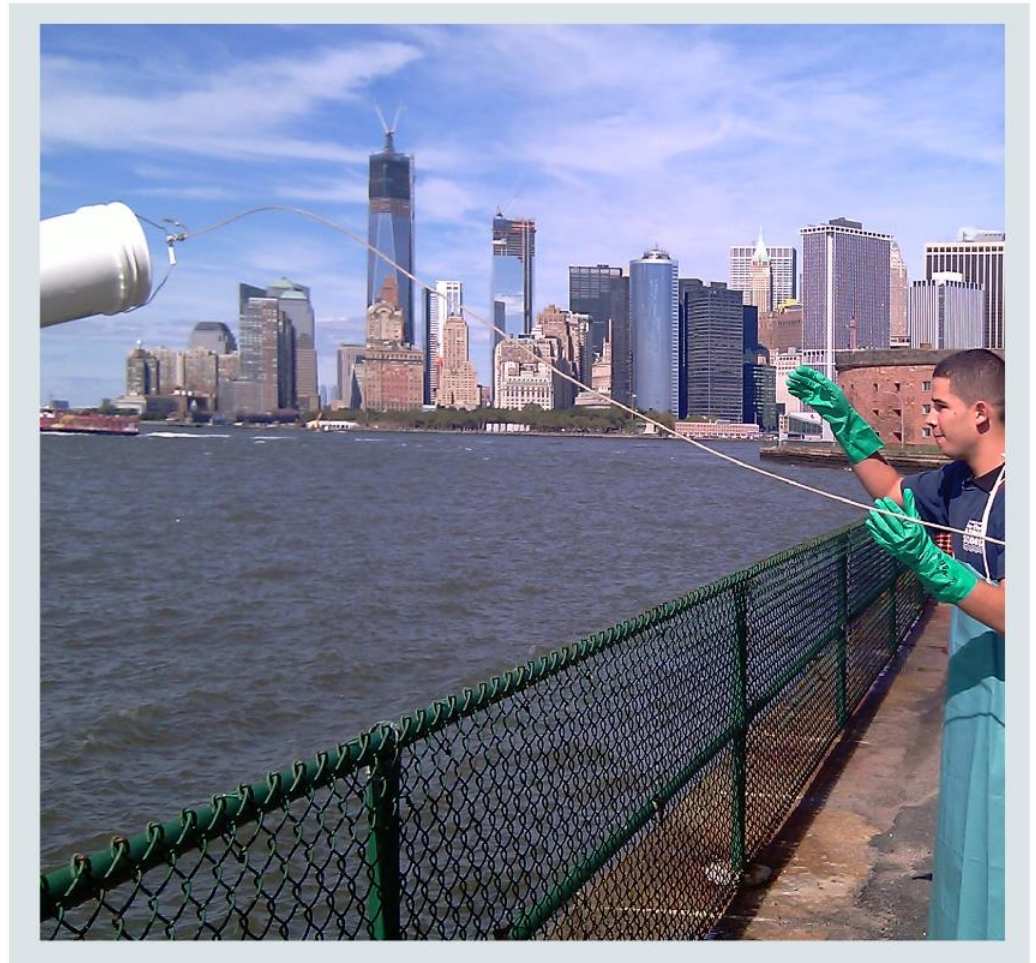Improve technology and tools and build technical capacity.

image: New York Harbor Seals

03 ENABLE the use of citizen science data

Adopt a positive, cooperative agenda that increases the utility of citizen science data.

Adopt standards for citizen science data.

Provide guidance and communicate data quality needs for different data uses.

images: Chicago Botanic Garden, Bronwen Densmore, Center in the Park Senior Environment Corps

04 INTEGRATE

citizen science into the full range of work of EPA

| Support citizen science for environmental protection beyond regulations. | Support community citizen science. | Integrate citizen science into EPA science. | Expand EPA's regulatory mission to include citizen science. |

Community engagement: awareness, partnership, development, stakeholder engagement, public outreach

Case Studies:

Citizen Science in Great Smoky Mountains National Park

Environmental Health Organizing in El Paso, Texas

Condition indicator: media campaign, cross-sector stakeholder involvement, request for further study or involvement by government agency and/or research institutions

Case Studies:

Argentine/Turner Rail Yard Community Air Pollution Monitoring

Southeast Alaska Tribal Toxins Partnership

Management decisions: remediation, restoration, community solution enactment

Case Studies:

Canton Creek Snorkel Survey

Composting Food Waste with Fermentation

Regulatory standard setting: new mandatory and voluntary standards, development of best practices, revision of prior standards, changes in methodologies for measuring compliance status

Case Study:

The Dewey-Humboldt Arizona Garden Project

Community Engagement	Education	Condition Indicator	Research	Management	Regulatory Decisions	Regulatory Standard Setting	Enforcement

Education: Environmental and STEAM literacy, civic participation, stewardship

Case Studies:

Ironbound Community Corporation Partnership

Center in the Park's Senior Environment Corps

Research: creating baseline datasets, identifying trends and hotspots in health and ecological change over time, filling gaps in datasets

Case Studies:

Watershed Monitoring in the Mill (Otter) Creek Watershed

Friends of the Shenandoah River

Regulatory decisions: permits, licenses, leases, environmental permits, zoning and rezoning, site plan approvals, mitigation requirements

Case Study:

Aerial Imagery of the United Bulk Terminals in Plaquemines, Louisiana

Enforcement: launching of inspections; investigations; prosecution of administrative, civil or criminal violations; imposition of new permit conditions; liability

Case Study:

Tonawanda Coke Air Monitoring

- Beyond research and peer-reviewed publications, what are the range of impacts that can come from a citizen science project?

- How can projects collaborate for maximum impact, from engaging communities all the way to enforcement action?

- How can different types of partnerships support identifying, collecting and using appropriate data and information towards different outcomes?