Act on Climate
Climate-Food Systems Workshop

First, a quick poll!

Hosted by:

RI Executive Committee on Climate Change & Relish Rhody

Technical questions about zoom: email Matthew.Moretta.CTR@energy.ri.gov

We will get started shortly!

Photo credit: RI Food Policy Council

Act on Climate

Climate-Food Systems Workshop

July 27, 2022

1:00 – 2:30pm

Photo credit: RI Food Policy Council

Act on Climate Mandates

The Executive Climate Change Coordinating Council (EC4) coordinates climate change efforts across state agencies, including:

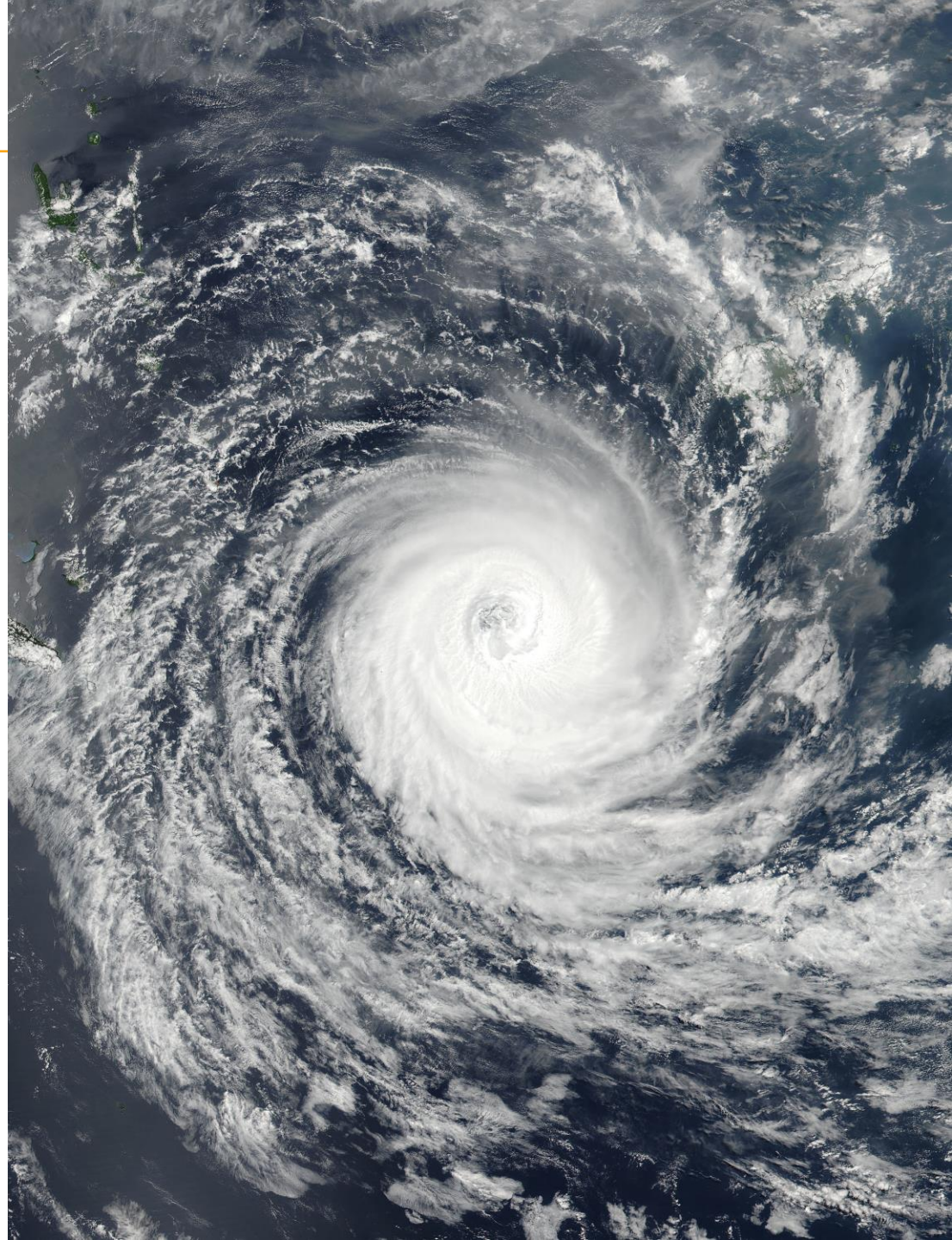
- Advance the state's understanding of the effects on climate change including food security
- Identify strategies to prepare for these effects and communicate them to Rhode Islanders

The 2021 Act on Climate establishes economy-wide emissions reduction mandates of:

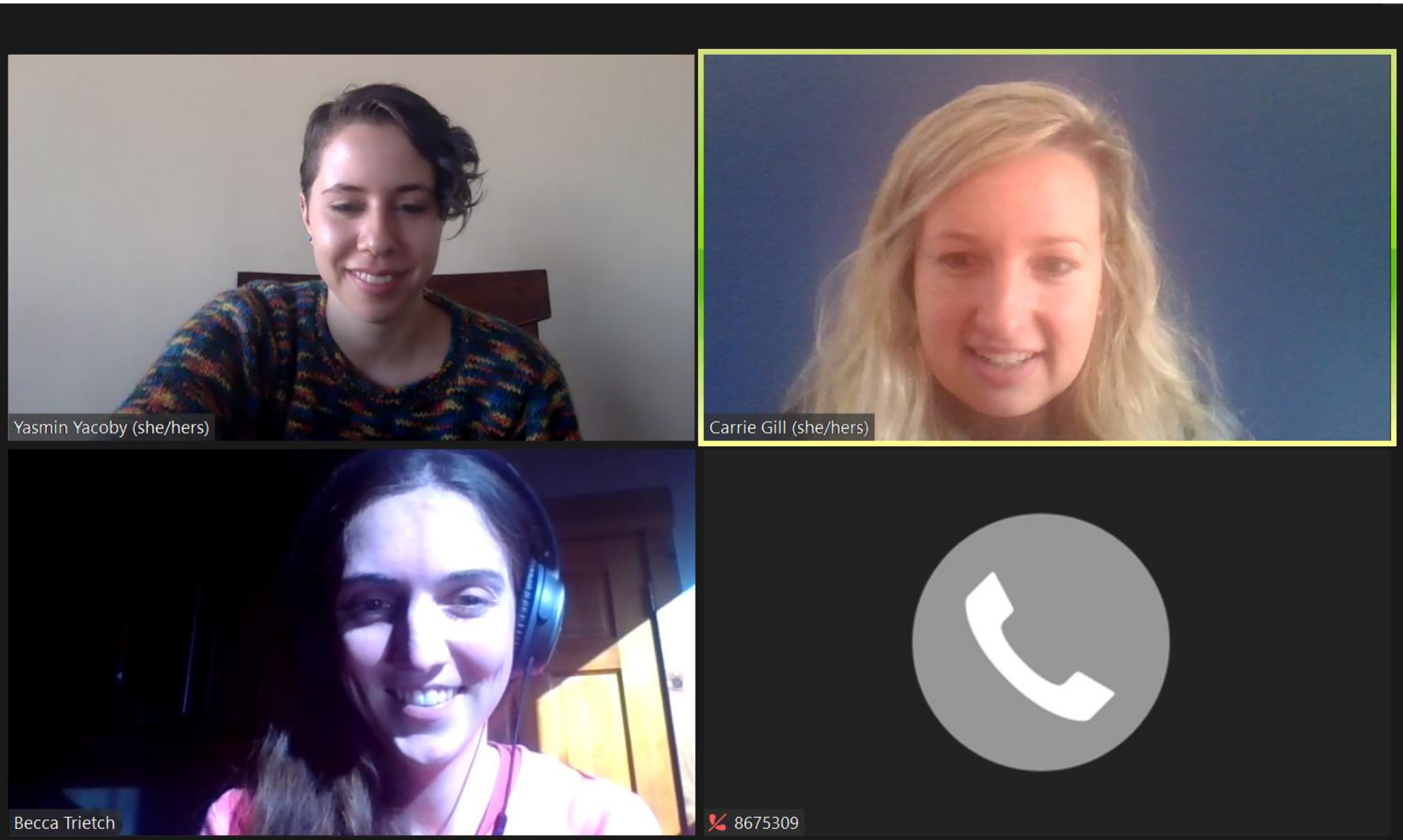
- 10% below 1990 levels by 2020
- 45% below 1990 levels by 2030
- 80% below 1990 levels by 2040
- Net-zero emissions by 2050

Panel Discussion

1. How does climate change affect food systems?
2. How do food systems affect climate change?
3. What priority actions do we need to take?

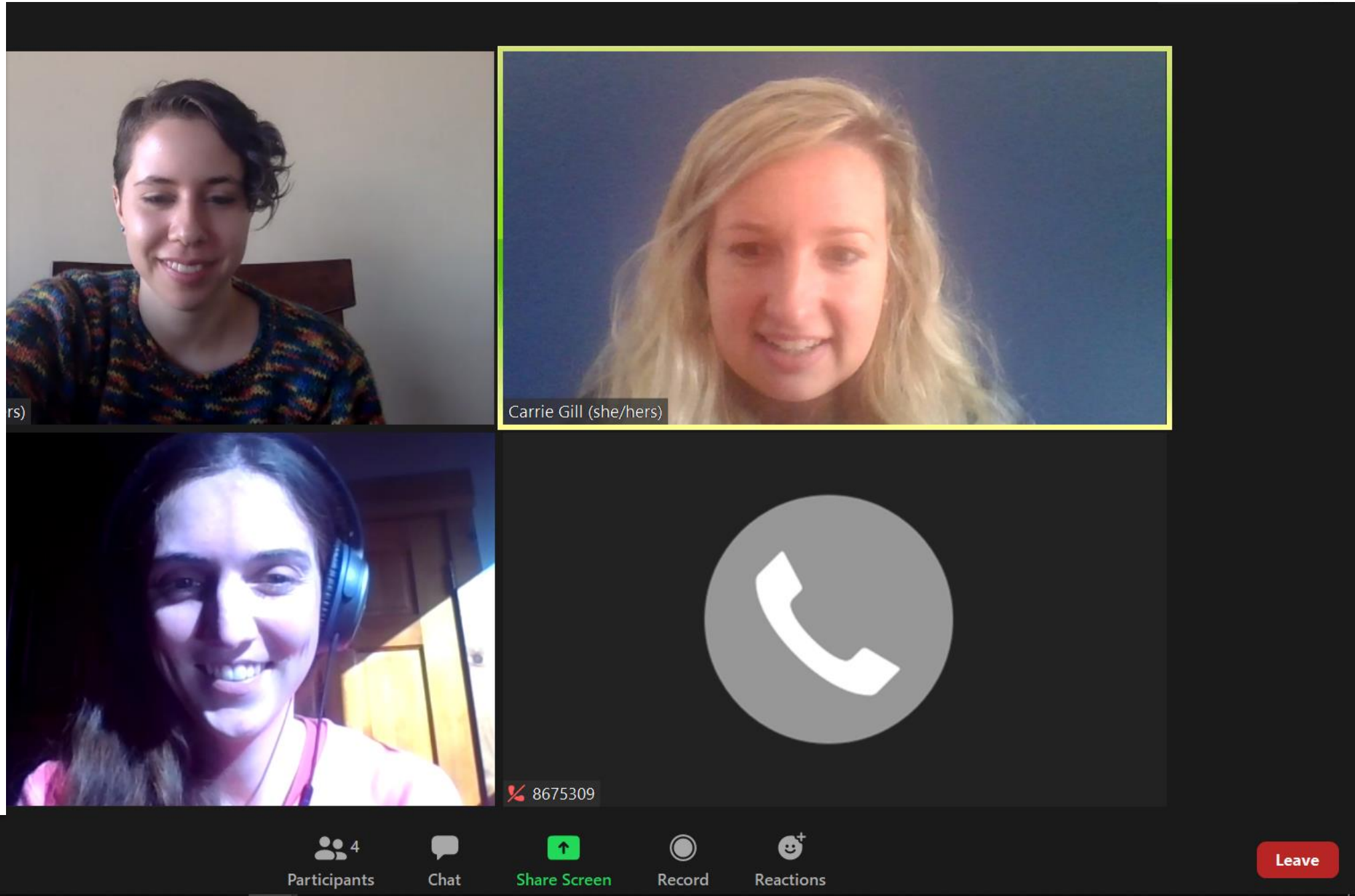


How to Participate



How to Participate

- **Unmute** yourself using the icon at the bottom right of the screen and speak your question or comment.

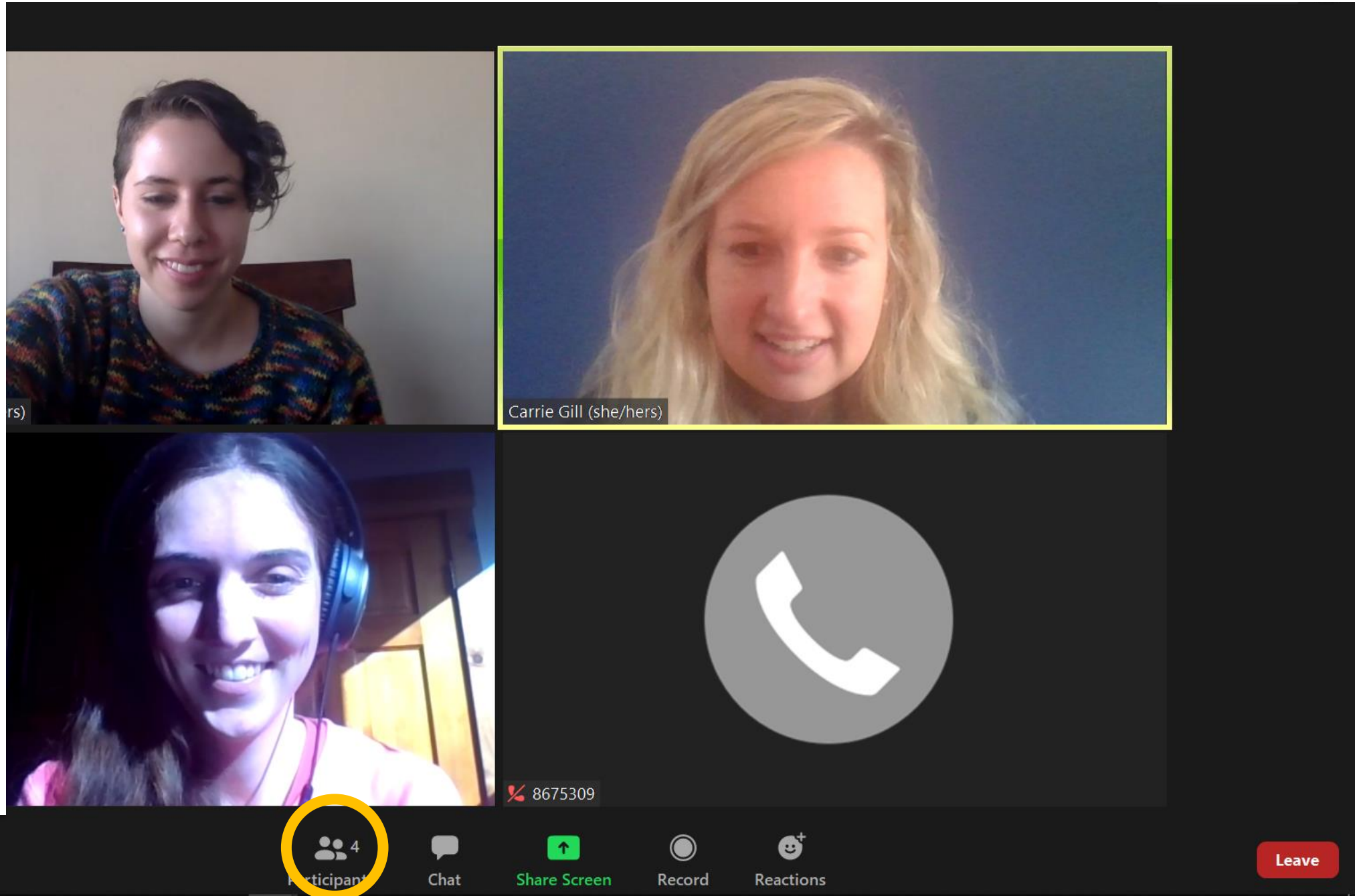


How to Participate

- Open the **chat box** by clicking on the icon at the bottom of your screen.
- Type your question or comment into chat.
- Type that you would like to speak in the chat.
- We will either read your comment or call on you to speak.

How to Participate

- Click the participants icon at the bottom of your screen then click the **raise hand** icon at the bottom left of the pop-up window to raise your hand.
- We will call on you to speak.



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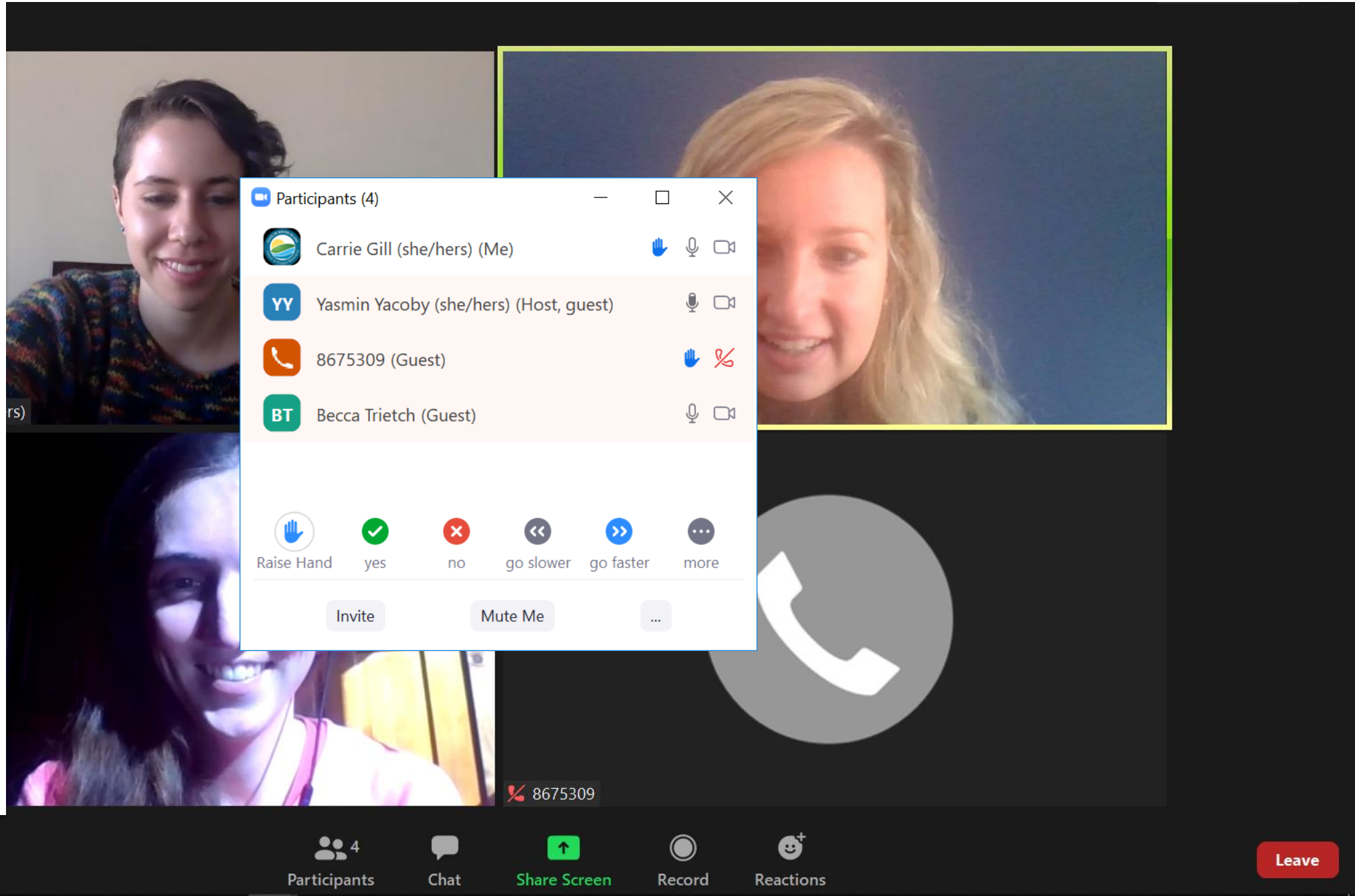

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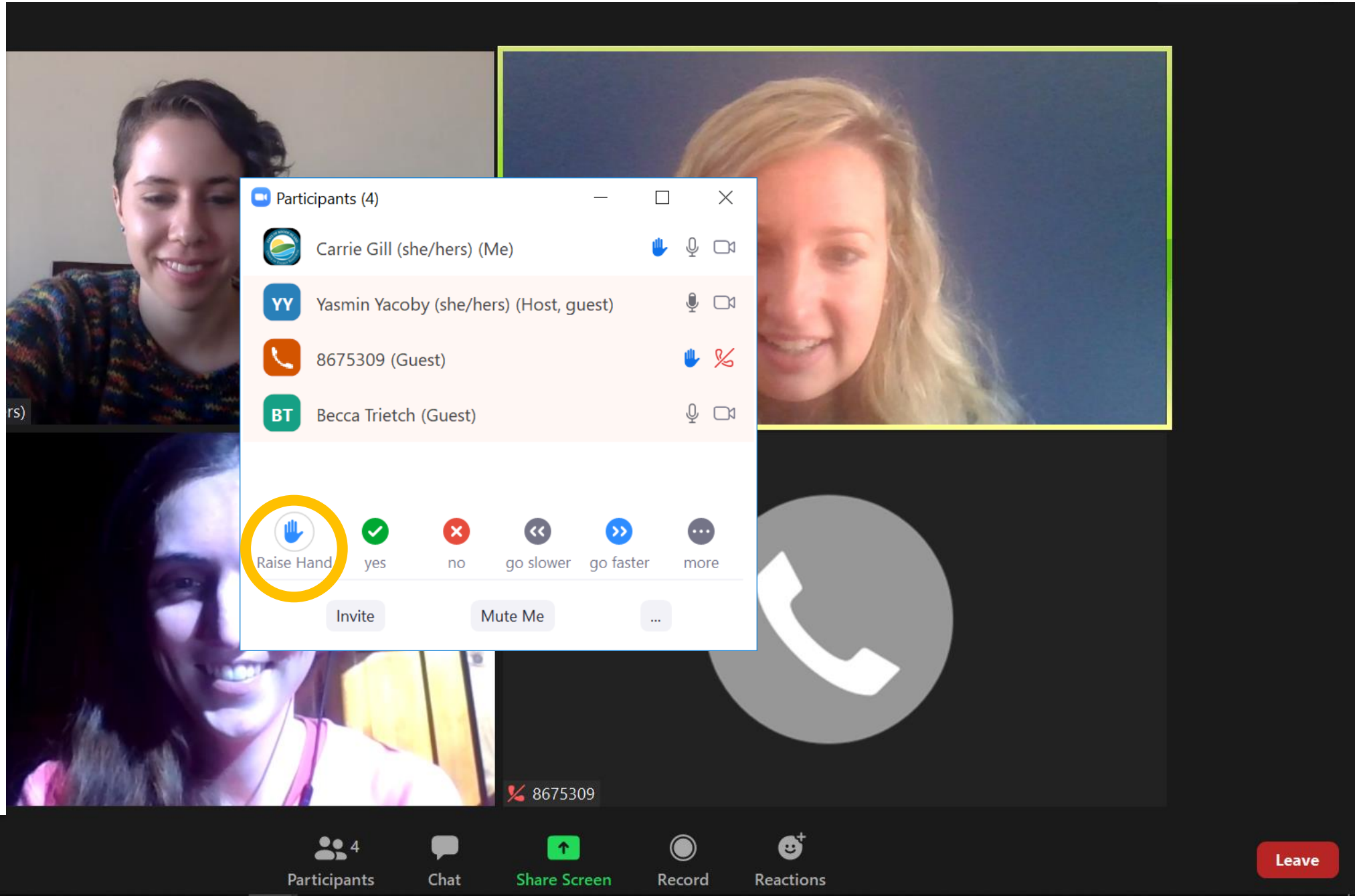
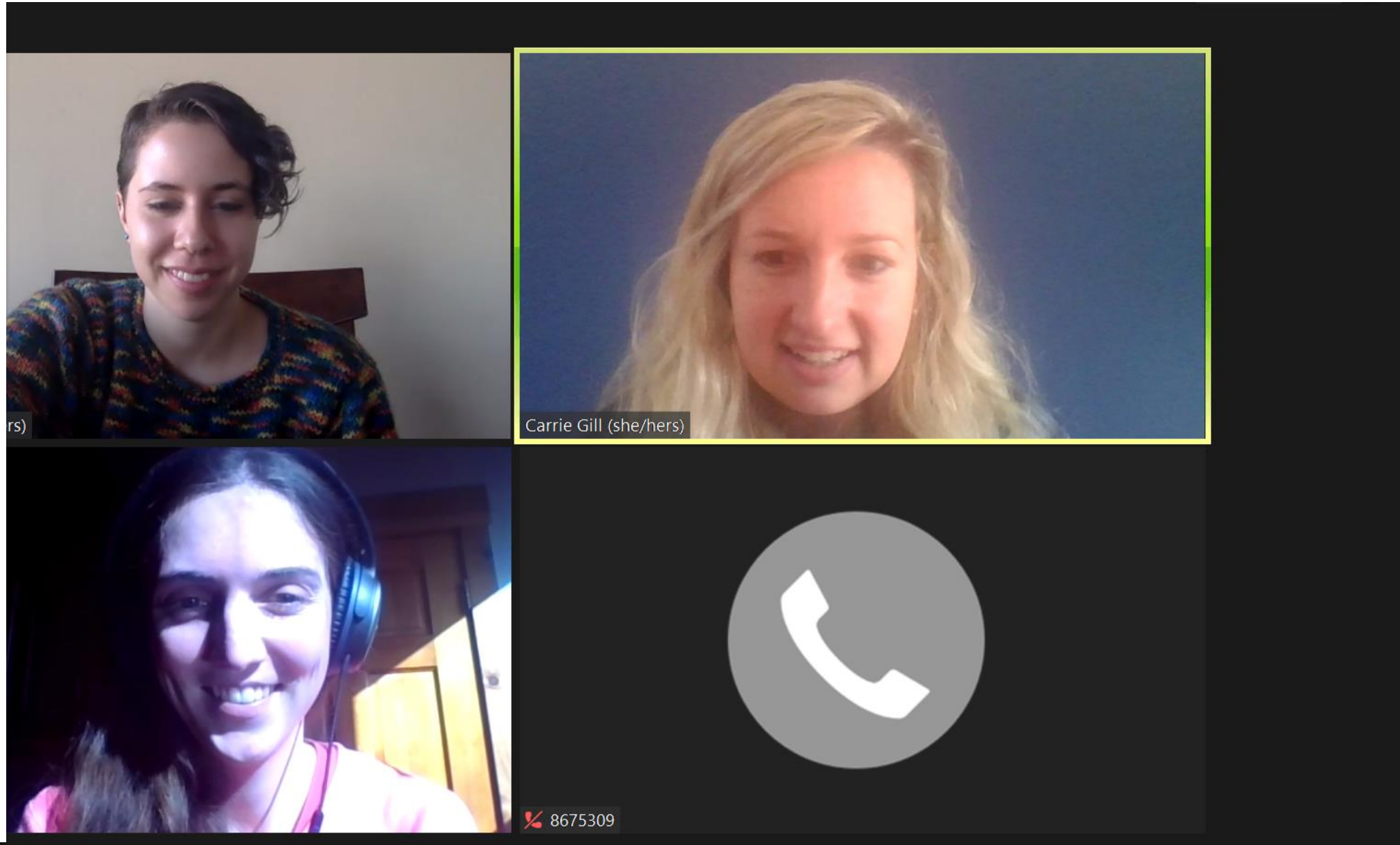


How to Participate

If you're calling in on the phone:

- Unmute yourself from your phone options and speak your question or comment.
- **Hit *6 to unmute** yourself and speak your question or comment.
- **Hit *9 to raise hand** and we will call on you to speak.



How to Participate

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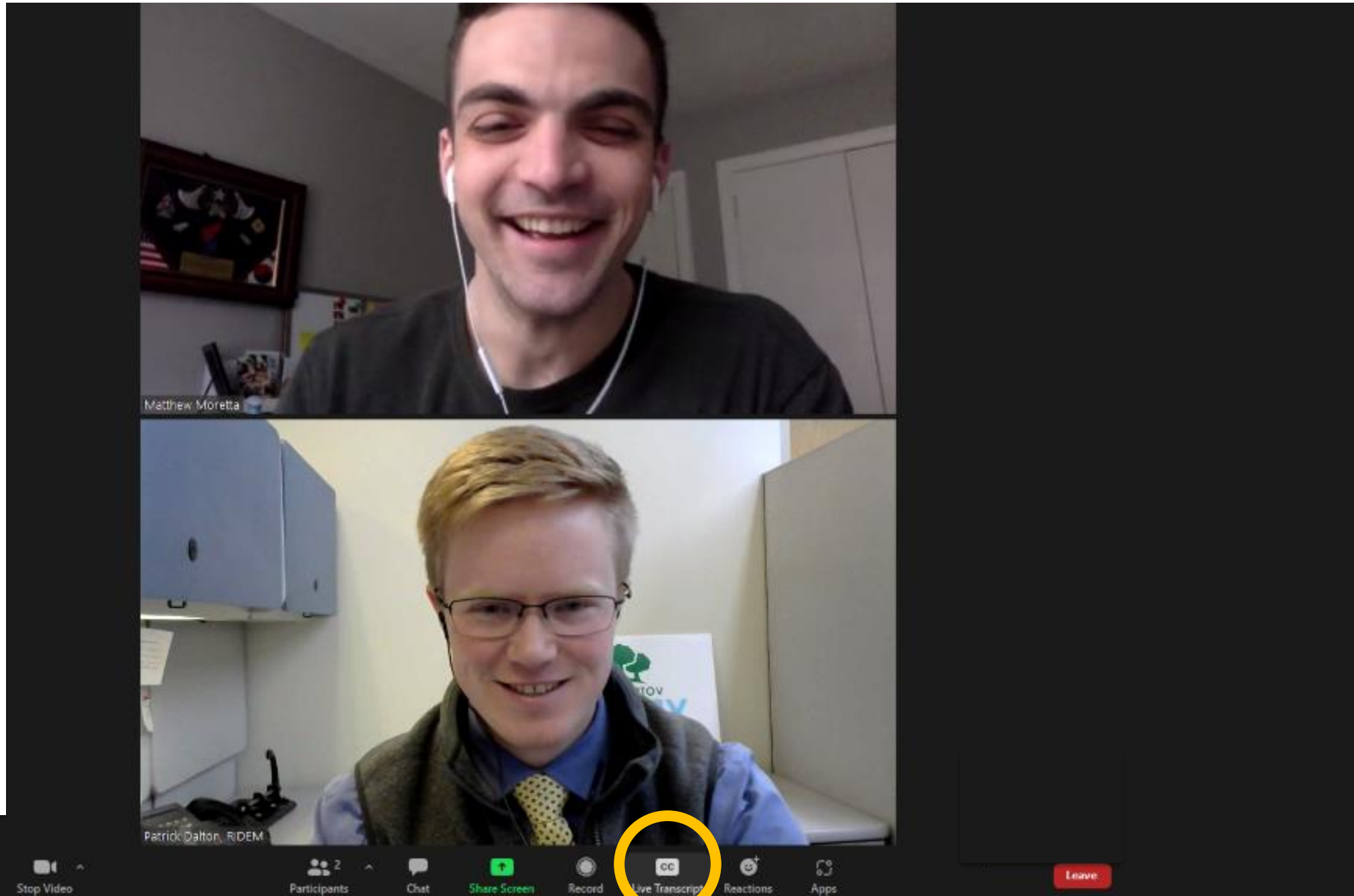
- You can also change the subtitle settings from this menu.



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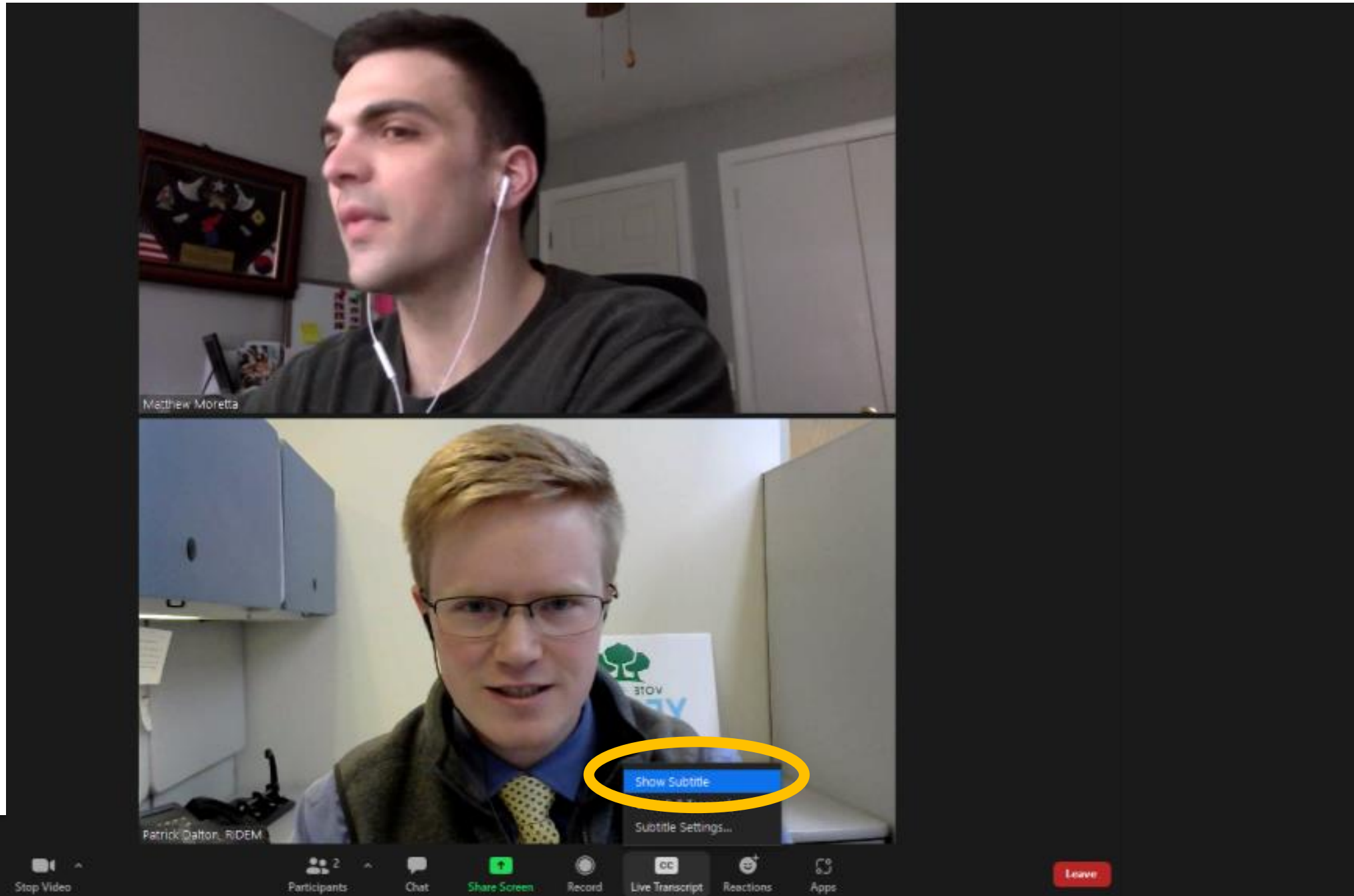

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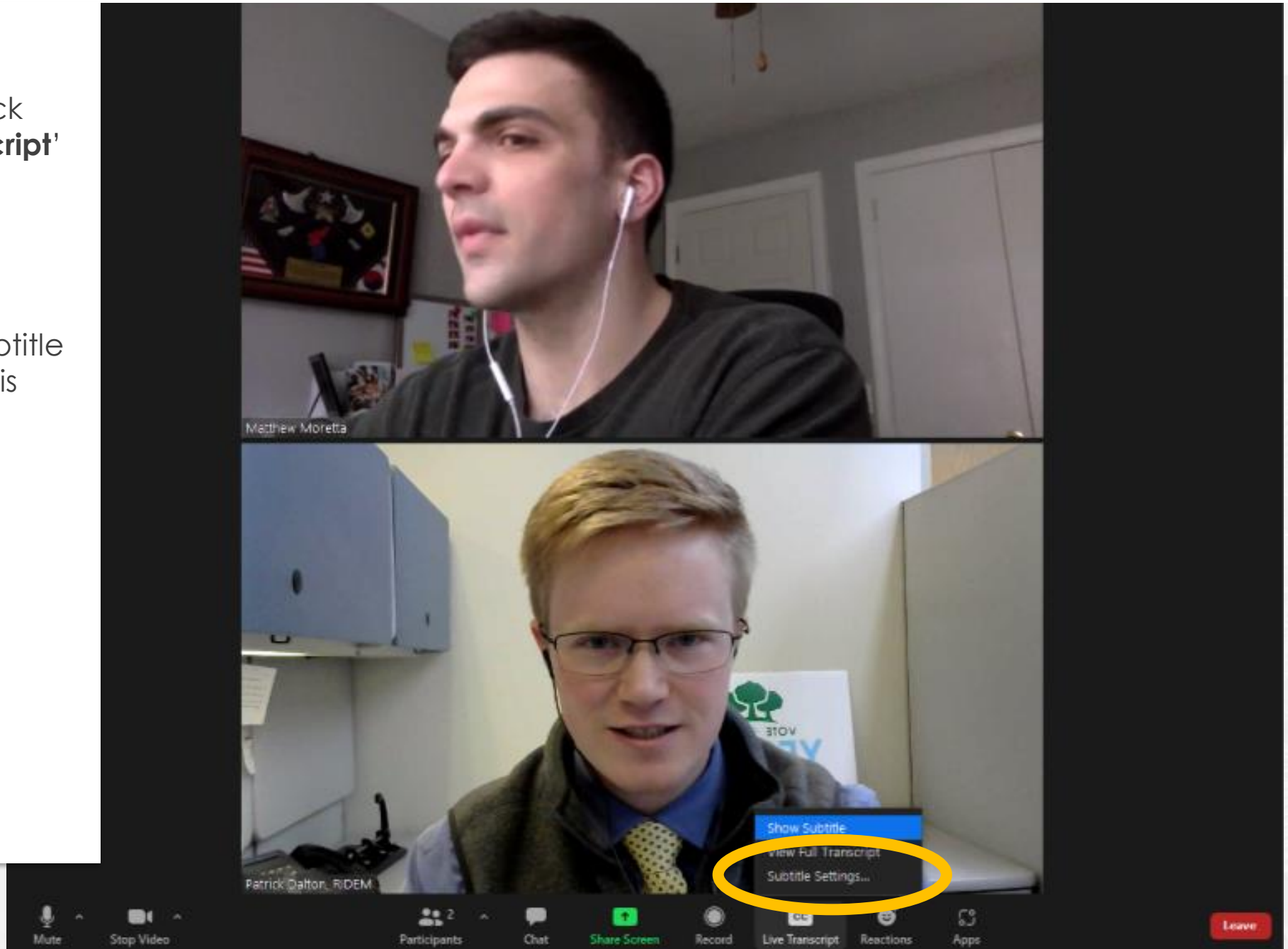

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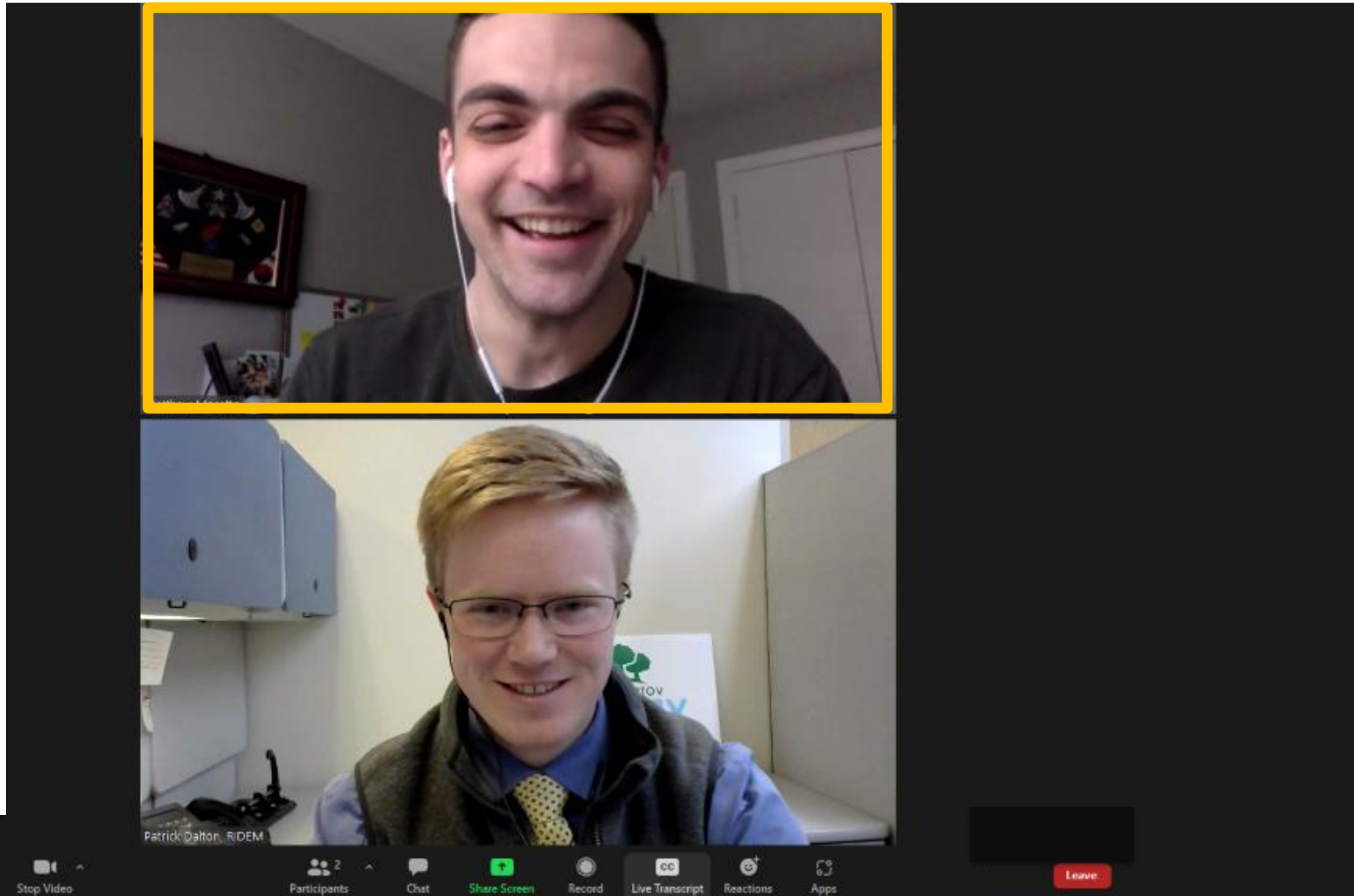

Housekeeping and Logistics

- This meeting is being **recorded** so we can be sure to capture your comments.
- We do not intend to post this recording publicly.

- Please **mute** your mic when not speaking.
- OER will monitor noise levels and mute folks who may have accidentally unmuted themselves.

- **Make space and take space**
- Each person will be allotted a maximum of 3 minutes to speak initially to ensure we are allowing everyone an opportunity to be heard

- We recognize there may be inherent **power dynamics** in this conversation.
- We **encourage** everyone to voice both support *and* concerns, and invite you to challenge our assumptions and our thinking.

- Thank you in advance for your good intentioned comments and questions and for your **respect** toward everyone present.
- Please refrain from interrupting or speaking over others – this will ensure we hear and understand all speakers.

Objectives

1. Improve our understanding of the relationship between food systems and climate change:

- How do food systems contribute to GHG emissions (e.g. land use, processing, distribution, cooking)?
- How will climate change impact our food system (e.g. agricultural production, storm damage, temperature, changes to crop yield or marine species composition)?

2. Understand preferences and considerations for further action.

How we will use what we learn

The 2021 Act on Climate states the EC4 shall have the following duty (among others):

"(3) **Advance the state's understanding of the effects on climate change including**, but not limited to: sea level rise; coastal and shoreline changes; severe weather events; critical infrastructure vulnerability; **food security**; and ecosystem, economic, and health impacts, including the effects of carbon pollution on children's health;"

This workshop is directly responsive to this core purpose of the EC4 by **connecting attendees with experts, improving understanding, and enabling discussion.**

We will summarize and discuss findings within a call-out box in the *2022 Update* working draft. Discussion may also inform and refine priority actions for reducing greenhouse gas emissions and the ***Relish Rhody* Food Strategy for 2030**.

Panel Discussion

Today's Panel

Julianne Stelmaszyk

Director of Food Strategy

Rhode Island Commerce

Dawn King

Director of Undergraduate Studies

Senior Lecturer in Environment and Society

Brown University

Chelsea Gazillo

New England Policy Manager

American Farmland Trust

Jayne Senecal

Owner & Farm Manager

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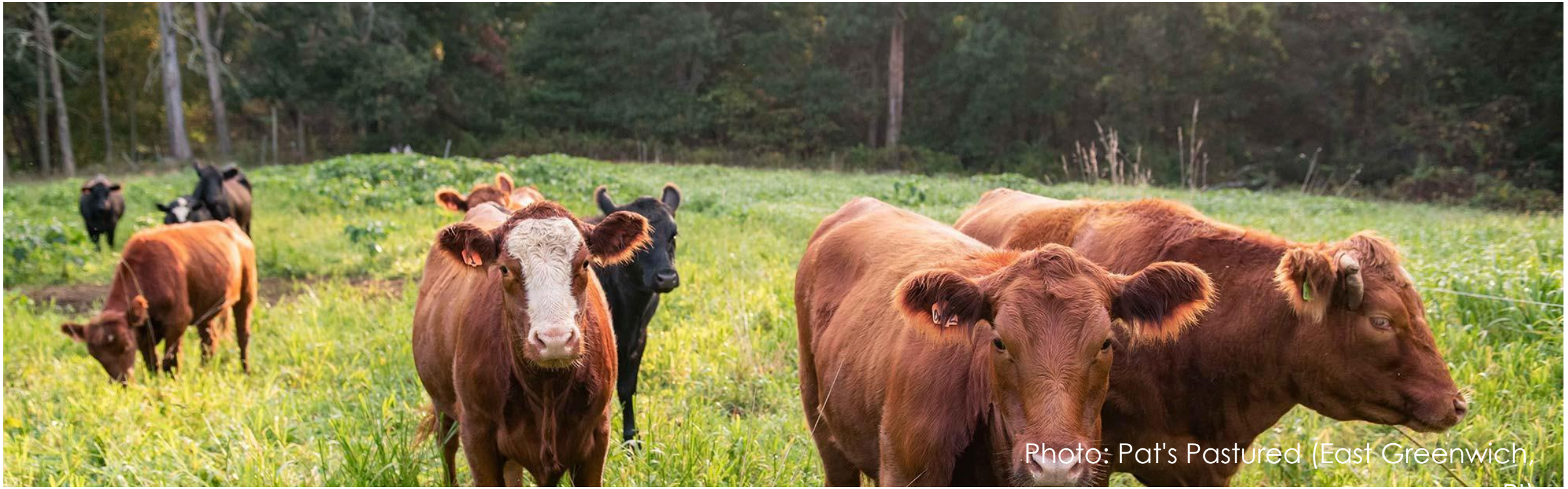


RI Food Strategy & Climate Considerations

Presentation for EC4 Climate & Food System Workshop | July 27, 2022

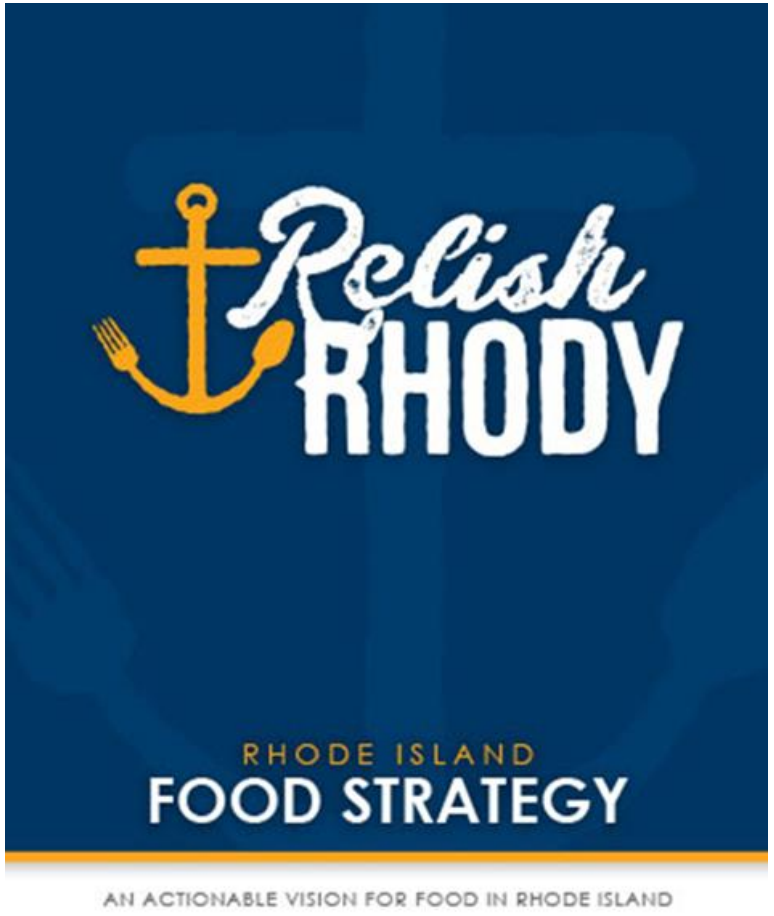
Julianne Stelmaszyk
Director of Food Strategy, RI Commerce
Julianne.Stelmaszyk@CommerceRI.com

RHODE ISLAND COMMERCE

Relish RHODY

Rhode Island's Food Vision

In 2017 RI launched its first-ever statewide food strategy envisioning a sustainable, equitable food system that is uniquely Rhode Island; one that builds on our traditions, strengths, and history while encouraging innovation



INTEGRATED FOCUS AREAS:

- Preserve & Grow Agriculture, Fisheries Industries in Rhode Island
- Enhance the Climate for Food & Beverage Businesses
- Minimize Food Waste & Divert It from the Waste Stream
- Sustain & Create Markets for Rhode Island Food, Beverage Products
- Ensure Food Security for all Rhode Islanders

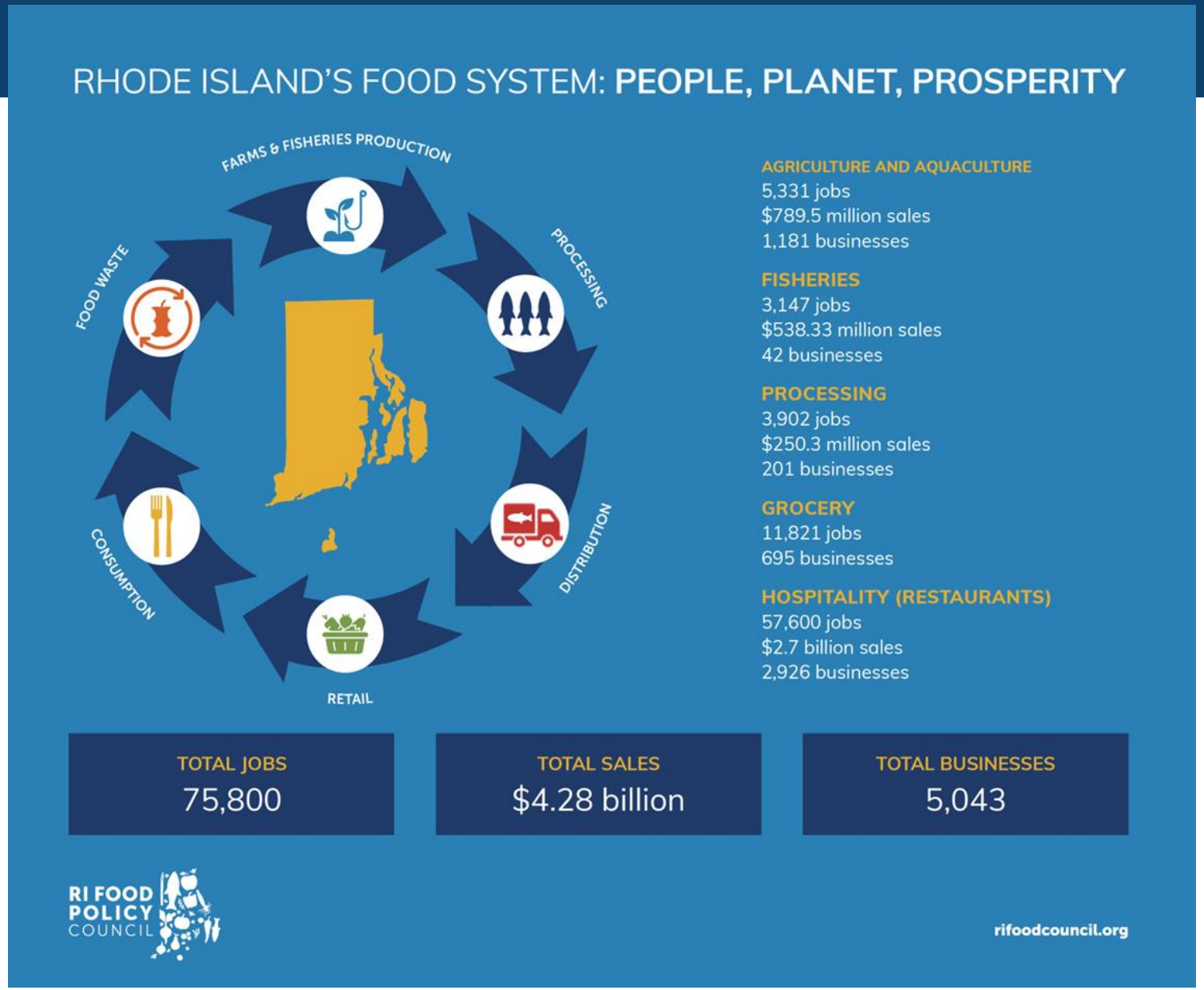
Led by a 3 Agency partnership via Director of Food Strategy

RHODE ISLAND COMMERCE

RHODE ISLAND DEPARTMENT OF HEALTH

DEM RHODE ISLAND

Rhode Island's Food System



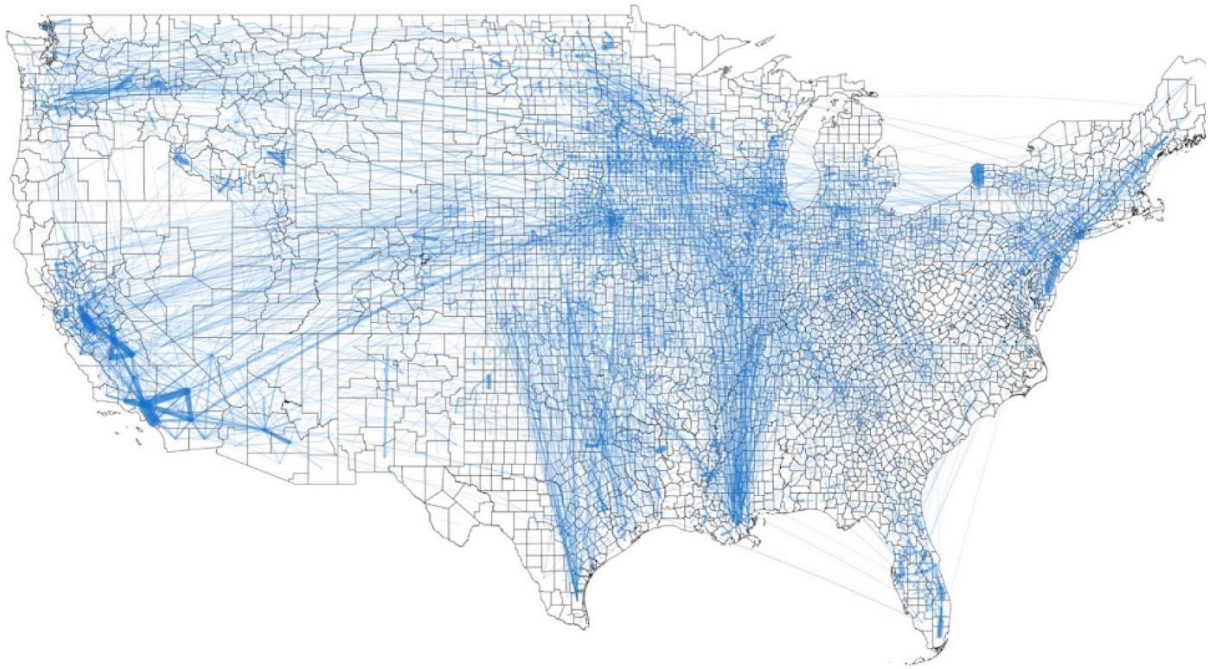
Our food system supports 75,000+ jobs, generates over $4B in economic activity and is made up of almost entirely small businesses, many of whom are stewards of our land and ocean natural resources.

Relish RHODY

RI imports 90% of our food from outside the region

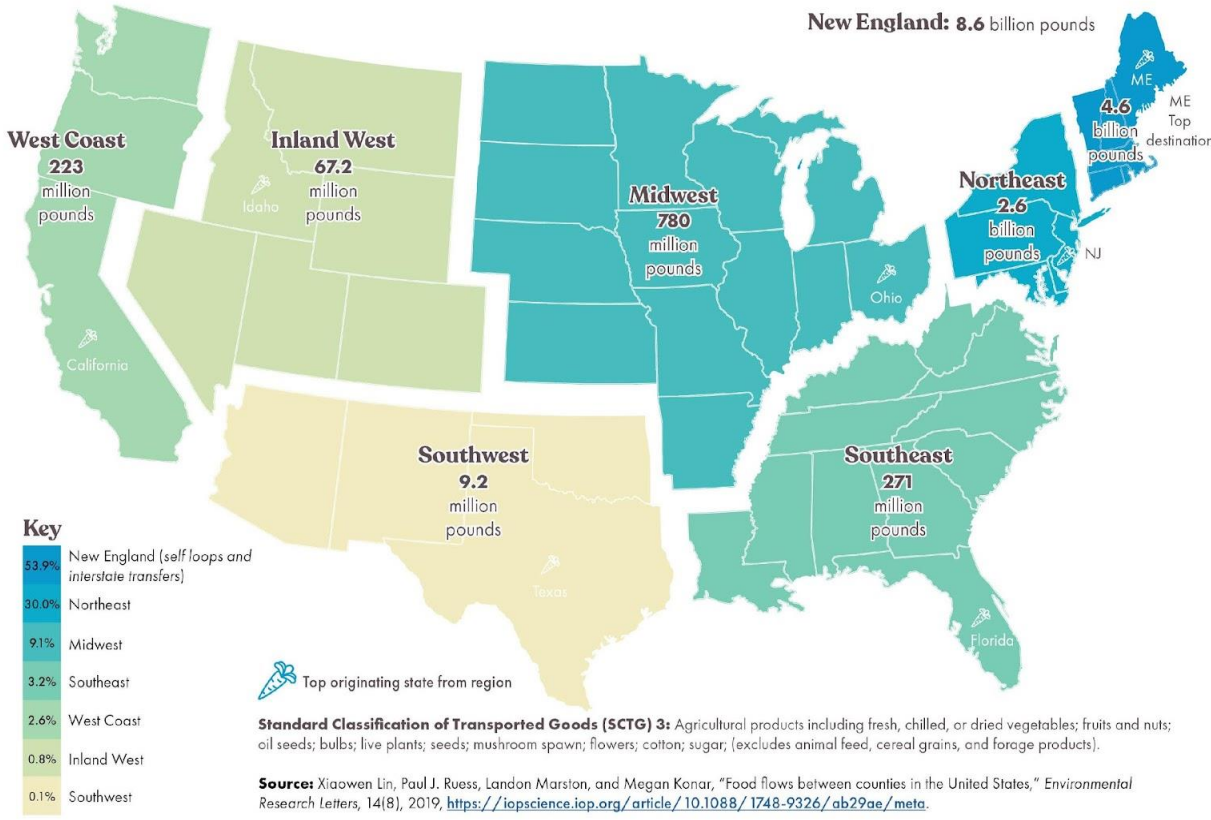
Food Flows: Downscaled to All Counties

B



source: Lin, X., Ruess, P. J., Marston, L., & Konar, M. (2019). Food flows between counties in the United States. *Environmental Research Letters*, *14*(8), 084011.

Agricultural Product (SCTG 3) Flows Into New England

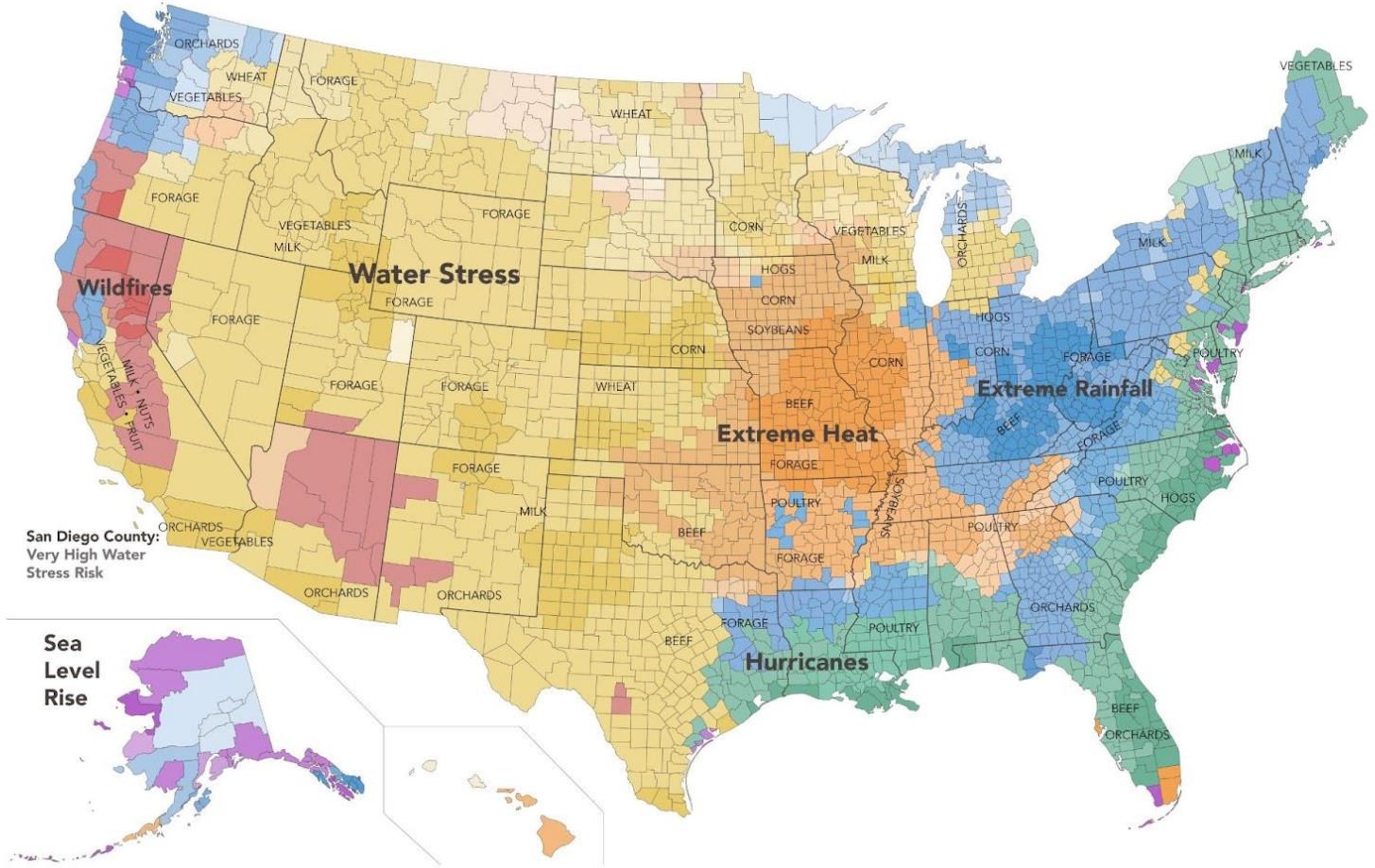


Standard Classification of Transported Goods (SCTG) 3: Agricultural products including fresh, chilled, or dried vegetables; fruits and nuts; oil seeds; bulbs; live plants; seeds; mushroom spawn; flowers; cotton; sugar; (excludes animal feed, cereal grains, and forage products).

Source: Xiaowen Lin, Paul J. Ruess, Landon Marston, and Megan Konar, "Food flows between counties in the United States," *Environmental Research Letters*, 14(8), 2019, https://iopscience.iop.org/article/10.1088/1748-9326/ab29ae/meta.

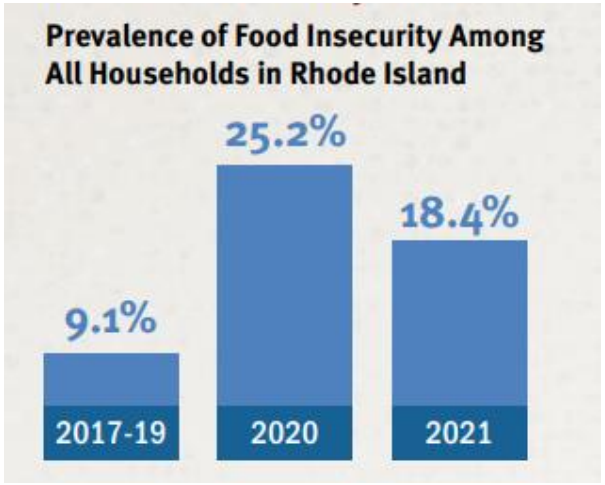
Most of our food comes from high risk regions

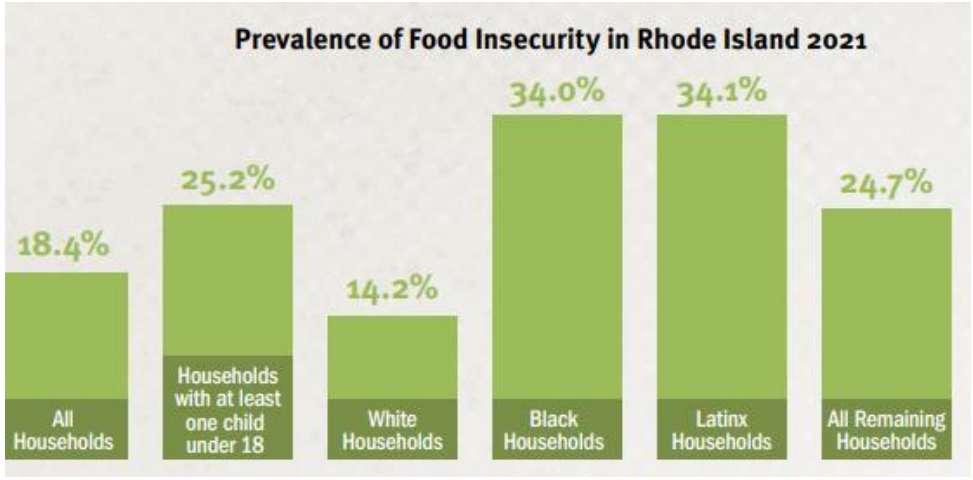
Major Climate Risks by US Agricultural Production Regions



Sources: Stuart A. Thompson and Yaryna Serkez, "Every Place Has Its Own Climate Risk. What Is It Where You Live?," *The New York Times*, www.nytimes.com/interactive/2020/09/18/opinion/wild-fire-hurricane-climate.html. Based on data from Four Twenty Seven. Major agricultural products data based on USDA Ag Atlas Maps.

Food insecurity surges during times of crisis





All remaining households includes Asian Native American/Alaskan Native, Native Hawaiian/Other Pacific Islander and more than one race/ethnicity

source: RI Community Food Bank (2021)

The New York Times

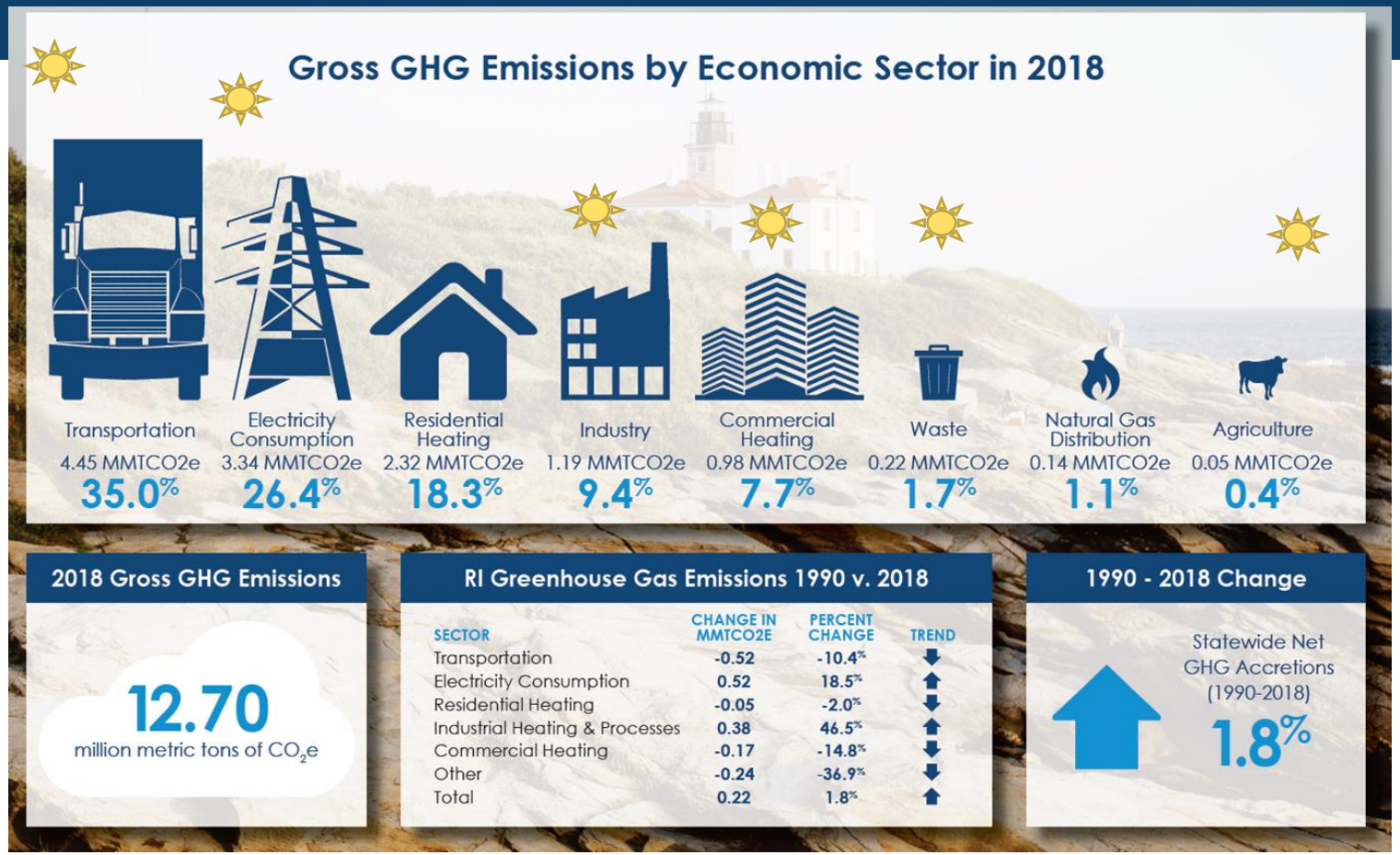
Food Prices Approach Record Highs, Threatening the World's Poorest

The prices have climbed to their highest level since 2011, according to a U.N. index. It could cause social unrest "on a widespread scale," one expert said.

Source: NYT February 23 2022

RI Food Systems x GHG Emissions

Distributed emissions from food and agriculture



source: Neufeld, Visual Capitalist (2020)

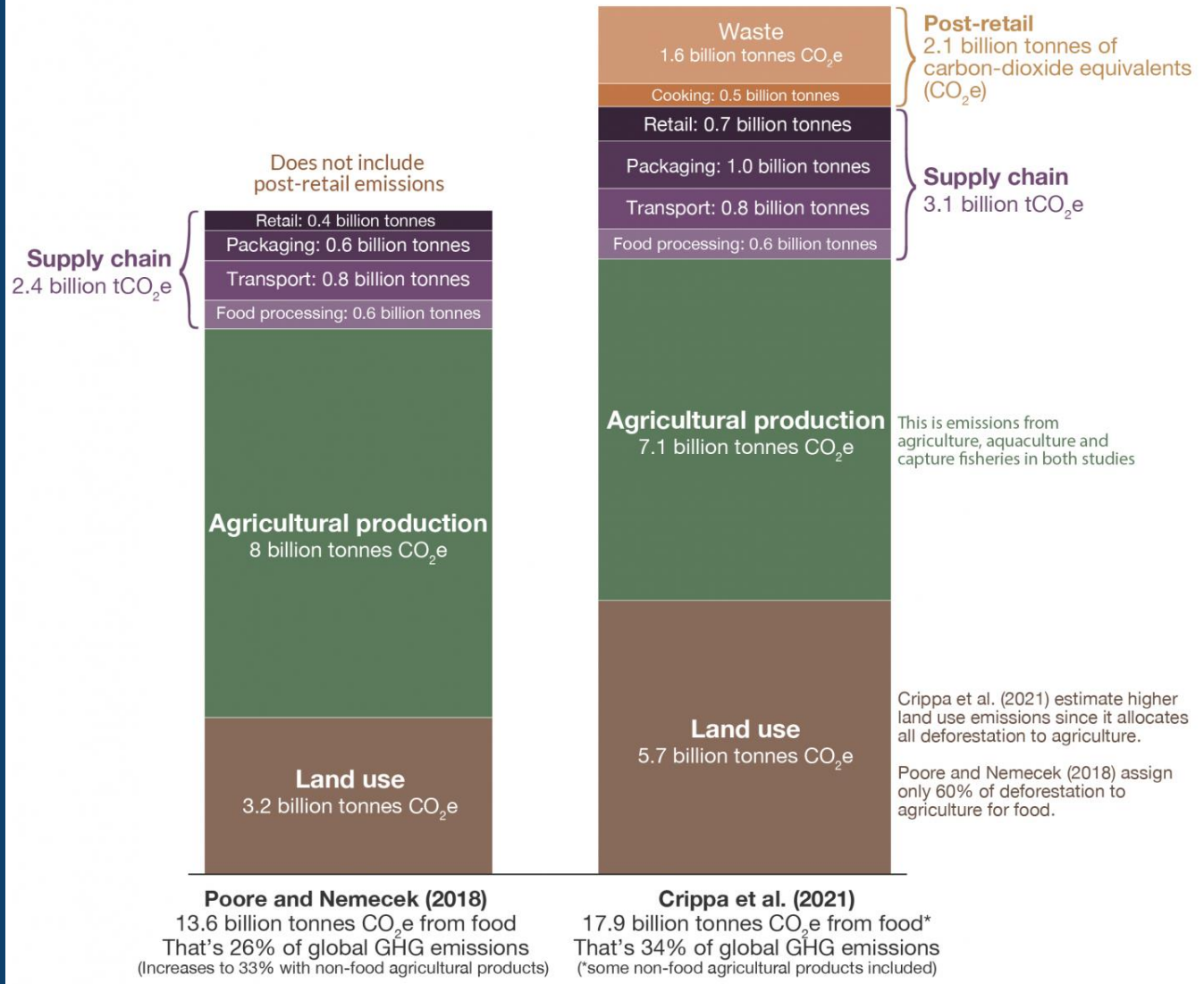
The food system is responsible for 25-35% of global greenhouse gas emissions

Source: Cippa, Solazzo et al. *Nature* (2021)

How much of global greenhouse gas emissions come from the food system?

Our World in Data

Shown is the comparison of two leading estimates of global greenhouse gas emissions from the food system.
Most studies estimate that food and agriculture is responsible for 25% to 35% of global greenhouse gas emissions.



*Crippa et al. (2021) include emissions from a number of non-food agricultural products, including wool, leather, rubber, textiles and some biofuels. Poore and Nemecek (2018) do not include non-food products in their estimate of 13.6 billion tonnes CO_2e. This may explain some of the difference.

Data sources: Joseph Poore & Thomas Nemecek (2018). Reducing food's environmental impacts through producers and consumers. *Science*.
Crippa, M., et al. (2021) Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*.

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Relish RHODY

How might we measure food emissions in Rhode Island?

Photo: Earth Care Farm compost facility - Charlestown, RI

Considerations for food & climate in RI

- To what extent does the way we produce, consume and dispose of food contribute to RI's GHG emissions?
- How will the effects of climate change impact our long-term food security and which communities are most vulnerable?
- In what ways will our food producers be impacted by climate-related disruptions?
- What opportunities exist to leverage our land and ocean farming as carbon sinks?

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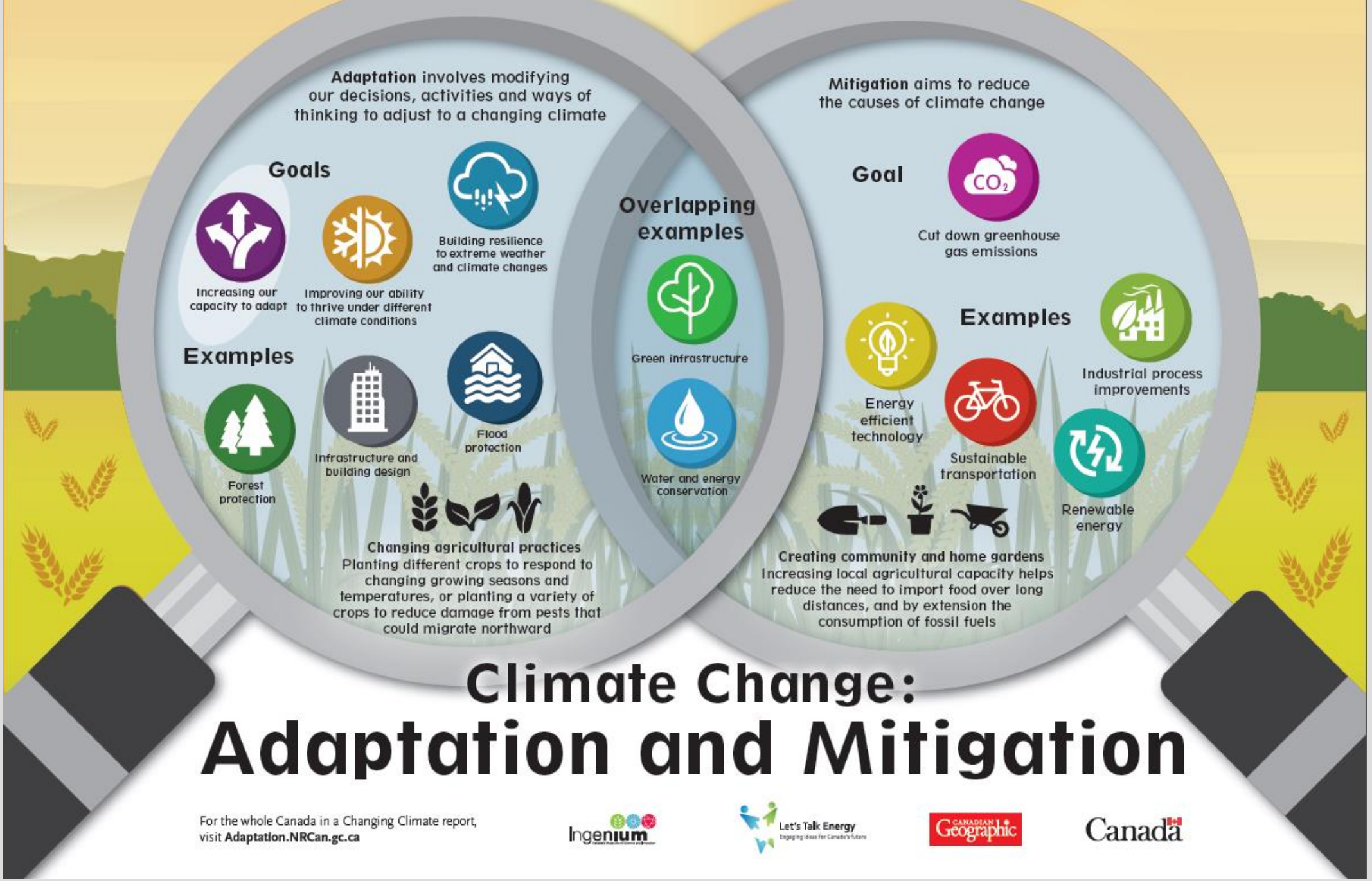


Climate Change:
Adaptation and Mitigation

For the whole Canada in a Changing Climate report, visit **Adaptation.NRCan.gc.ca**

Ingenium

Let's Talk Energy

Canadian Geographic

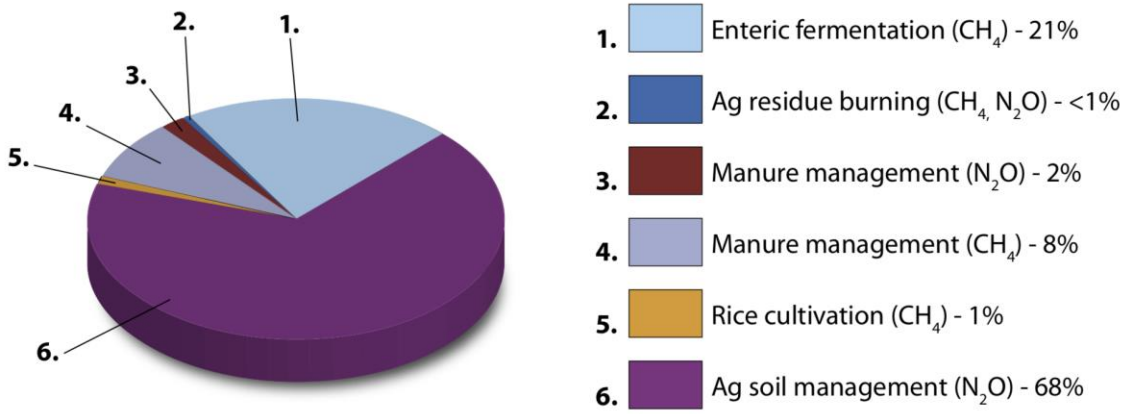
Canada

GHG DIRECTLY FROM AGRICULTURE
WHAT WE MUST REDUCE/ELIMINATE

Methane (CH4) is 25x more potent than CO2 (cow burps and manure management)

Nitrous Oxide (N2O) 300x more potent than CO2 - and long lasting. Chemical fertilizers

Figure 3. Agricultural greenhouse gas emissions, average from 2001 to 2005. *Source: EPA, 2007 Inventory report, April 2007. www.epa.gov/climatechange/emissions/usinventoryreport.html*

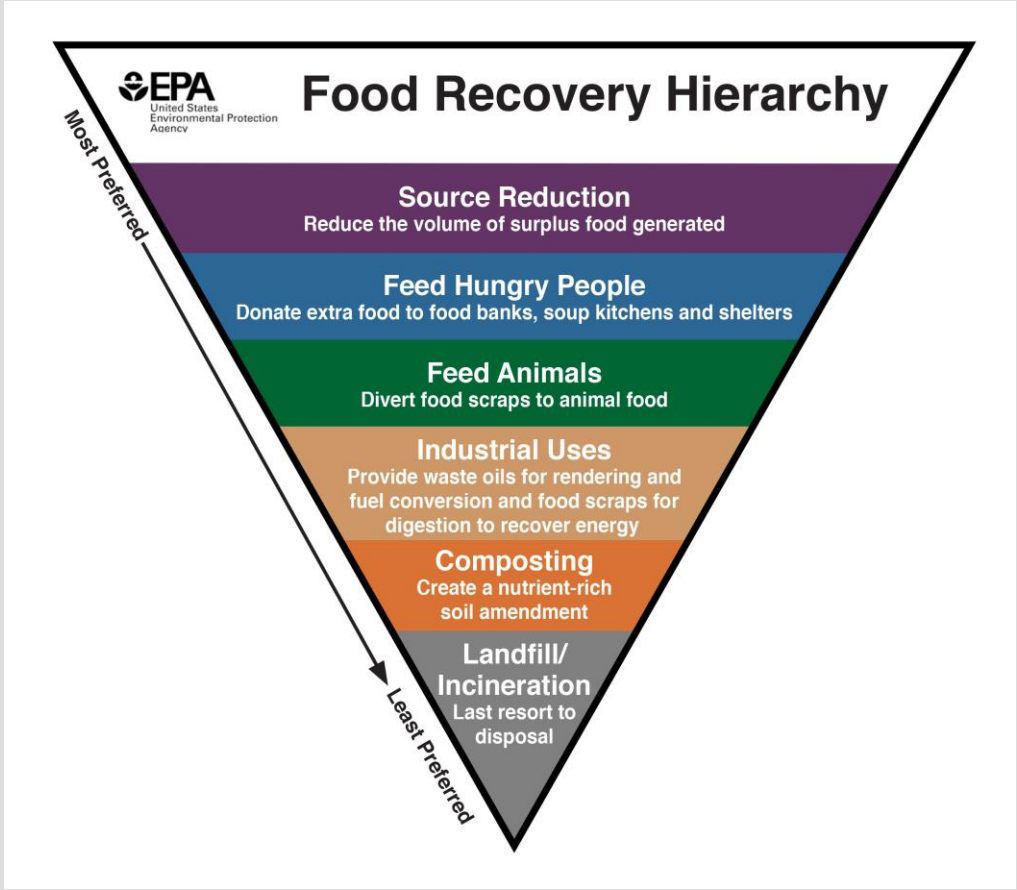


WASTED FOOD

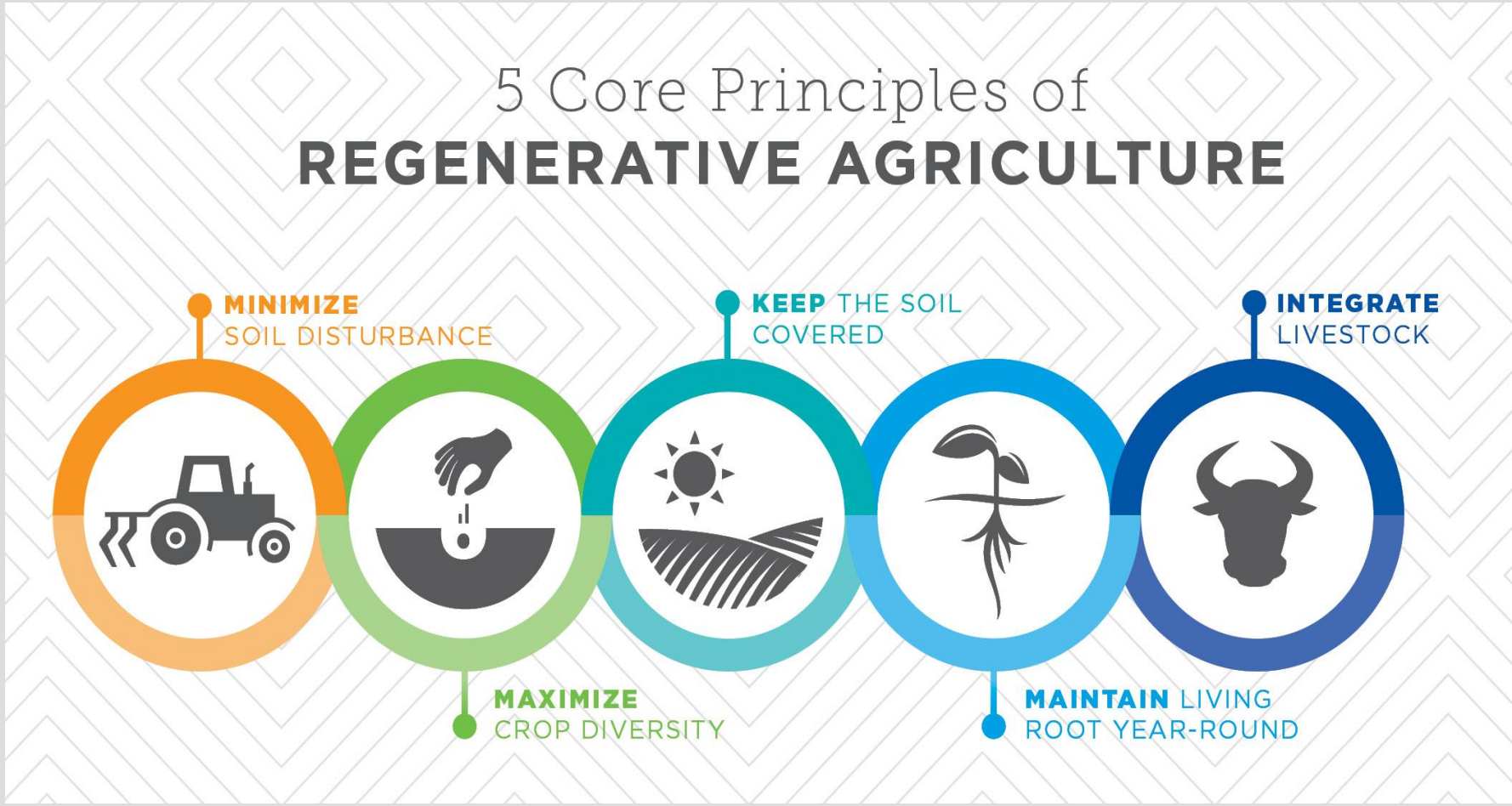
20% of RI solid waste is food waste (single largest category of municipal waste in the US)

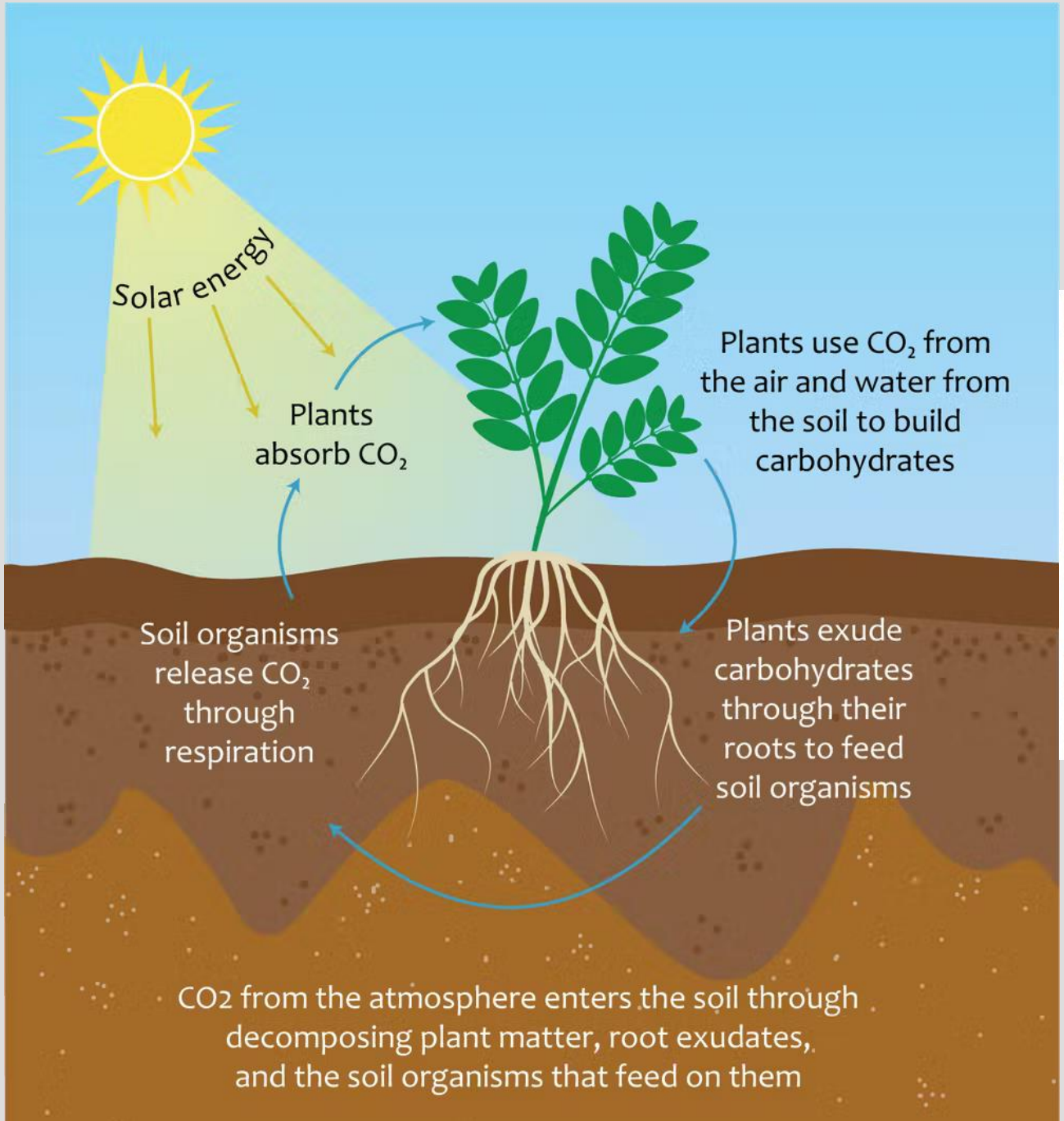
Releases methane in landfill - Anaerobic Digestion (bacteria break down organic material in absence of oxygen)

Many levels to reduce food waste!



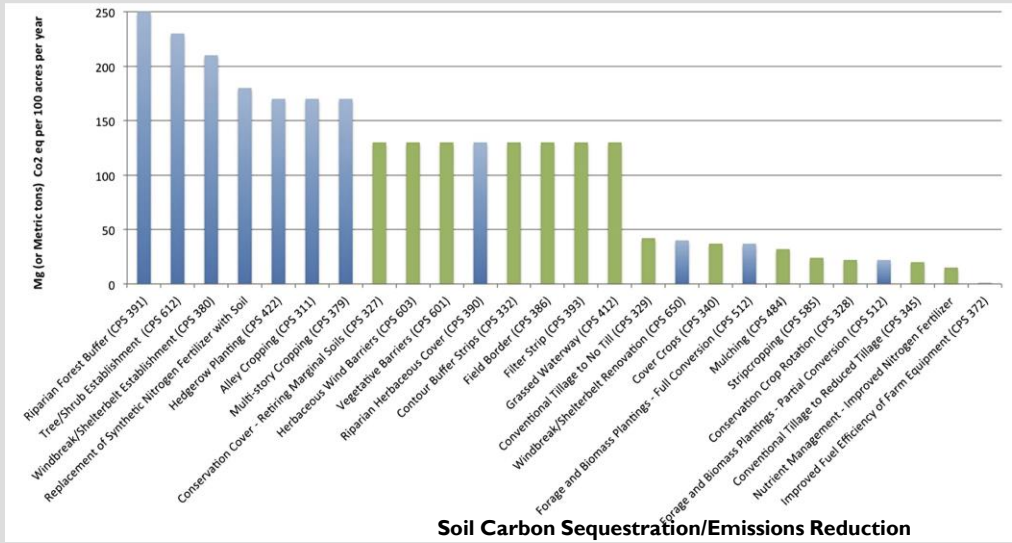
SOIL HEALTH – SEQUESTRATION AND ADAPTATION




Solar energy
Plants absorb CO_2
Plants use CO_2 from the air and water from the soil to build carbohydrates
Soil organisms release CO_2 through respiration
Plants exude carbohydrates through their roots to feed soil organisms
CO2 from the atmosphere enters the soil through decomposing plant matter, root exudates, and the soil organisms that feed on them

ADAPTATION

A robust and strengthened regional food system will help us safeguard against climate caused supply chain and production problems



Soil Carbon Sequestration/Emissions Reduction
Source: NRCS COMET-Plan**Potential by Management Practic**
excerpted from Biardeau et al., (2016).)

Strengthening soil health not only leads to more carbon capture, but also makes our food system more resilient to the impacts of climate change

FARMLAND PRESERVATION HAS MULTIFACETED BENEFITS

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July 27, 2022

American Farmland Trust

Climate, Farmland, and Agriculture

RHODE ISLAND EXECUTIVE CLIMATE CHANGE COORDINATING COUNCIL

American Farmland Trust
Chelsea Gazillo
New England Policy Manager

American Farmland Trust

SAVING THE LAND THAT SUSTAINS US

PROTECT FARMLAND
We lose 2,000 acres of farmland a day across the US: this has serious implications for food production, our environment, and the next generation of farmers. Climate change and extreme weather are compounding risks to farmland and soil health.

PROMOTE SOUND FARMING PRACTICES
We help farmers with the difficult transition to more regenerative farming practices that rebuild soil health, sequester carbon, protect our waterways, and boost income.

KEEP FARMERS ON THE LAND
A seismic transfer of farmland is looming. More than 40% of American farmland is owned by seniors aged 65 and older. AFT provides guidance, tools, and partnerships that connect current landowners with diverse, new farmers to ensure a sustainable farming future.

American Farmland Trust

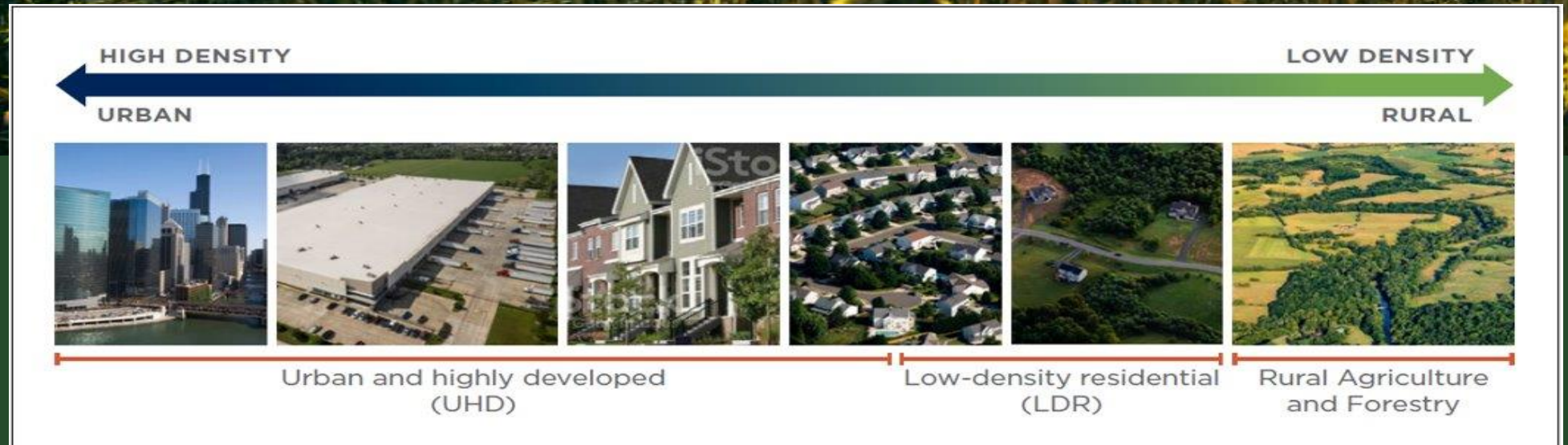
Climate Change Impacts on U.S. Agriculture

- Increased **water requirements** of crops due to warmer temperatures and changes in precipitation
- Increased **heat** affecting crops, animals, and humans
- Increased **soil erosion** from heavy rain
- Increased **pest and weed** pressure
- Increased **sea level rise** will impact coastal farms

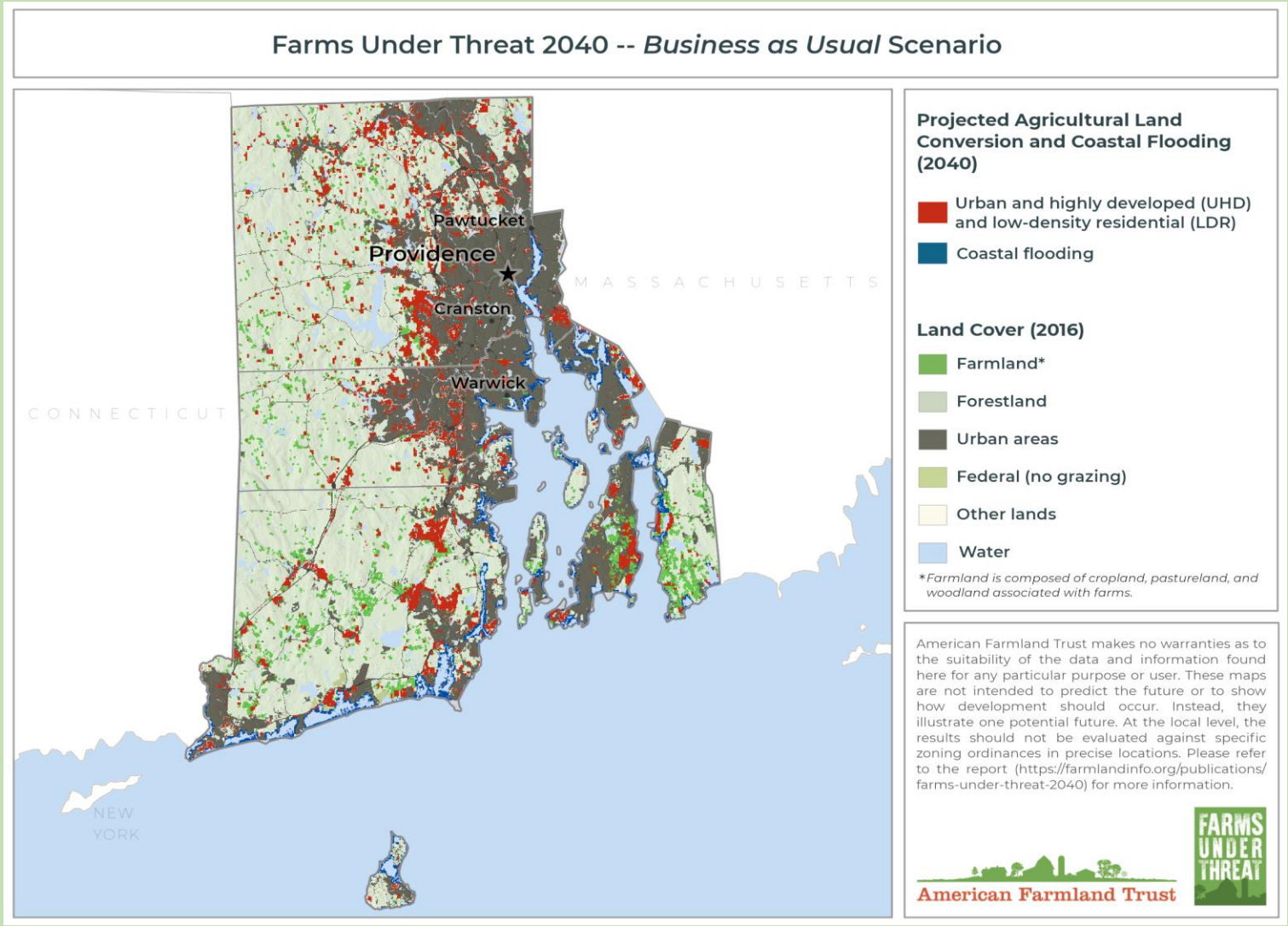
American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

The U.S. Continues to Lose Farmland

- Between 2001-2016, the United States lost or compromised **2,000 acres of farmland and ranchland every day**
- **On our current path, 18.4 million acres will be converted** to urban and highly developed (UHD) and low-density residential (LDR) land use between 2016 and 2040
- **If rural sprawl accelerates,** the total could amount to **24.4 million acres**
- But if policymakers and planners **embrace more compact development**, we could **slash conversion by up to 55%** and **save up to 13.5 million acres**



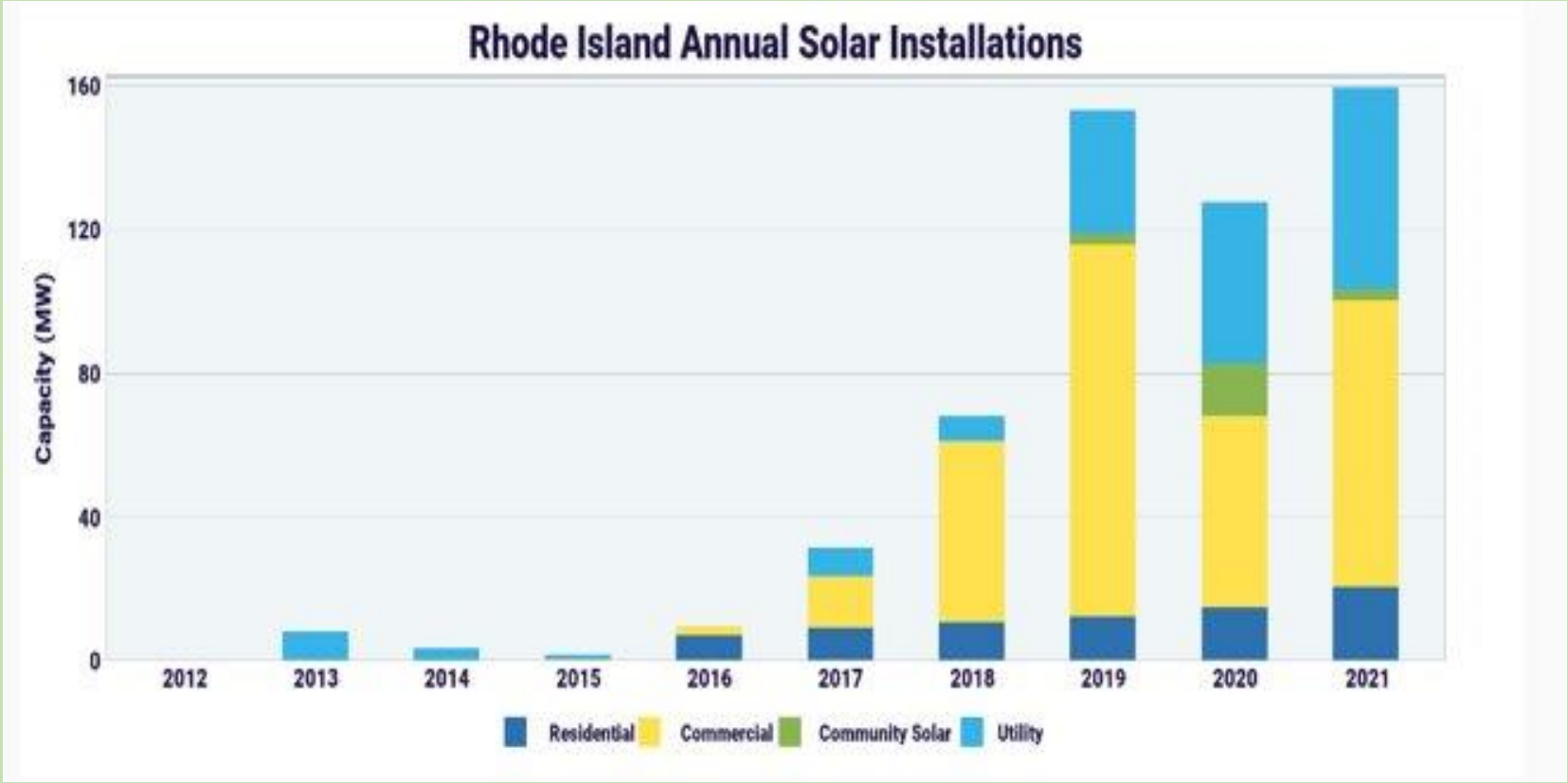
Rhode Island Snapshot



Between 2001-2016, Rhode Island lost roughly 3,600 acres of land to urban development or low-density residential land use

American Farmland Trust

Competing Farmland Uses –Solar Development



Rhode Island's Annual Solar Installations

American Farmland Trust

AFT's Smart Solar Siting on Farmland from Farms Under Threat 2040

- Maximize solar siting on **disturbed**, contaminated, and marginal lands and on rooftops.
- Minimize conversion of our **best agricultural lands** to conventional ground-mounted solar.
- Protect or enhance **soil health** for solar projects on agricultural land.
- **Optimize agrivoltaics** / **agricultural dual-use** solar on lands well-suited for agriculture.
- Ensure that solar built on agricultural lands prioritizes **farmer interests**.
- Promote an equitable, ethical, and **inclusive process** for solar development.

For more information on Smart Solar Best Practices:

- National Center for Appropriate Technology AgriSolar Clearinghouse -- https://www.agrisolarclearinghouse.org/
- American Farmland Trust Smart Solar Siting for New England – https://farmland.org/project/smart-solar-siting-for-new-england/

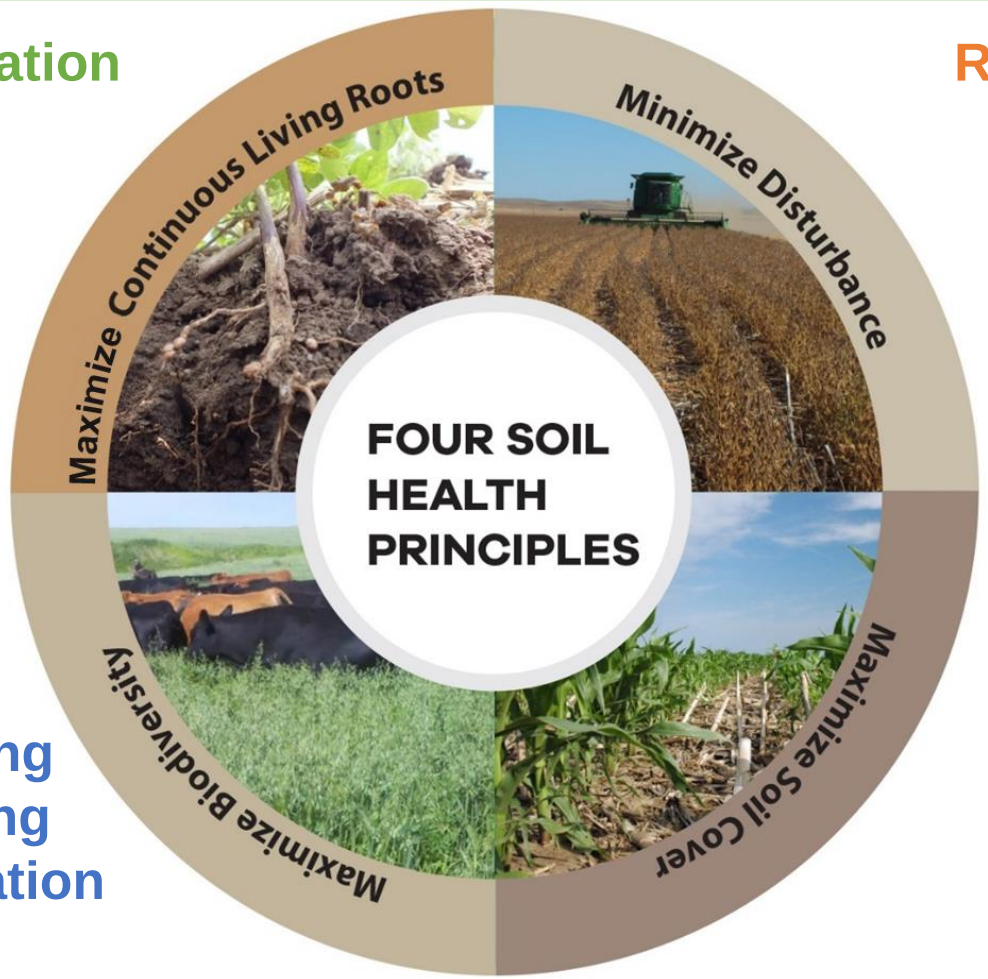
American Farmland Trust

Practices that Support Healthy Soil

FEED

Perennial Vegetation
Crop Rotation
Cover Crops
Relay Crops

Cover Crop
Crop Rotation
Rotational Grazing
Pollinator Planting
Perennial Vegetation



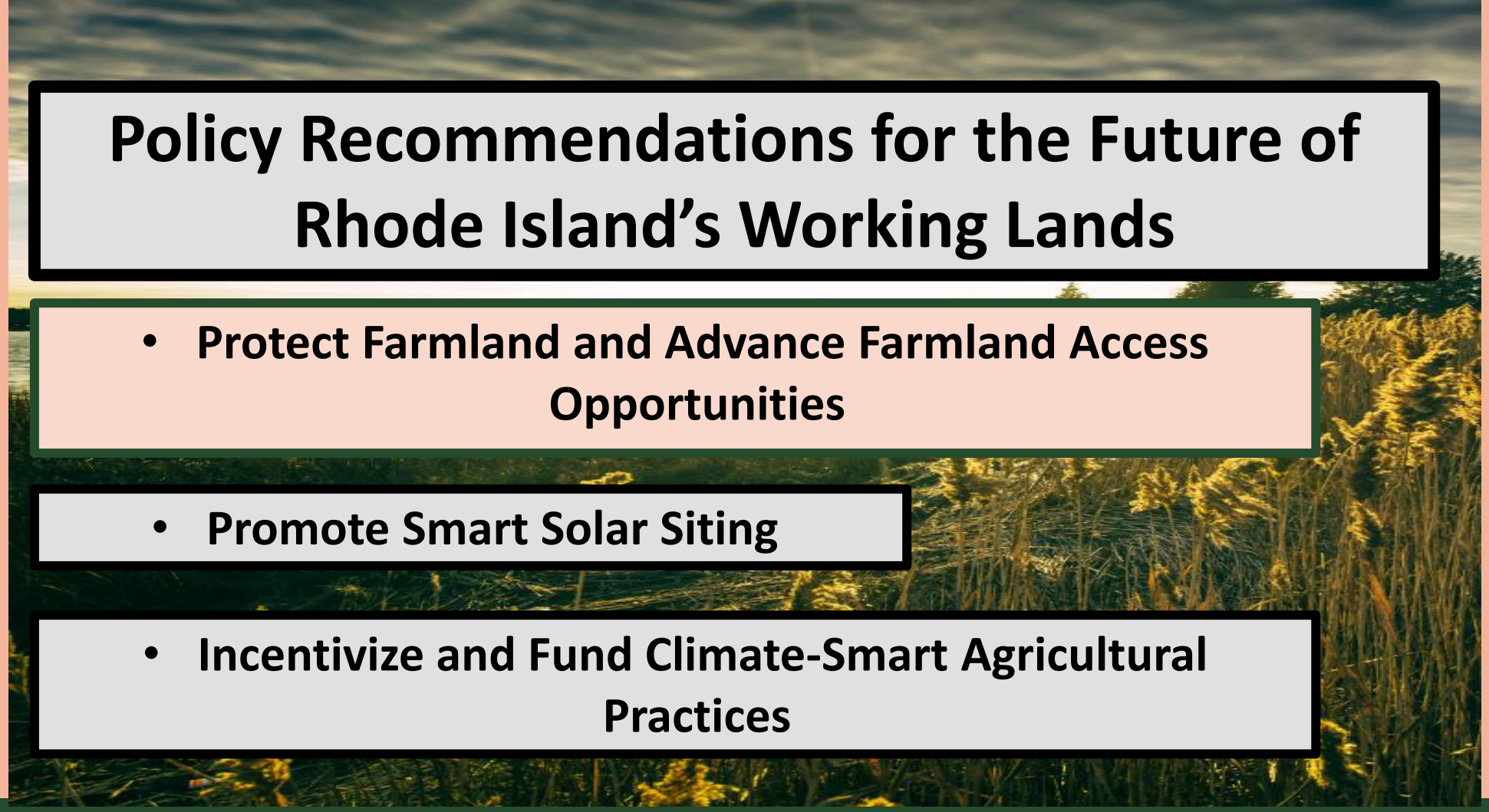
PROTECT

Rotational Grazing
Controlled Traffic
Reduced Tillage
No-till

No-till
Mulching
Cover Crop
Reduced Tillage
Residue Retention

American Farmland Trust

Image Source: USDA-NRCS



Policy Recommendations for the Future of Rhode Island's Working Lands

- Protect Farmland and Advance Farmland Access Opportunities
- Promote Smart Solar Siting
- Incentivize and Fund Climate-Smart Agricultural Practices

American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

Today's Panel

Julianne Stelmaszyk

Director of Food Strategy

Rhode Island Commerce

Dawn King

Director of Undergraduate Studies

Senior Lecturer in Environment and Society

Brown University

Chelsea Gazillo

New England Policy Manager

American Farmland Trust

Jayne Senecal

Owner & Farm Manager

Earth Care Farm

Charlestown, RI

Bill Silkes

Founder

American Mussel Harvesters

North Kingstown, RI

Diane Lynch

Board President

RI Food Policy Council

Producer Perspective: Agriculture

Impacts we are noticing

- More frequent large **wind** and rain events
  - lost power 6 times due to wind last year
  - light farm building such as greenhouses and high tunnels with wind damage
  - crop damage from wind
- Tree health has declined
  - oaks, pines and now beech
- More invasive insects, less native insects
  - declining bumblebee populations
  - new invasive jumping worm

2021 August Wind Event

Farm Adaptations

- For wind
  - installed a whole farm generator
  - anchoring building beyond what the manufacturer/code require
- For Trees
  - Planting replacement native trees
  - Tree Removal of diseased trees
  - Boost trees with IMO treatments
- For Native insects
  - Planting lots of habitat

Soil Adaptations

- Adding more organic matter
  - compost, cover cropping, and mulches
- No-till

Soil Adaptations

- Keeping soil planted as much as possible
- No salt based fertilizers used

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RHODE ISLAND COMMERCE

BROWN

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EARTH CARE FARM
WORKING IN HARMONY WITH NATURE

AMERICAN MUSSEL HARVESTERS

RI FOOD POLICY COUNCIL

Producer Perspective: Aquaculture

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RI FOOD POLICY COUNCIL

OUR PURPOSE

Building a more just and resilient food system for all Rhode Islanders

Act on Climate Food Systems and Climate Change in Rhode Island Workshop July 27, 2022

We work toward an **equitable, accessible, economically vibrant, environmentally sustainable** food system by *addressing the most pressing food system needs.*

FOOD SYSTEMS **NEED** TO BE INCLUDED IN CLIMATE PLANS

CLIMATE BENEFITS

- Carbon sequestration in agricultural land
- Reduced GHG through more organic waste composting
- Reduced GHG through shorter food supply chains
- Reduced GHG through climate-smart food industry practices

SOCIAL/ECONOMIC BENEFITS

- Food security
- Food system resilience
- Improved public health

REALIZING BENEFITS IS A **LONG-TERM, MULTI-STAKEHOLDER PROCESS**

Identifying and quantifying climate-related impacts, costs, benefits, metrics throughout the food system

Increasing adoption of carbon-mitigation practices

Shifting consumer behaviors around food consumption and waste management

Disinvesting in carbon-intensive supply chain infrastructure

POLICY RECOMMENDATIONS...**METRICS**

DEVELOP	QUANTIFY	PUBLICIZE	INCLUDE
Develop metrics to capture emissions from the food system as a whole	Quantify carbon sequestration in agricultural lands (& oceans?) as part of the state's greenhouse gas inventory	Include metrics in online public dashboard	Include impacts from food imported to RI from outside of the New England region

POLICY RECOMMENDATIONS...**RESEARCH**

Work with academic institutions to **develop RI-relevant methodologies for assessing 'blue carbon' sequestration** activities in the state

Identify research priorities for improving the environmental sustainability of food production, processing, transportation and distribution activities in the state

POLICY RECOMMENDATIONS...**WASTE**

Take a comprehensive approach to reducing wasted food/organic material going into the landfill

Evaluate a wide range of options for increasing food (and organic) waste diversion volumes,
from consumer-facing programs > composting regulations/policies > other food/organic waste processing approaches

POLICY RECOMMENDATIONS...**AGRICULTURE**

Increase support for conservation of agricultural land

Increase support for soil-regenerative agriculture practices

POLICY RECOMMENDATIONS...**PLANNING**

CENTER	Center climate change risks and opportunities in the RI's food strategy, Relish Rhody
LEVERAGE	Leverage regional food system partnerships to increase learning and share resources
CONSIDER	Consider a stand-alone climate strategy for nature-based climate solutions, including blue carbon, in Rhode Island 's working lands and bay and coastal waters

KEY POINTS

Engage the land & food sectors in climate work

Plan for long-term, multi-stakeholder efforts

Measure climate, resilience & equity benefits

Question & Discussion

Relish RHODY

RIEC4

Act on Climate

Thank you & a quick post session poll!

Comments may be submitted: www.climatechange.ri.gov/aoc

Check back for updated project materials: www.climatechange.ri.gov/aoc

All climate-related activities will be posted to the EC4 calendar: www.climatechange.ri.gov

Next RIEC4 Meeting – 9/22 from 2:30-4PM (Location TBD)