

# Climate Mitigation Breakout Group

What efforts exist to prevent, reduce, or reverse the emission of greenhouse gases?

*Remember convergent and cross-cutting themes: climate justice, policy, communication, arts, etc. ....*

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# Grand Challenge: Mitigation

- Convergent Research Opportunities (thematic)

Where do climate researchers have opportunities to align their efforts?

- Current Penn State Assets and What Makes Us Unique

What is available at Penn State? What are our unique strengths?

- Barriers to Action

What, if anything, hinders your ability to further your climate work?

- Exemplar “success stories”

Where have you seen climate work shine?

- Recommendations and Next Steps

What do you see as opportunities for climate work at Penn State?

# Grand Challenge: Mitigation

Convergent Research Opportunities:

**A few examples were listed during the discussion:**

- Mitigation at multiple scales (local, regional, global) – where are the interactions occurring?
- PSU CAN is developing a plan and identifying potential solutions so that Penn State meet negative carbon emissions
- Interactions between technology and society

# Grand Challenge: Mitigation

## Assets/Unique:

**Alumni network:** Penn State alumni network includes people in high places in the fossil fuel industry (Shell Energy, etc).

**Size and expertise:** Penn State is very big and has experts that can connect science/ideas to application in our local/state/national communities.

- Expertise in agriculture: focus on carbon sinks and sequestration

- Expertise in engineering: focus on renewable energy in multiple Colleges (College of Earth and Mineral Sciences, College of Engineering)

- PSU Extension: Infrastructure in place to connect with the community. Noted that PSU Extension already has a biomass team with connections to the state and knowledge of where money is going.

**A general theme that Penn State's assets also presents its greatest barriers!**

# Grand Challenge: Mitigation

## Barriers:

**Institutional inertia:** How do we create change given the current culture at Penn State?

- Penn State has an interest in the fossil fuel industry. How do we balance this interest with a goal to achieve carbon negative emissions as an institution? Finding this balance is a challenge PSU CAN is currently facing.
- Institutional inertia can also occur with infrastructure, business models, and expertise.

**Size and expertise:** Penn State is very big. What are the best ways to find each other and bring together expertise?

**Knowledge gaps:** Could use more focus on biomass and sequestration!

- Can we enhance carbon capture and sequestration across natural systems associated with Penn State?
- PSU CAN mentioned that they are looking at biomass and sequestration.

**Scale mismatches:** How do we monitor whether mitigation efforts are actually working? Time scale to see results is quite long (~ 50 years), so what can we monitor in the short term?

**A general theme that Penn State's assets also presents its greatest barriers!**

# Grand Challenge: Mitigation

## Success Stories:

### A few examples were listed during the discussion:

- Lightsource BP
- Buildings efforts at Penn State
- Leadership in wind, solar, and batteries are strengths at Penn State
- Strong research portfolio on mitigation at Penn State. A particular strength in understanding how ecosystems act as carbon sinks (shout out to Armen Kemanian)

# Grand Challenge: Mitigation

## Recommendations/Next Steps:

**Creating community:** How do we organize so that forums are not the only time we get together? Are there ways to solidify so that we have a more outward presence? What are tradeoffs between a centralized and decentralized approach?

**Funding the needed work force:** We need to mobilize a work force that scales up to a global-scale problem (climate change). How do we fund the work force and make it sustainable?

- Research groups require students; therefore, understanding the funding cycle is critical
- Funding options: Foundations and energy industries looking to make changes (especially at the state level)

**Community engagement:** A critical component is engaging with the surrounding community.

- Recognize context and what can be accomplished in a State College-like setting versus a city. Fewer barriers in State College might make actions easier to accomplish than in a large city. However, in a city setting, non-profits are great resources (shout out to green building initiative in Philly). Need to connect with these folks and regional planning folks to make changes in a city.
- Carbon reduction plan being announced for Centre region.
- Build a bridge between Penn State students and the community. Students have powerful voices!

**Education:** Another critical component is education and this needs to be a priority.

- Develop new general education courses that are cross-cutting.
- How do we address the barrier that making changes to required courses and curriculum can be very slow?
- Potential for collaboration between College of Earth and Mineral Sciences and College of Engineering?