

CAES Annual Pitch Event 2021: Pathways to INL Net Zero

Information Session

Michael Baskin, PhD

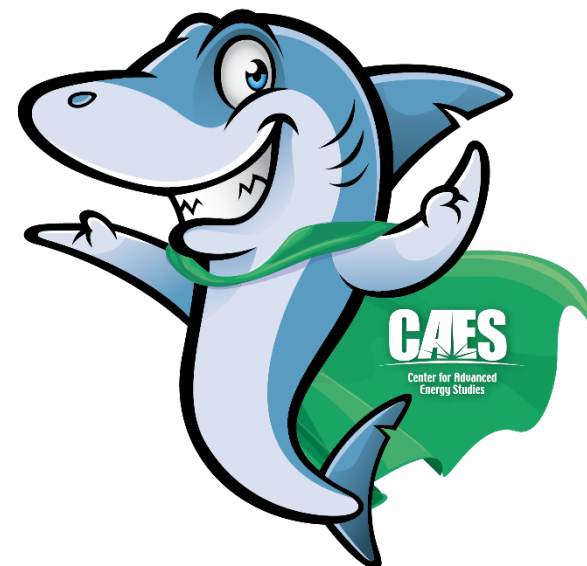
CAES Innovation Advisor

June 30, 2021



Agenda

- Framework
- Team
- INL GHG Data
- Track Structure
- Stages of the Contest
- Follow-On/Seed Funding
- Evaluation Criteria
- Important Information



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Framework

In April 2021, Idaho National Laboratory announced it will become Net Zero by 2030, an ambitious but feasible goal. To meet that timeline, your most promising ideas are needed, and through the 2nd CAES Annual Pitch Event 2021: Pathways to INL Net Zero, CAES will improve, refine, and fund the most promising for further development to translate them into implementation.

The 2nd CAES Annual Pitch Event 2021: Pathways to INL Net Zero is focused on leveraging talent within the CAES consortium (Boise State University, Idaho National Laboratory, Idaho State University and University of Idaho) to further accelerate the INL Net Zero initiative as well as further develop the innovation culture across the CAES consortium. It is a developmental contest with impact.

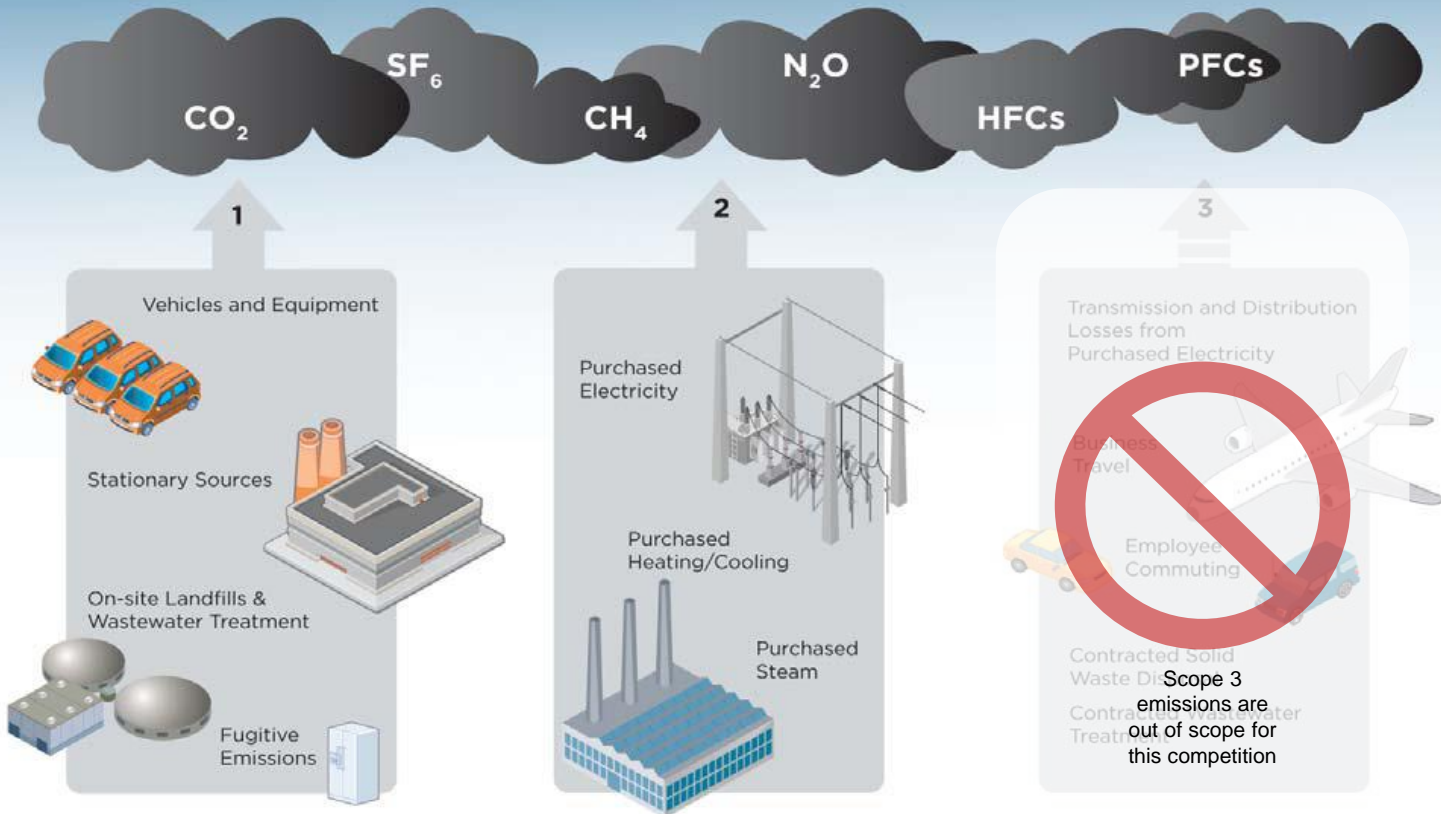


CAES Annual Pitch Event 2021: Pathways to INL Net Zero Core Execution Team

- Michael Baskin/CAES Innovation Advisor – Event Lead
 - Darcie Martinson & Dena Tomchak – Platform Leads
 - Liam Boire and Dan Herway (EES&T) – Track A: Demonstration Track
 - Chris Ischay – INL Facilities Lead + Track B: Implement Today
 - Natalie Summers – Training Lead/CO*STAR & RIIS
 - Steve Fitchpatrick – Pitch Coaching
 - Amy Woodard/CAES Budget & Finance
 - Matt Evans/CAES Comms
-
- Steve Hartenstein (Advisor)
 - Laszlo Gyorffy (Advisor)



Common Sources of Federal Greenhouse Gas Emissions



SCOPE 1:

Greenhouse gas emissions from sources that are owned or controlled by a Federal agency.

SCOPE 2:

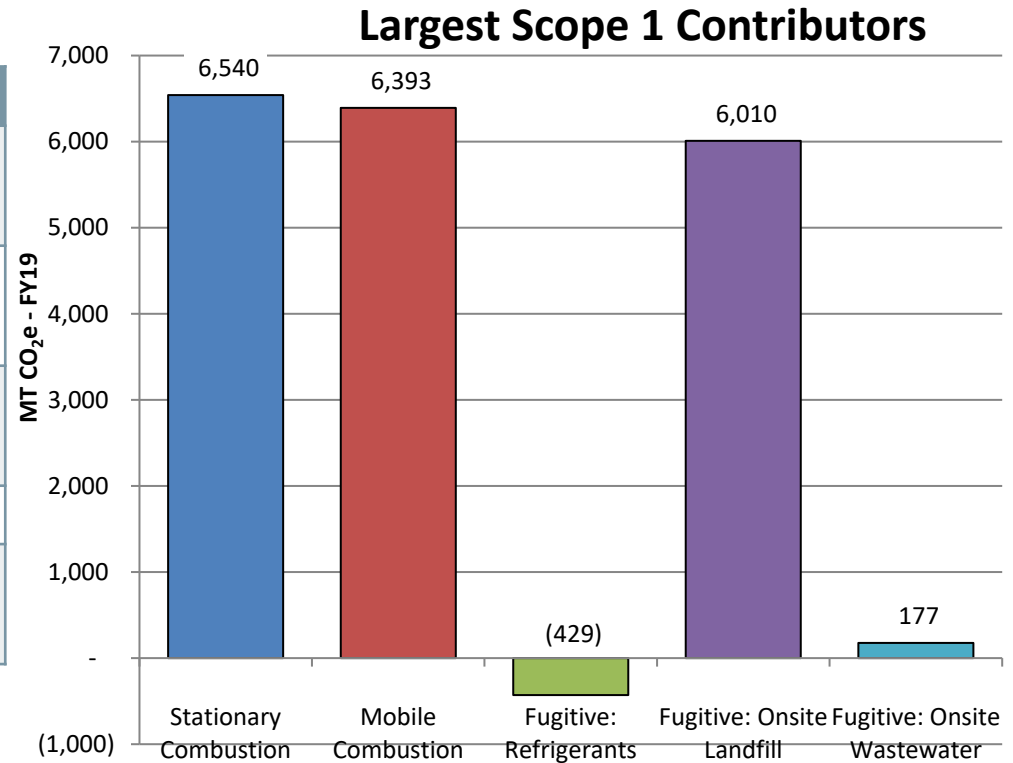
Greenhouse gas emissions resulting from the generation of electricity, heat, or steam purchased by a Federal agency.

SCOPE 3:

Greenhouse gas emissions from sources not owned or directly controlled by a Federal agency but related to agency activities.

Scope 1 Direct Emissions – 18,691 MT CO₂e

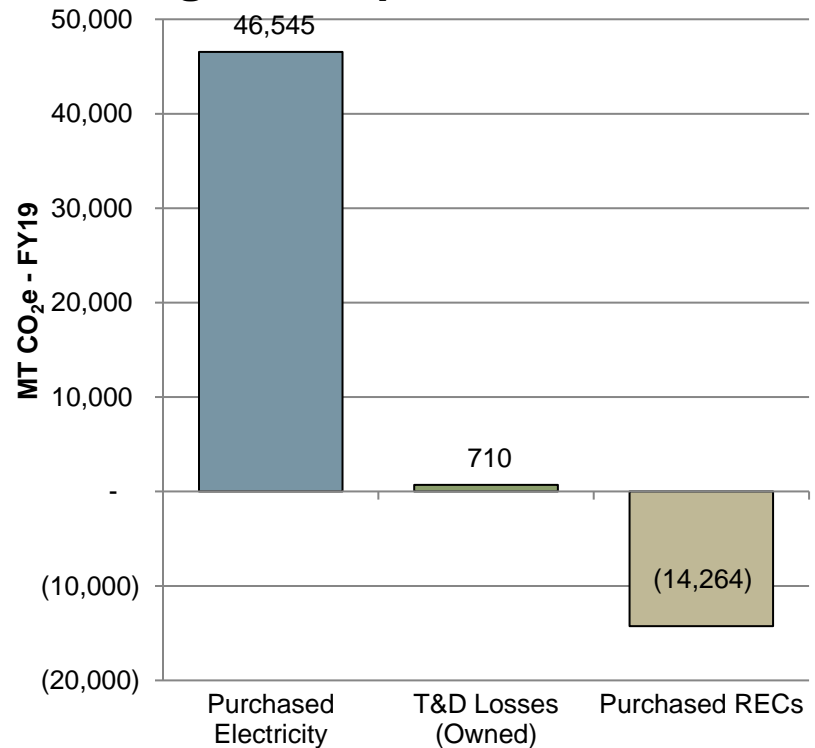
FY 2019 Scope 1 Emissions	MT CO ₂ e
Stationary Combustion <ul style="list-style-type: none"> Boilers Generators 	6,540
Mobile Combustion <ul style="list-style-type: none"> INL vehicle fleet (light & heavy) Buses 	6,393
Fugitive – Refrigerants <ul style="list-style-type: none"> Negative due to chemical inventory return 	-429
Fugitive – Onsite Landfill	6,010
Fugitive – Onsite Wastewater Treatment <ul style="list-style-type: none"> Sewage lagoons Septic tanks 	177



Scope 2 Indirect Emissions – 32,991 MT CO₂e

FY 2019 Scope 2 Emissions	MT CO ₂ e
Purchased Electricity	46,545
T&D Losses (Owned)*	710
<small>* assumes the national average T&D loss factor of 6.59%</small>	
Purchased RECs	-14,264

Largest Scope 2 Contributors



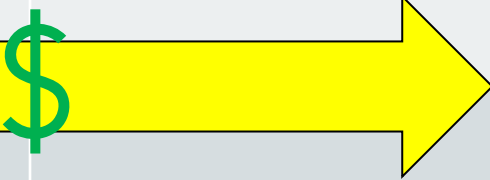


Scope	Emissions Category	FY 2019 GHG Emissions (MT CO ₂ e)
1 (Direct)	Stationary Combustion	6,540.40
	Mobile Combustion	6,393.26
	Fugitive Emissions: Refrigerants	-429.39
	Fugitive Emissions: Onsite Landfill	6,009.75
	Fugitive Emissions: Onsite Wastewater Treatment	177.34
	SCOPE 1 TOTAL	18,691.36
2 (Indirect)	Purchased Electricity	46,544.53
	Transmission & Distribution Losses (Owned)	709.77
	Purchased RECs	(14,263.76)
	SCOPE 2 TOTAL	32,990.54
3 (Indirect)	Transmission & Distribution Losses (Shared)	3,067.28
	Employee Commuting	10,715.91
	Business Air Travel	6,746.14
	Business Ground Travel: Rental Vehicle	758.12
	Business Ground Travel: Personal Vehicle	454.52
	Contracted MSW Disposal	275.11
	Contracted Wastewater Treatment	12.95
	SCOPE 3 TOTAL	22,030.03
	TOTAL ANTHROPOGENIC EMISSIONS^a	73,711.93
Biogenic	Mobile Combustion	2,266.39
	Fugitive Emissions: Onsite Landfill	733.00
	Contracted MSW Disposal	30.26
TOTAL BIOGENIC EMISSIONS	3,029.65	
TOTAL EMISSIONS (ANTHROPOGENIC + BIOGENIC)	76,741.57	

CAES Annual Pitch Event 2021: Pathways to INL Net Zero

Problem Statements by Track



CAES Annual Pitch Event 2021: Pathways to INL Net Zero

Phase I: Advertise, CO*STAR, Submission	Phase II: Down-Select, Develop, Resubmit, Down-Select	Phase III: Road to Finals & Final Pitch Event	Phase IV: Funding, Exploration & Hand-Off
July 05– August 01	Aug 02 – Aug 20	Aug 21 – Sep 02	Sep 02 – Dec 31
Track A: Demonstrations			
Track B: Facilities/Implement Today			
Track C: Open Submissions			

CAES Annual Pitch Event 2021: Pathways to INL Net Zero Track A Scope

Track A: Demonstration projects that reduce INL Greenhouse Gas (GHG) emissions footprint

- Propose a technology demonstration, with a preference for a current Technology Readiness Level (TRL) of 4-7, that could be initiated, with the support of external funding sources (current or potential), at small, medium or large-scale, by 2024, within the INL site, INL footprint within Idaho Falls, or other Idaho/regional location, that leads to reduction in INL Greenhouse Gas (GHG) Scope 1 or Scope 2 emissions, from sources such as: vehicles and heavy equipment, landfills, wastewater treatment, stationary combustion, electricity generation, and/or transmission/distribution losses, or other combination thereof. Submissions which are in scope will drastically decrease, minimize, or halt INL-related GHG emissions through demonstrations of new technologies or applications, increase the efficiency of current technologies, and/or combine technologies in new or novel ways.



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Track B Scope

Track B: Implement Today

- Propose commercially-available/proven technologies, applications, methods, or operating processes, at niche (one-off/single use), small, medium, or large-scale, that can be initiated within the next year, within the INL site, INL footprint within Idaho Falls, or other Idaho/regional location, that leads to any form of reduction in INL Greenhouse Gas (GHG) Scope 1 or Scope 2 emissions. Submissions which are in scope will decrease, minimize, or halt INL-related GHG emissions within the next year through existing technologies, applications, methods or operating processes, and/or combine them in new or novel ways.



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Track C Scope

Track C: Open Submission

- Propose any/all ideas, non-technology collaborations, initiatives, applications, methods, programs, operating processes, as well as technologies, that can be initiated within the next year, that can lead to any form of reduction in INL Greenhouse Gas (GHG) Scope 1 or Scope 2 emissions. Submissions to Track C: Open Submission which are in scope will decrease, minimize, or halt INL-related GHG emissions and are intended to solicit ideas and submissions that may not necessarily fall within Track A: Demonstrations and Track B: Implement Today.



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Stages of the Contest

Today

Step 1: Sign-up

Sign up for
Challenge Updates

By Aug. 01

Step 2: Submit

Form a Team,
Attend CO*STAR
Training
(July 14 & 20)
Submit your Idea

Aug. 4-18

Step 3: Semifinals

Apply RIIS feedback to
refine your proposal
and submit to make
the Finals

Sep. 02

Step 4: Finals

Pitch your developed
idea to a board of
Sharks to win seed
funding

Sep.-Dec.

Step 5: Implement

With CAES seed
funding, turn your
proposal into practice
and/or embed with
INL Facilities team.



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Follow-On/Seed Funding

- Seed Funding - CAES Program Development Funds
 - Indirect Funds that are considered programmatic
 - Choice of FY21 or FY22, or shared across FY21/22
- 3 x \$20K Track Winner Seed Awards (Program Development or Funded Time)
- 1 x \$10K INL Lab Leadership Seed Award
- 2 x \$10K CAES Collaboration Seed Award



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Evaluation Criteria

1. **Alignment with call, or need:** Did they just state that it responds to the call, or do they provide sufficient evidence they are responding to a need? Was it clear they understood the problem, and that their solution filled the subsequent gap?

2. **Feasibility ?** (Is it technically viable, is the cost to ROI ratio reasonable etc. Is the team the right one to pull it off, or do they have a plan?)

3. **Strategic Impact & Innovation.** Does the project have potential impact outside of Idaho as well? Does the project significantly reduce carbon emissions?

Track B – Strategic Impact: Can this project reduce INL carbon emissions?



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Important Information (1 of 2)

1. To participate in the competition, an individual or team must be affiliated with (employed by or enrolled at) one of the CAES entities (Boise State University, Idaho National Laboratory, Idaho State University, or University of Idaho).
2. CAES reserves the right to reassign a submission to the most appropriate track.
3. Competition entries may be submitted by an individual or a team. If a team submits an entry, one person must be designated as the lead.
4. To be eligible for the CAES Collaboration Award an entry must be submitted by a team composed of members affiliated with two or more CAES entities (refer to T&C #1).
5. An individual may submit up to three entries including team entries. An individual or team is eligible for up to a total of \$30k in awards.
6. Each submission must meet the deadlines stated on the website.



CAES Annual Pitch Event 2021: Pathways to INL Net Zero Important Information (2 of 2)

7. Each submission must be the contestant's original work. Published data can be used from any source. Participants are expected to cite others' original work or copyrighted materials, and must not plagiarize, infringe, misappropriate, or otherwise violate any intellectual property rights, privacy rights, or any other rights of any person or entity.

8. Competition entries must be suitable for general audiences (i.e., no explicit language, crude/suggestive humor, drug innuendo, or mature/suggestive themes).

9. Any intellectual property should be disclosed and cleared for submission by the contestant's home institution.

10. Submissions should not include any "Export Controlled" information. As applicable, the contestants are expected receive their institutions' approval for public release prior to submission.

11. Each contestant grants CAES permission to use and make publicly available any submission provided or disclosed in connection with the competition.

12. Failing to meet submission requirements or other submission screenings will result in ineligibility for next stage or prize.

13. CAES reserves the right to add, modify or delete Terms and Conditions.





Discussion



CAES Annual Pitch Event 2021: Pathways to INL Net Zero

Phase 0: Contest Scoping & Preparation	Phase I: Advertise, CO*STAR, Submission	Phase II: Down-Select, Develop, Resubmit, Down-Select	Phase III: Road to Finals & Final Pitch Event	Phase IV: Funding, Exploration & Hand-Off
May 03-July 04	July 05– August 01	Aug 02 – Aug 20	Aug 21 – Sep 02	Sep 02 – Sep 24

