

Looking Forward:

*Challenges and
Opportunities for
HEI*

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Vice President

HEI Annual Conference

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HEI: Drawing on the Best of the Science Community

A Deep Well of Science and Technology Experts



The Many Faces of HEI

HEI Board, Technical Staff

Standing Committees: Research, Review,
Energy, GHOC, ISOC, EJ

Special Panels: Traffic, SCET

Oversight Panels; Reanalysis, ACES, Diesel EPI,
GAM,

Ad-hoc Review Panels

Stakeholder Advisory Panels, EJ, Global,
Reanalysis, ACES

Regular input from Sponsors, NGOs, more

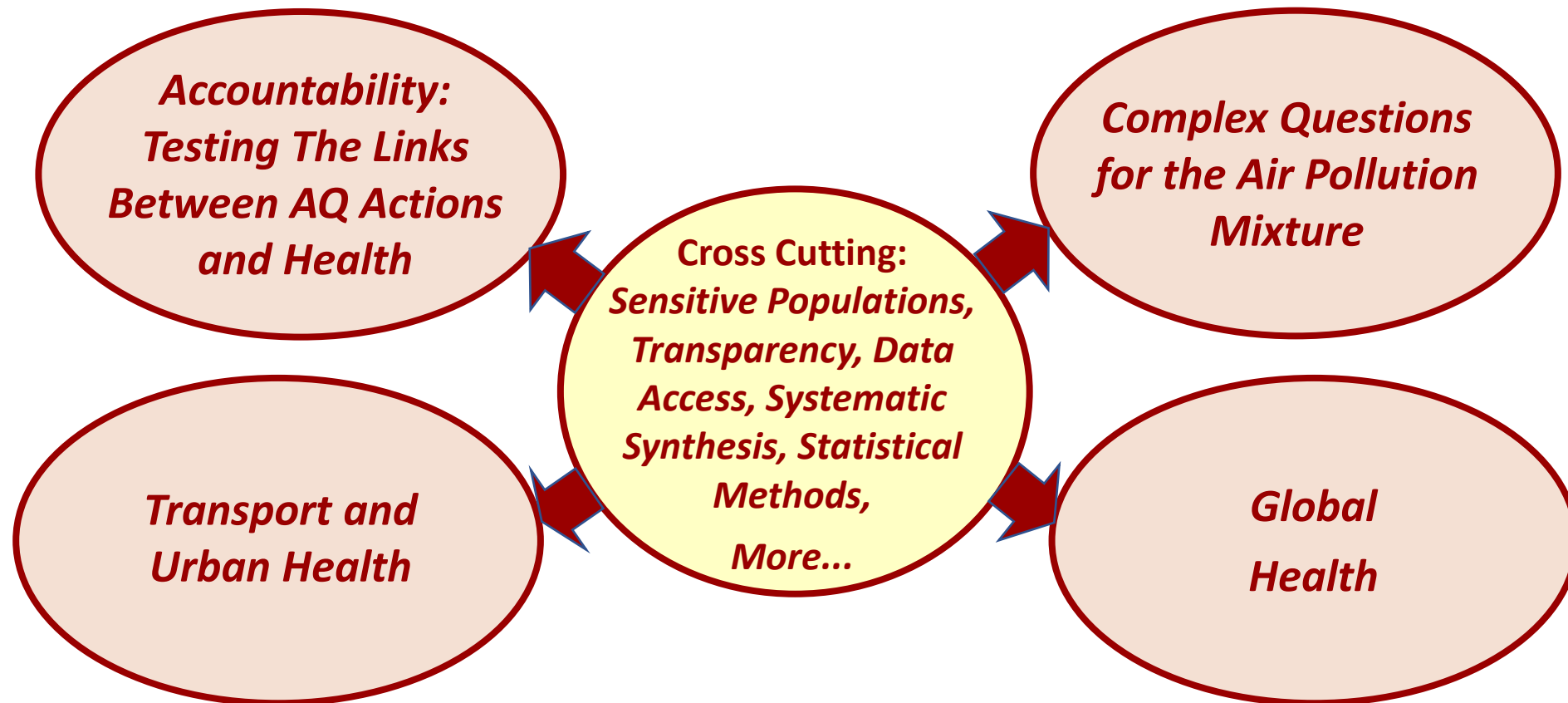


HEI Today: HEI's Strategic Plan

- ✓ Targeting HEI's research and review activities.
- ✓ Responding to the needs of HEI industry and government sponsors and other interested parties.
- ✓ Anticipating future policy and technology events.
- ✓ Evolving over time to adapt to changing knowledge and events.



HEI Today: Four Key Initiatives



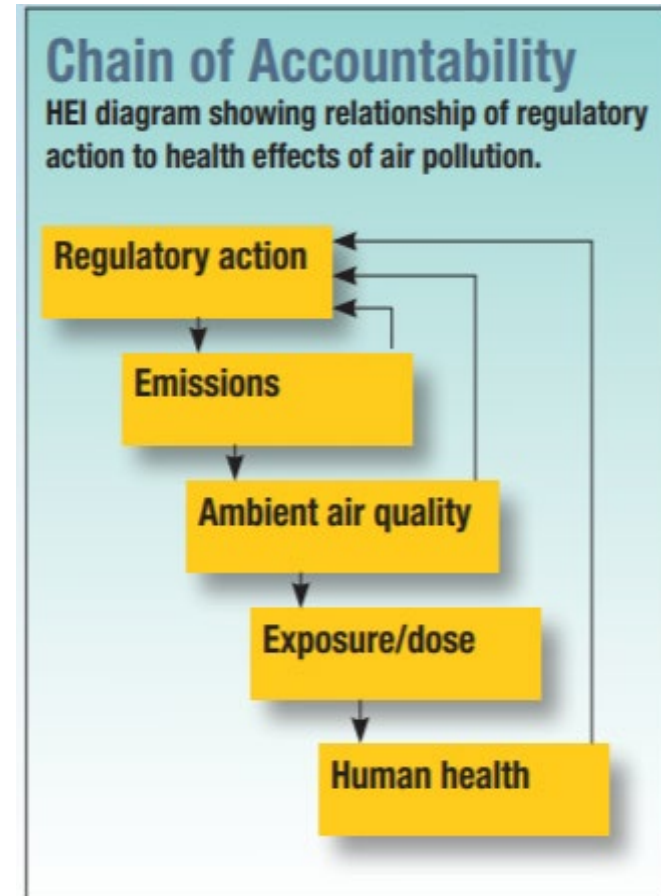
And a Fifth Initiative Underway: *HEI-Energy*

*Targeted Exposure and
Health Science to Inform
Transformation of the
Nation's Energy Systems*

The Challenges Today:

Accountability: Testing The Links Between AQ Actions and Health

- Can we better test and quantify the consequences of policy actions on air quality and health?
- How can examinations of air quality interventions help us analyze cause and effect?
- Can these studies improve cost-benefit analyses of future actions?



*The Challenges
Today:*
Complex Questions
for the Air Pollution
Mixture



Testing associations between air pollution exposure and health effects *below* standards.

- **Are current standards sufficiently protective?**

New, low-cost sensors and satellite remote sensing promise to improve exposure assessment

- **But many challenges to overcome.**

Studies, including NPACT, report no clear-cut links between PM characteristics and health.

- **Questions about differential toxicity persist.**

The Challenges Today: Transport and Urban Health

A host of new technologies – EVs, AVs, shared ride and goods delivery services are changing the future of transport

- But many challenges will persist in United States, Europe, LMICs:
 - Long-lived internal combustion engines
 - Questions about NO_x, UFP, non-tailpipe, in-use emissions.
 - New steps to tighten both tailpipe and GHG standards.
- And a growing focus on noise, socioeconomic status, access to green space, others
- **NEW RFA:** *Assessing the Health Effects of TRAP in a Changing Urban Transportation Landscape*



The Challenges Today: HEI-Global

Growing Markets, High Local and Transported Air Pollution, Public Health Impacts

- Globally air pollution is 4th leading risk factor for mortality.
- Nearly everyone lives in areas above the updated WHO Guideline for PM_{2.5}.
- Major standard setting and source control getting underway.
 - Limited science, not widely accepted.
 - A lack of data on which sources pose greatest risk,
 - A need to understand all sources — coal use, industry, household fuel combustion, waste, transport — in context.



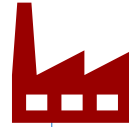
HEI Global Platform

Supported by: Clean Air Fund, Children's Investment



State of Global Air

Flagship annual report presents global and country-specific air pollution exposures, health impacts, and trends. (IHME-GBD)



Global Burden of Disease from Major Air Pollution Sources

HEI Research Report released December 2021.



Targeted Analysis, Reports, Active Communication

Regional *Spotlight* Reports, Special Reports, Policy Briefs, and more.



Capacity Building

Support for targeted research and strengthening local investigator capacity in selected geographies (e.g., India).

*The Challenges
Today:
HEI-Energy
Supported by EPA,
industry, and
philanthropy*

-Science to identify potential exposures from current oil and natural gas operations

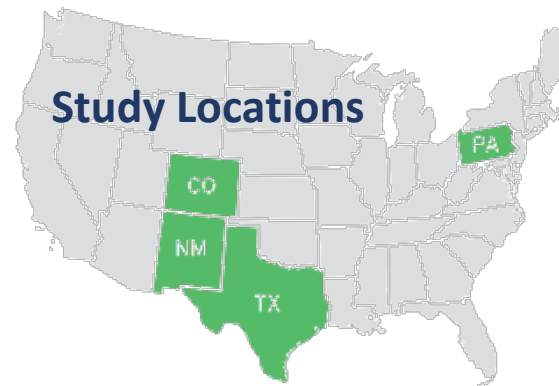
-Targeting the highest priority topic: what are the exposures and where are they coming from?

-Strong commitment to community engagement and understanding health, disproportionate impacts

-Laying a foundation to inform the health benefits and unintended consequences of the energy transition

HEI Energy

Community Exposure Research: AQ, Noise, and Water



Air Quality and Noise

Tracking Community Exposures and Releases (TRACER) Collaboration



Jeffrey Collett
Colorado State



Lea Hildebrandt Ruiz
Univ of TX-Austin



Meredith Franklin
Univ of Toronto

- Quarterly meetings to coordinate

Study Duration: 2022-2024

Water Quality



Jennifer Baka
Penn State




Joseph Ryan
Univ of Colorado

Study Duration: 2022-2023

In-kind support provided by sponsors and state officials

HEI Energy: Extensive Community Engagement



	September 2021
A Health Effects Institute Affiliate	Guiding Principles for Research and Stakeholder Engagement
HEI-Energy Health Effects Institute-Energy 75 Federal St., Suite 1400 Boston, MA 02110, USA +1-617-488-2300 www.hei-energy.org	<i>Trusted Science, Clean Environment, Better Health</i>

*Future
Challenges ...
AND
Opportunities*

- *Assessing Air Pollution Solutions for Marginalized (EJ) Communities*
- *Air Pollution and Health in a Changing Transportation Landscape*
- *Health Implications of the Energy Transition*

HEI Future:

Assessing Air Pollution Solutions for Marginalized (EJ) Communities

- In response to increased awareness of *disparate exposures and effects*
- *HEI workshop: nearly 60* community, academic, government, and sponsor participants (Atlanta, October 2022)
- Need for new funding models to support:
 - Partnership building and continuity of engagement
 - Flexible research designs
 - Research translation that engages multiple sectors
- **HEI has empaneled new *EJ Advisory Council* and *Oversight Panel* and will soon launch new RFAs with significant community engagement**



HEI Future:

Air Pollution and Health in a Changing Transportation Landscape

- Rapidly Changing Transportation Landscape (see tomorrow's session!)
 - New technologies, new fuels
 - Different Approaches for Different Market Sectors (Heavy, medium, and light duty)
- Rapid Motorization in Low- and Middle-Income Countries
- HEI consulting with existing sponsors and new fuels and technology experts to identify key future priorities:
 - **Assessing the health impacts of legacy internal combustion engines**
 - **Examining Benefits and Effects of New Technologies and Fuels (EVs, Fuel Cells, Hydrogen, Low Carbon Fuels)**

HEI Future:

Health Implications of the Energy Transition

- **Vast Changes in the Production and Transport of Energy**
 - New fuels (e.g., hydrogen); new decarbonization technologies (e.g., CCUS); and much more
- **HEI Energy Already Beginning to Engage:**
 - Completing research on community exposures to oil and gas operations with extensive community engagement (*see the posters today!*)
- **Key Future Priorities:**
 - **Assessing the health benefits and unintended consequences of major national energy choices (coal, nuclear, renewables and others), and**
 - **Assessing similar health-based questions around a specific set of operations, the new regional hydrogen hubs and CCUS.**

Looking Ahead:

Initial thoughts from some HEI sponsors....

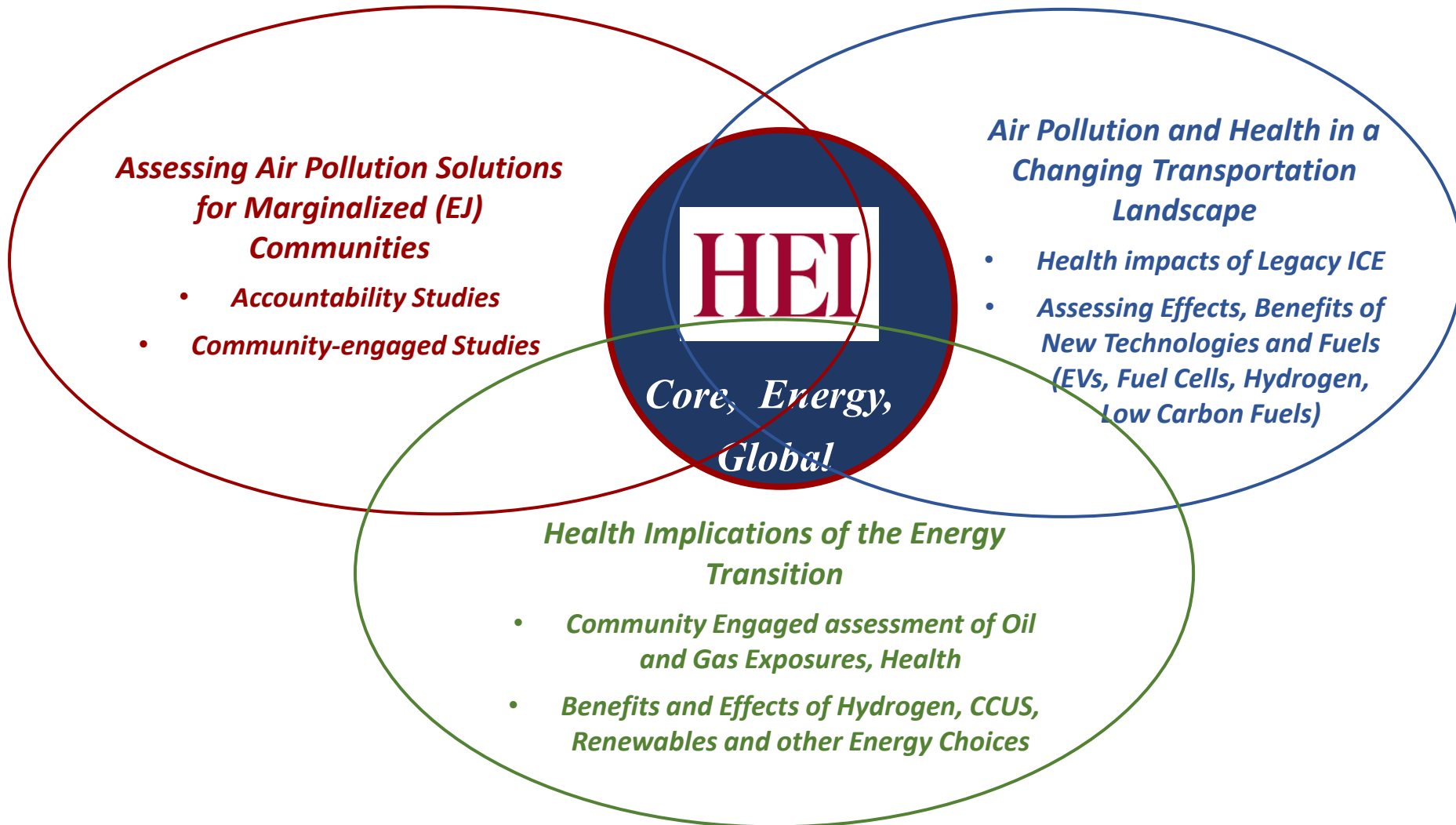
Potential Public Health Benefits and Impacts of:

- Major expansions and interconnectivity of the electrical grid
- Increased battery production, recycling and disposal
- Increased production and processing of rare earth metals
- The development of widespread hydrogen infrastructure
- Reduced fleet turnover rates and health consequences for EJ communities

Where can HEI fit into the paradigm shift that will play out in the coming decades?

Future Opportunity: Integrated Science for Informed Decisions

Leveraging the Deep Well of HEI Science



Looking Ahead: Building the 2025-2030 Strategic Plan!

Work with input from sponsors, science, community stakeholders to create an exciting new Strategic Plan

Key Process Milestones

- Fall/ Winter 23-24 -Visits to individual sponsors, stakeholders, science community
- March - 2024 -Sponsor meeting with Research Committee to hear recommendations
- April 2024 -First Draft Presented in special session at 2024 HEI annual meeting,
-Public comments invited
- June – Sept 2024 -Revised Plan, Review by Sponsors
- Dec-Jan 2024-2025 -Plan adopted by HEI Board

Final HEI Strategic Plan effective April 1, 2025

THANK YOU!

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