

Act on Climate Climate-Food Systems Workshop

Hosted by:

RI Executive Committee on Climate Change & Relish Rhody

First, a quick poll!

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

We will get started shortly!





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:

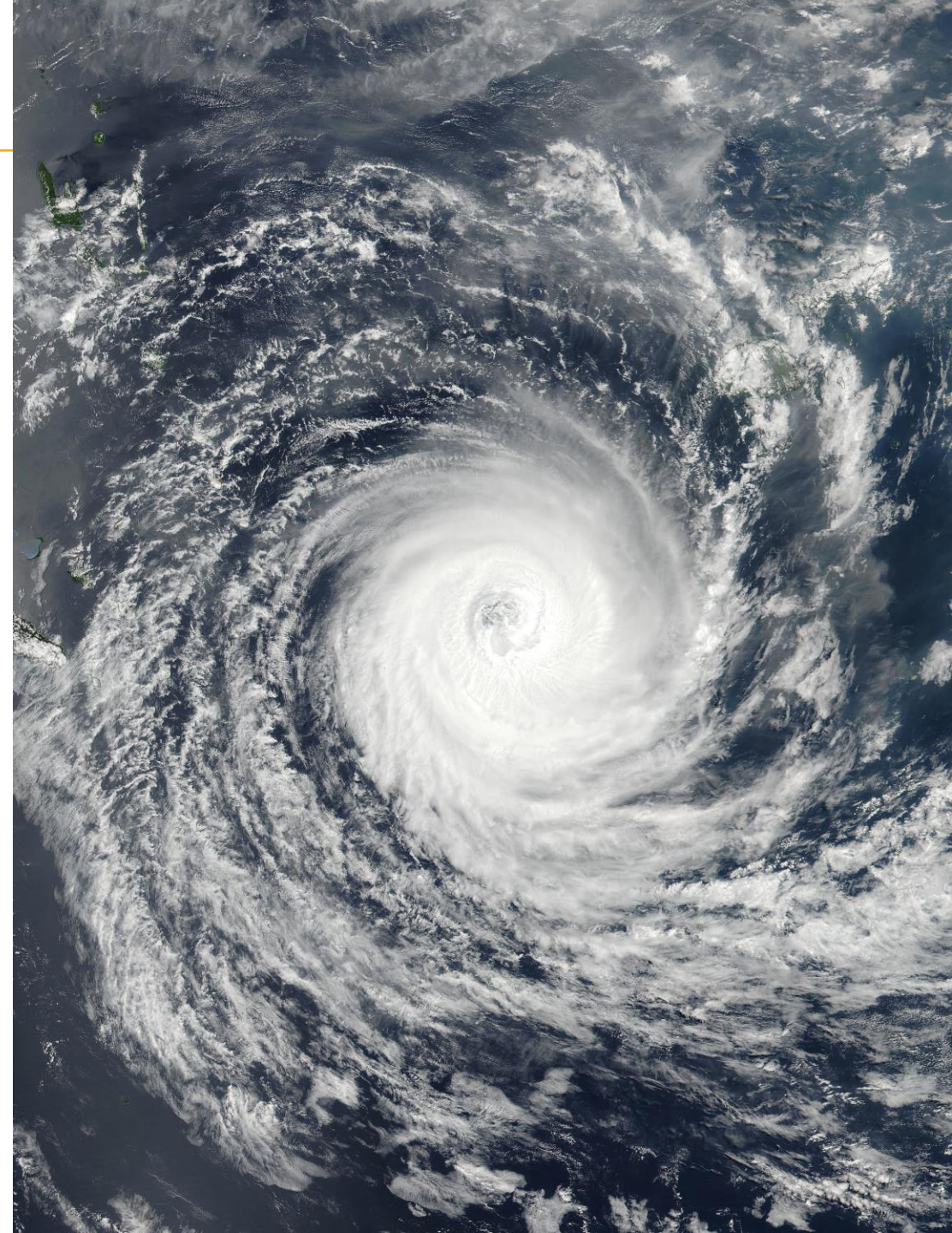
- Advance the state's understanding of the effects on climate change including food security
- Identify strategies to prepare for these effects and communicate them to Rhode Islanders

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

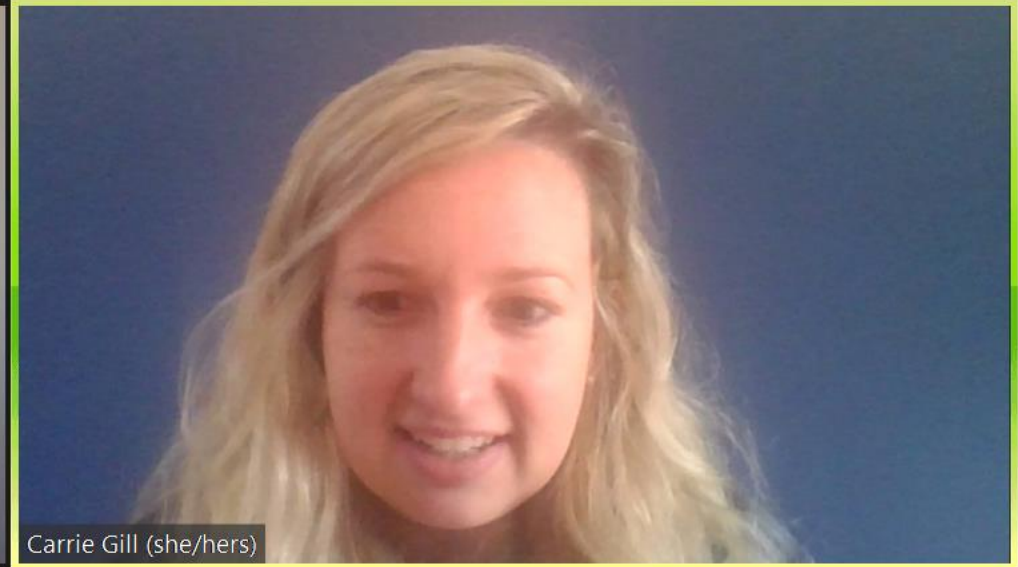
- 10% below 1990 levels by 2020
- 45% below 1990 levels by 2030
- 80% below 1990 levels by 2040
- Net-zero emissions by 2050

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?

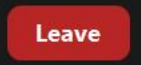
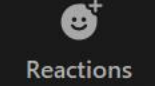
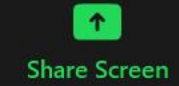
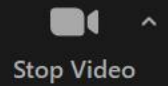
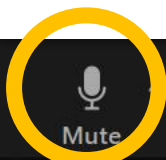
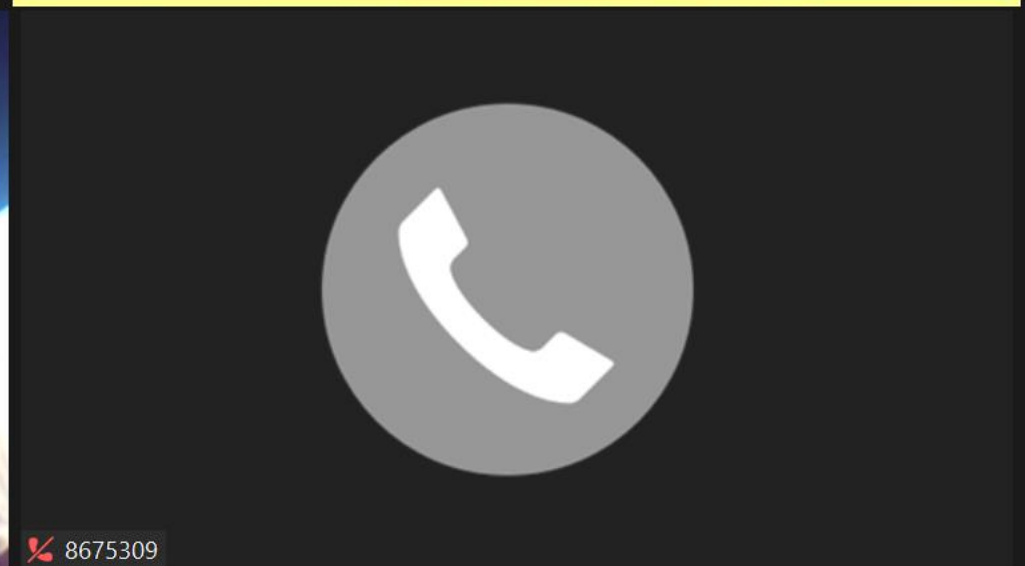
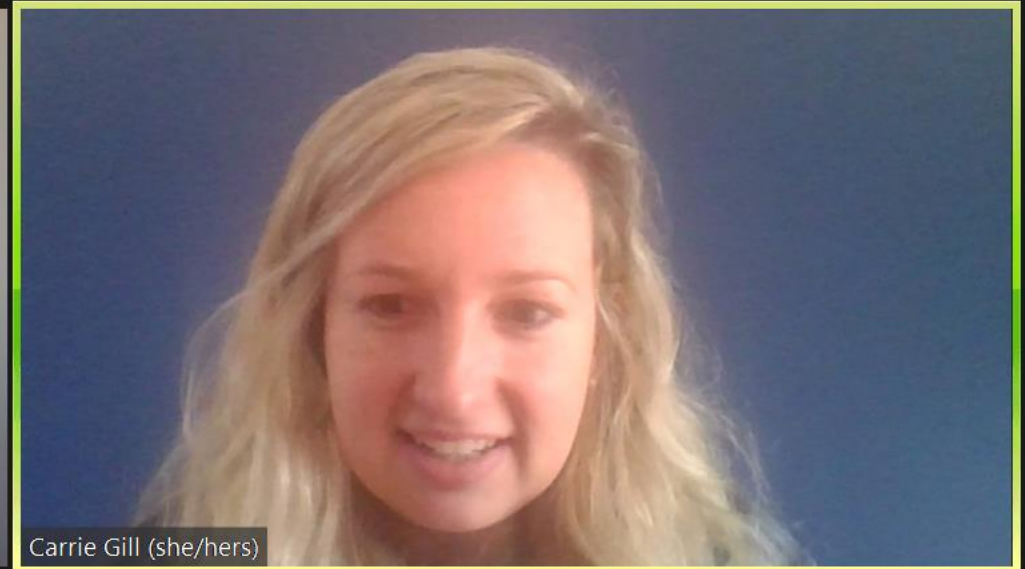


How to Participate



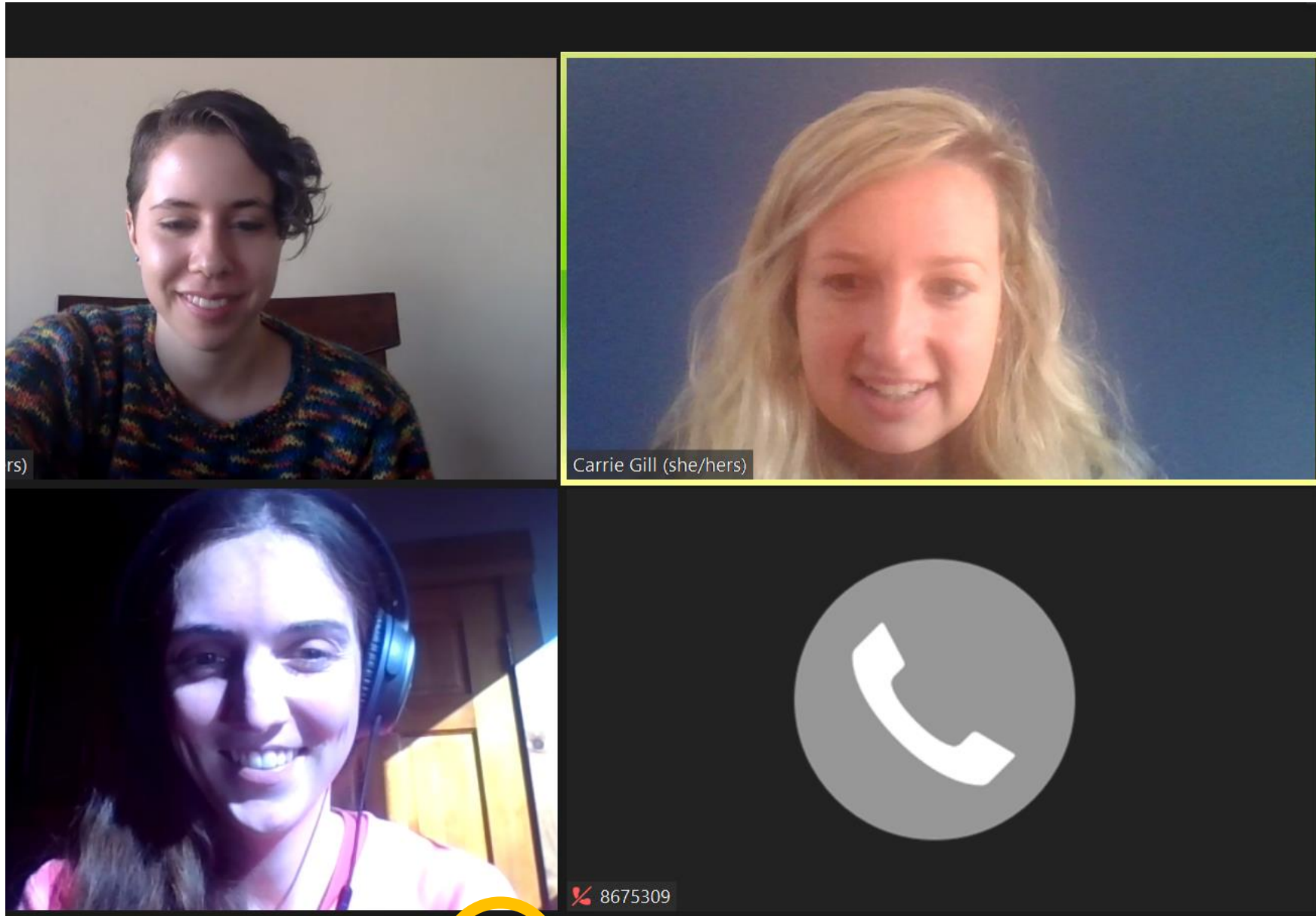
How to Participate

- **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.



Mute



Stop Video



Participants



Chat



Share Screen



Record

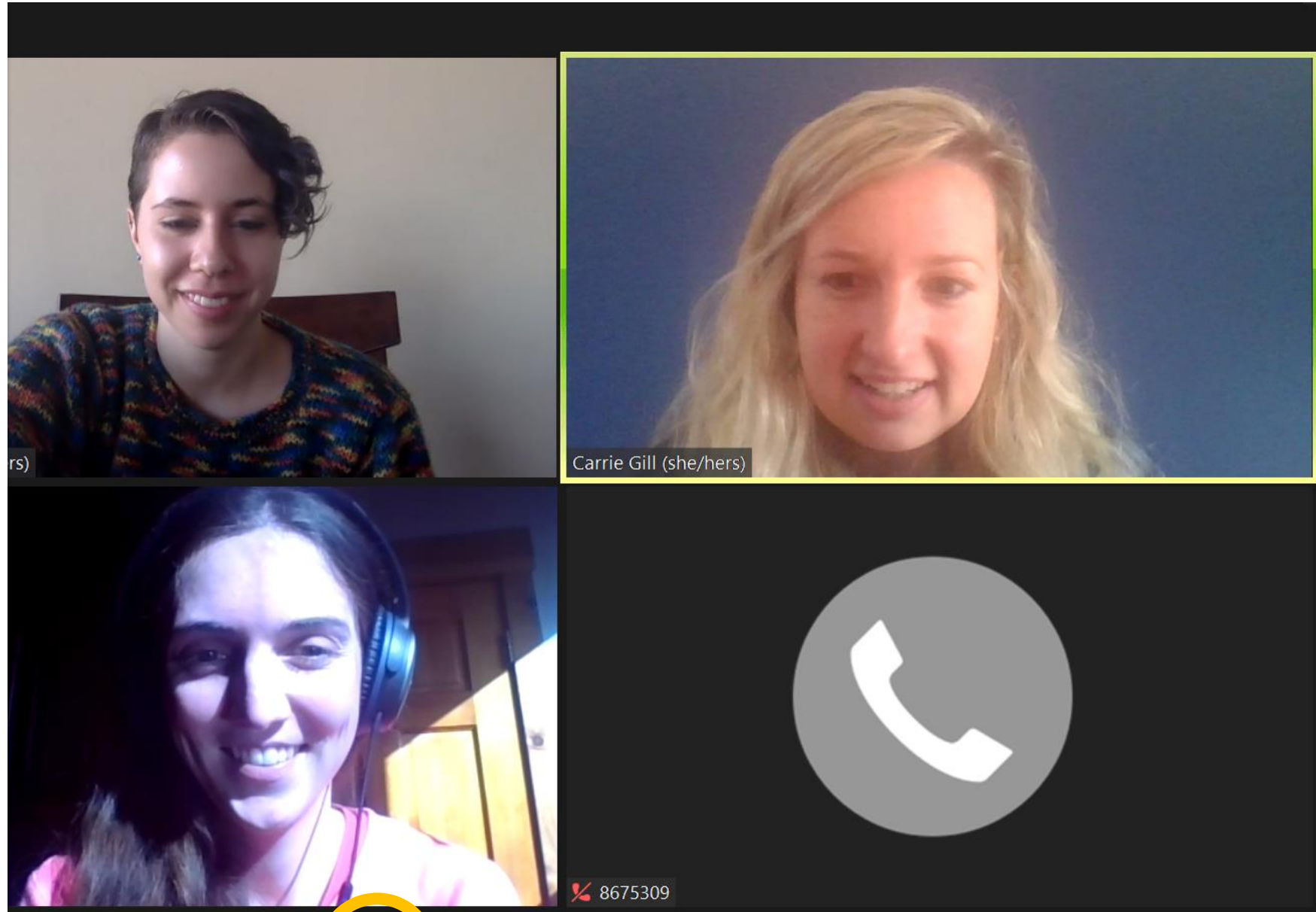


Reactions

Leave

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.



Mute Stop Video

Participants 4

Chat

Share Screen

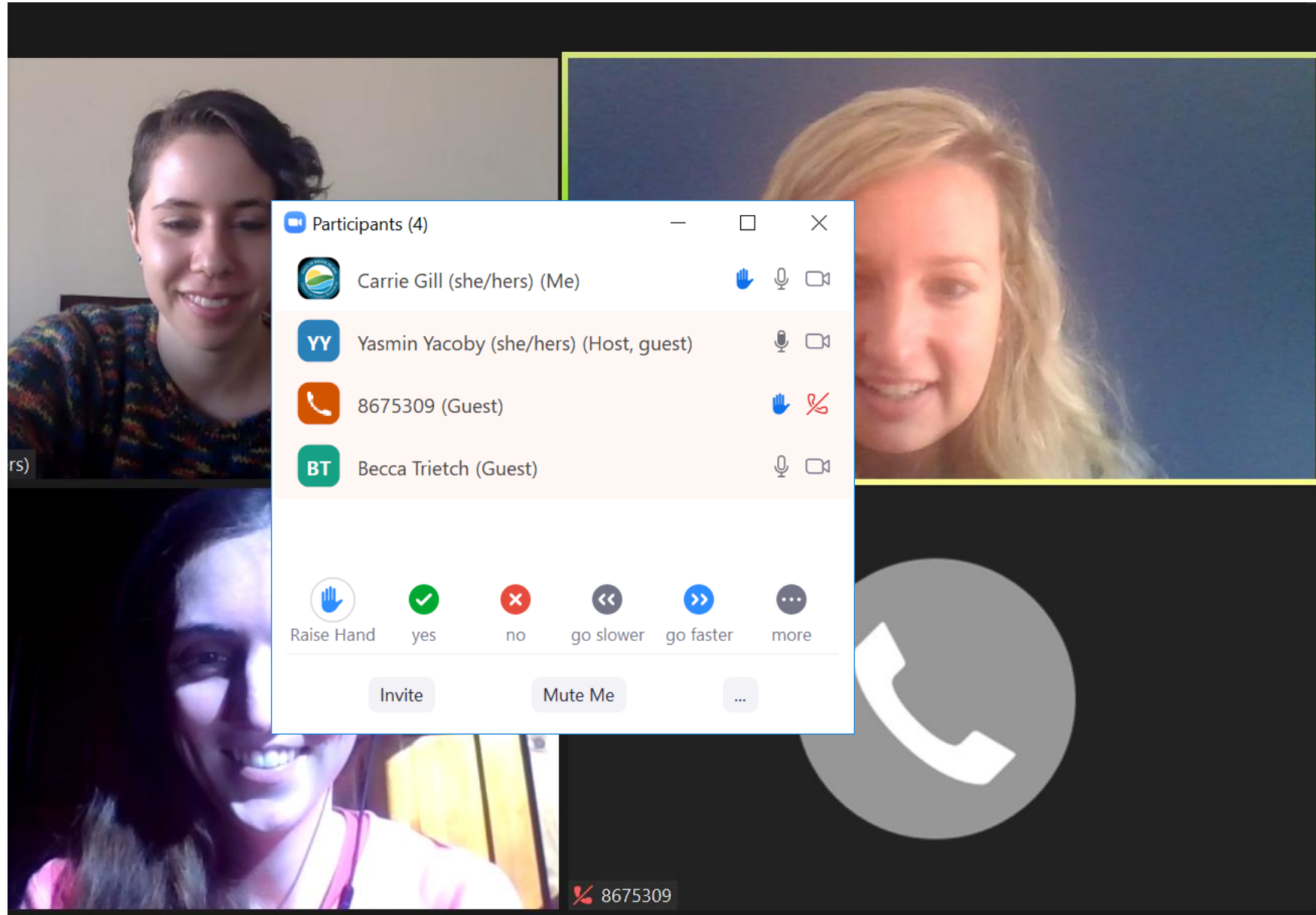
Record

Reactions

Leave

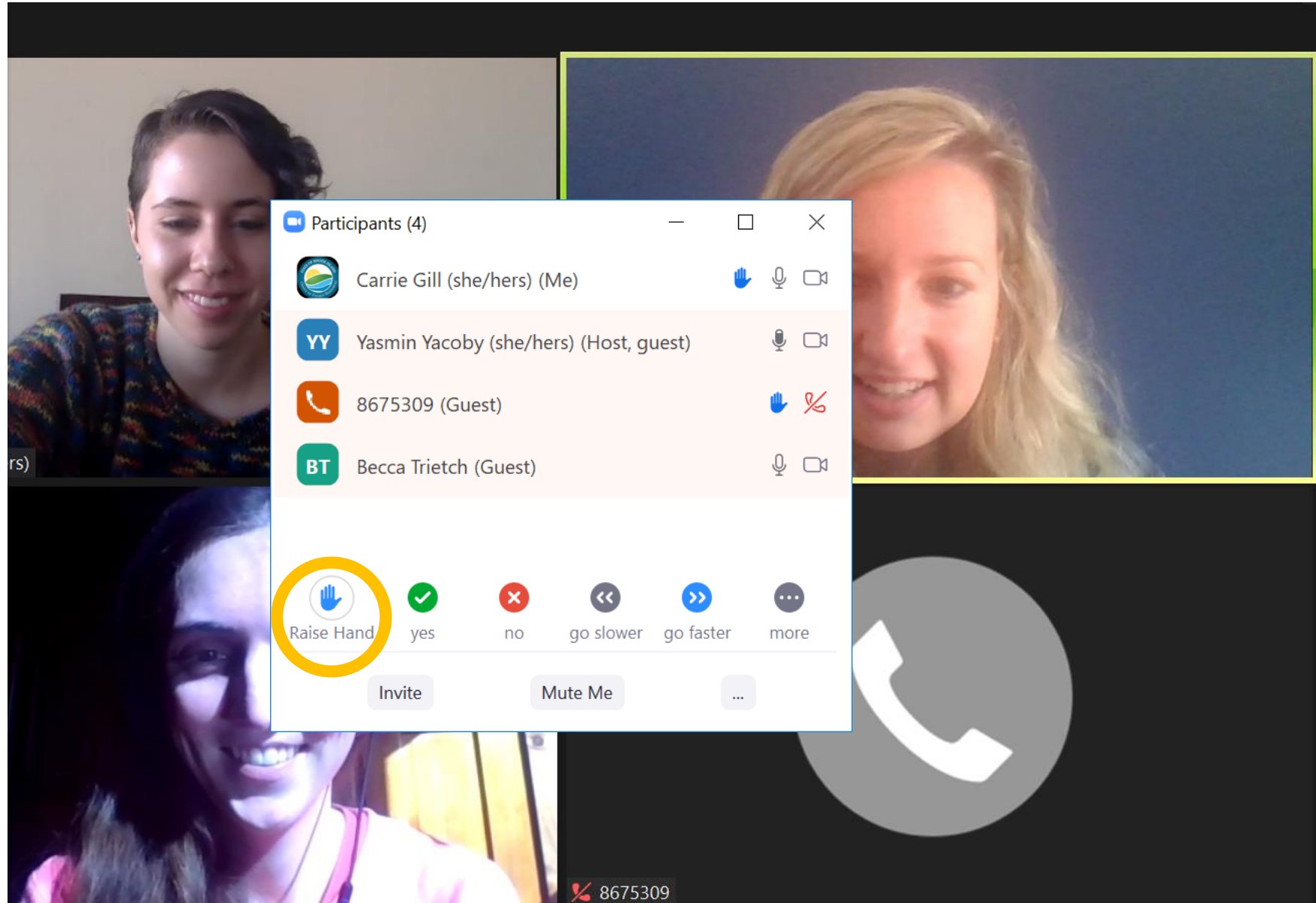
How to Participate

- 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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- We will call on you to speak.



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.



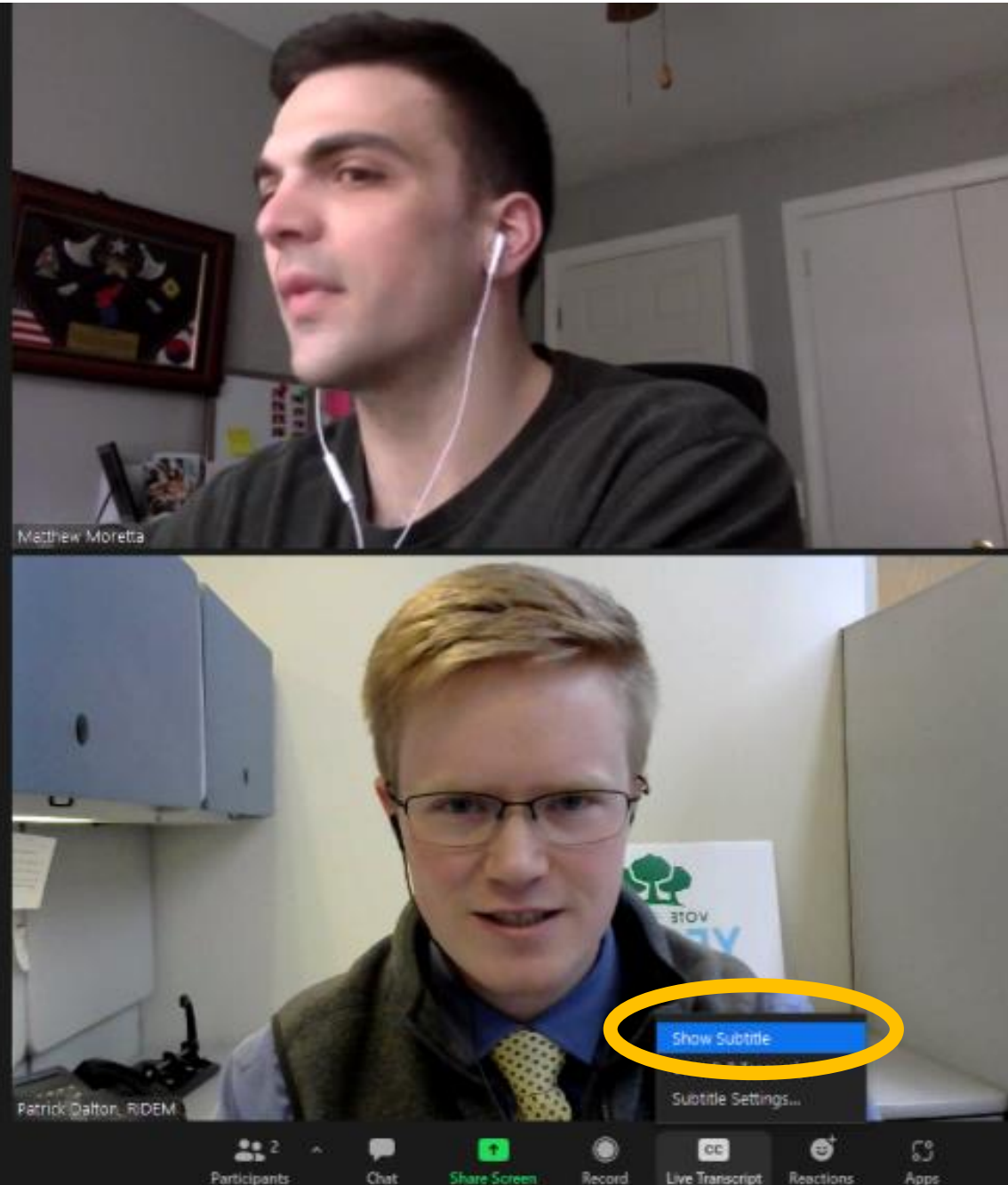
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- You can also change the subtitle settings from this menu.



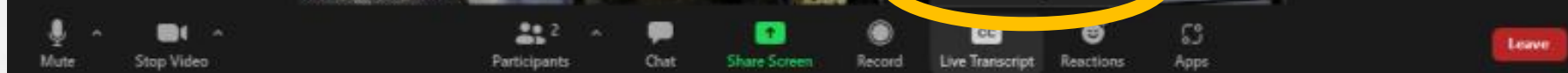
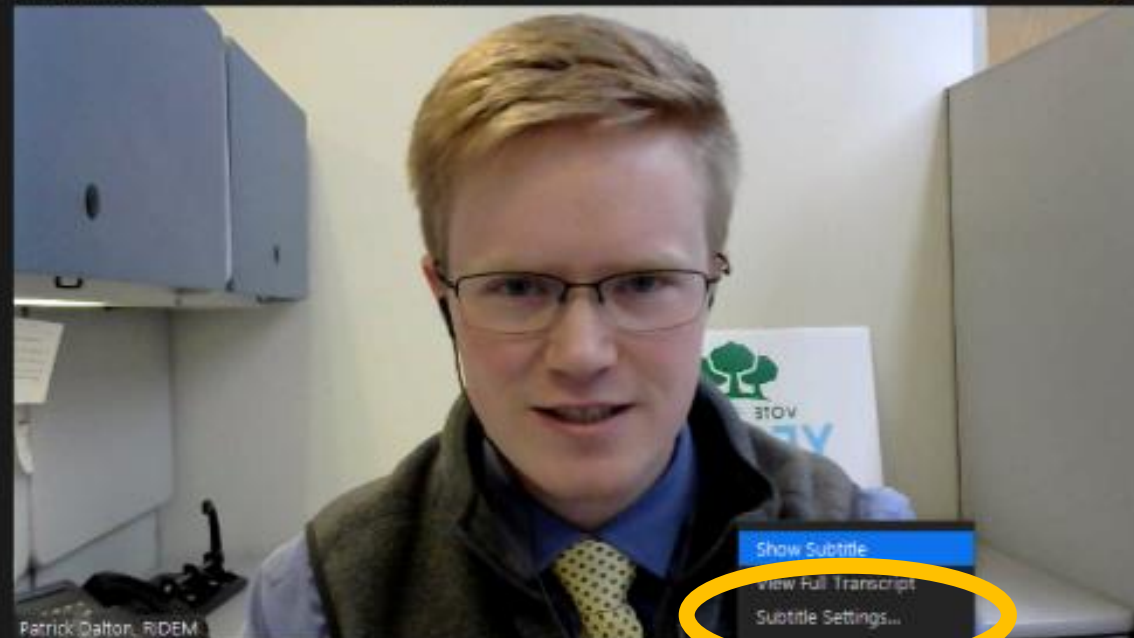
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How to Participate

- Please direct technical zoom **questions** to Matthew.Moretta. CTR@ energy.ri.gov



Patrick Dalton, RIDEM



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
Earth Care Farm
Charlestown, RI



Bill Silkes

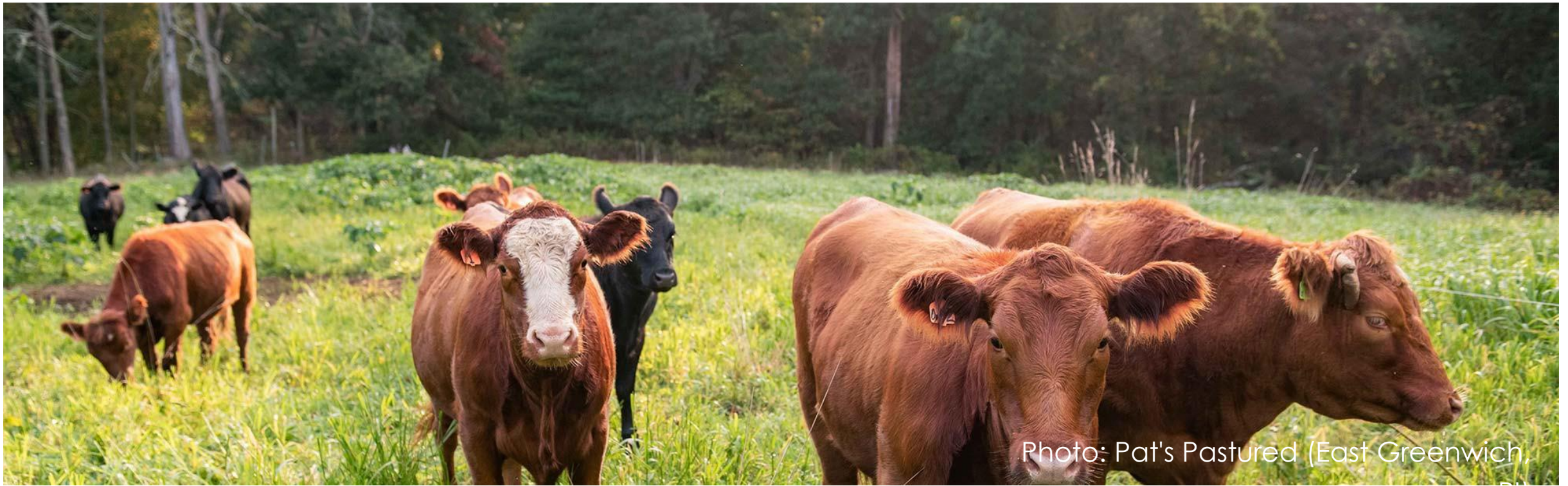
Founder
American Mussel Harvesters
North Kingstown, RI



Diane Lynch

Board President
RI Food Policy Council





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 System

RHODE ISLAND'S FOOD SYSTEM: PEOPLE, PLANET, PROSPERITY



AGRICULTURE AND AQUACULTURE

5,331 jobs
\$789.5 million sales
1,181 businesses

FISHERIES

3,147 jobs
\$538.33 million sales
42 businesses

PROCESSING

3,902 jobs
\$250.3 million sales
201 businesses

GROCERY

11,821 jobs
695 businesses

HOSPITALITY (RESTAURANTS)

57,600 jobs
\$2.7 billion sales
2,926 businesses

TOTAL JOBS

75,800

TOTAL SALES

\$4.28 billion

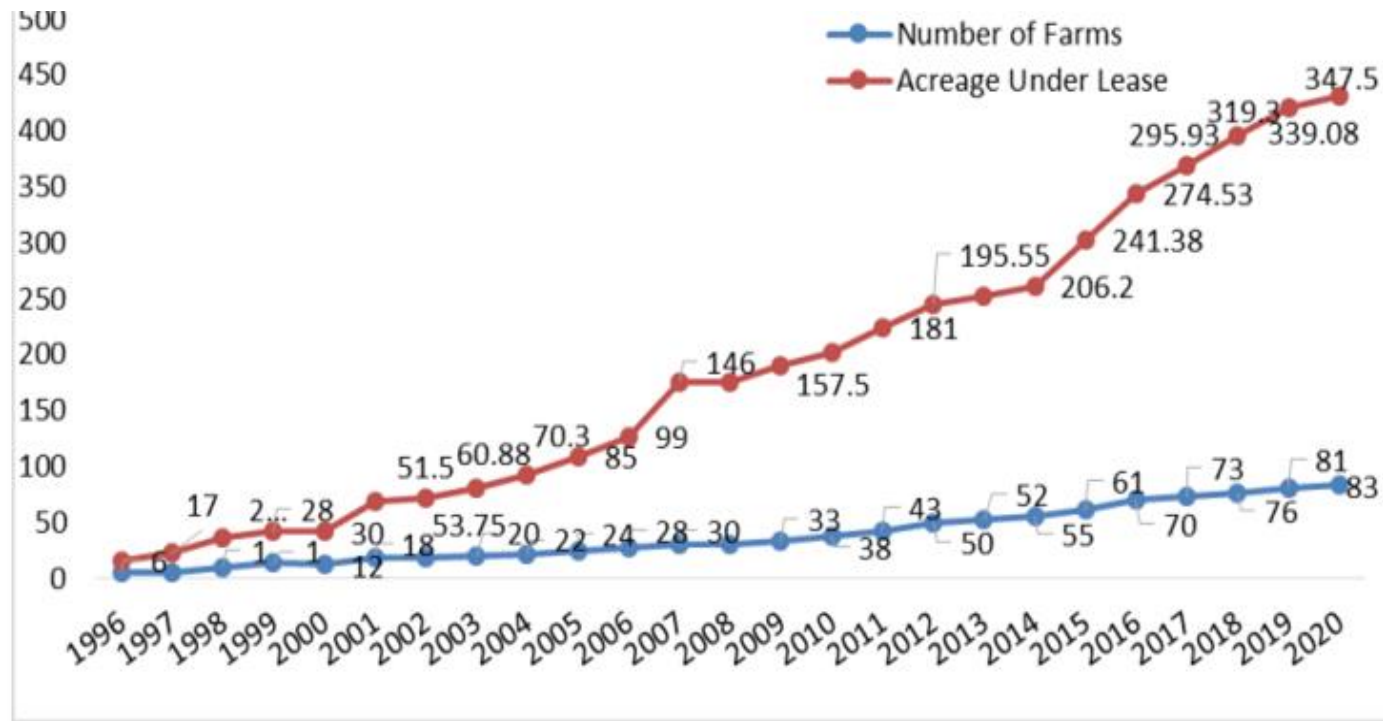
TOTAL BUSINESSES

5,043

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.

Rhode Island's Food System – Agriculture & Aquaculture

Aquaculture Farms & Acreage Under Lease



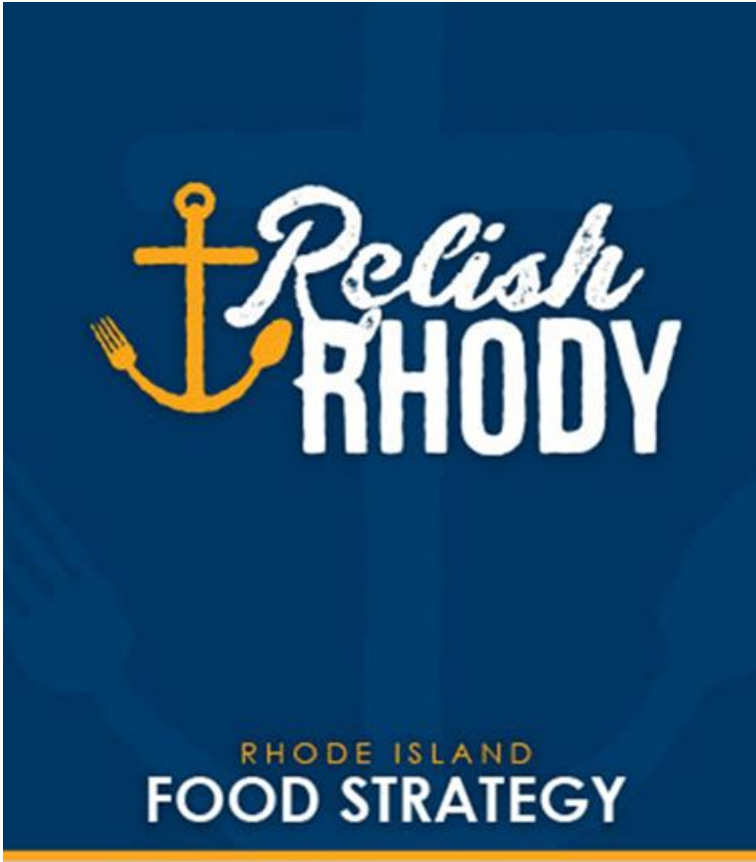
- 60,000 acres of farmland
- 1,200+ crop farms
- 347 acres under aquaculture production

source: [CMRC 2020](#), RIFPC, USDA Census of Agriculture (multiple years)



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



AN ACTIONABLE VISION FOR FOOD IN RHODE ISLAND



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

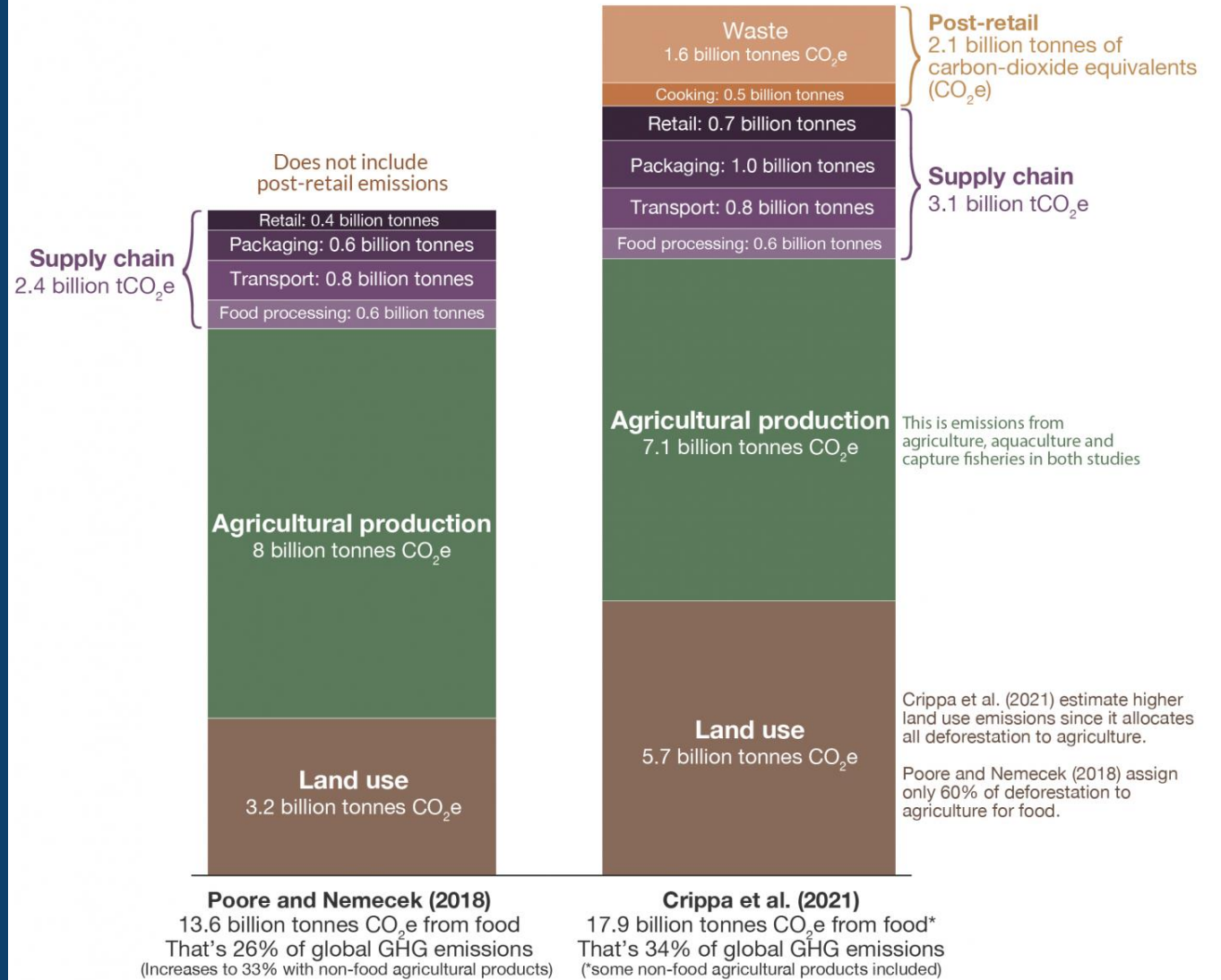


How much of global greenhouse gas emissions come from the food system?

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.

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

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



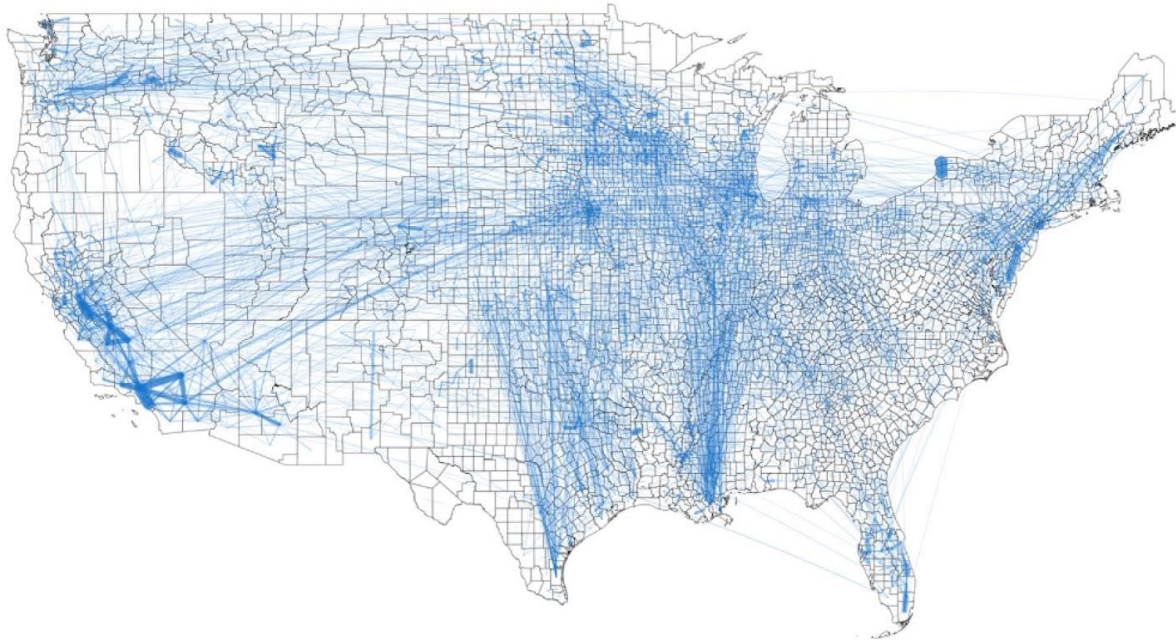
*Crippa et al. (2021) include emissions from a number of non-food agricultural products, including wool, leather, rubber, textiles and some biofuels. Poore and Nemecek (2018) do not include non-food products in their estimate of 13.6 billion tonnes CO₂e. This may explain some of the difference.

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*.



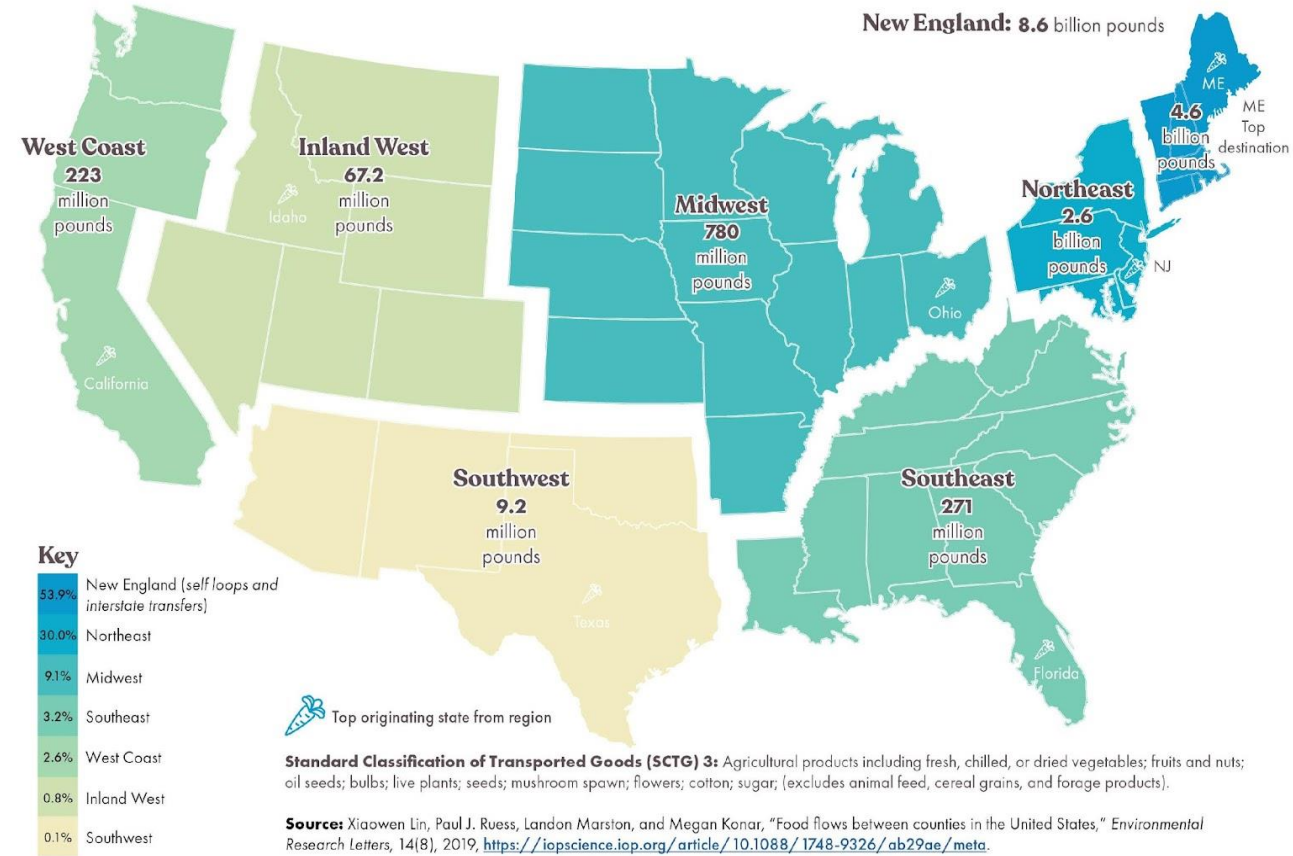
RI imports 90% of our food from outside the region

Food Flows: Downscaled to All Counties



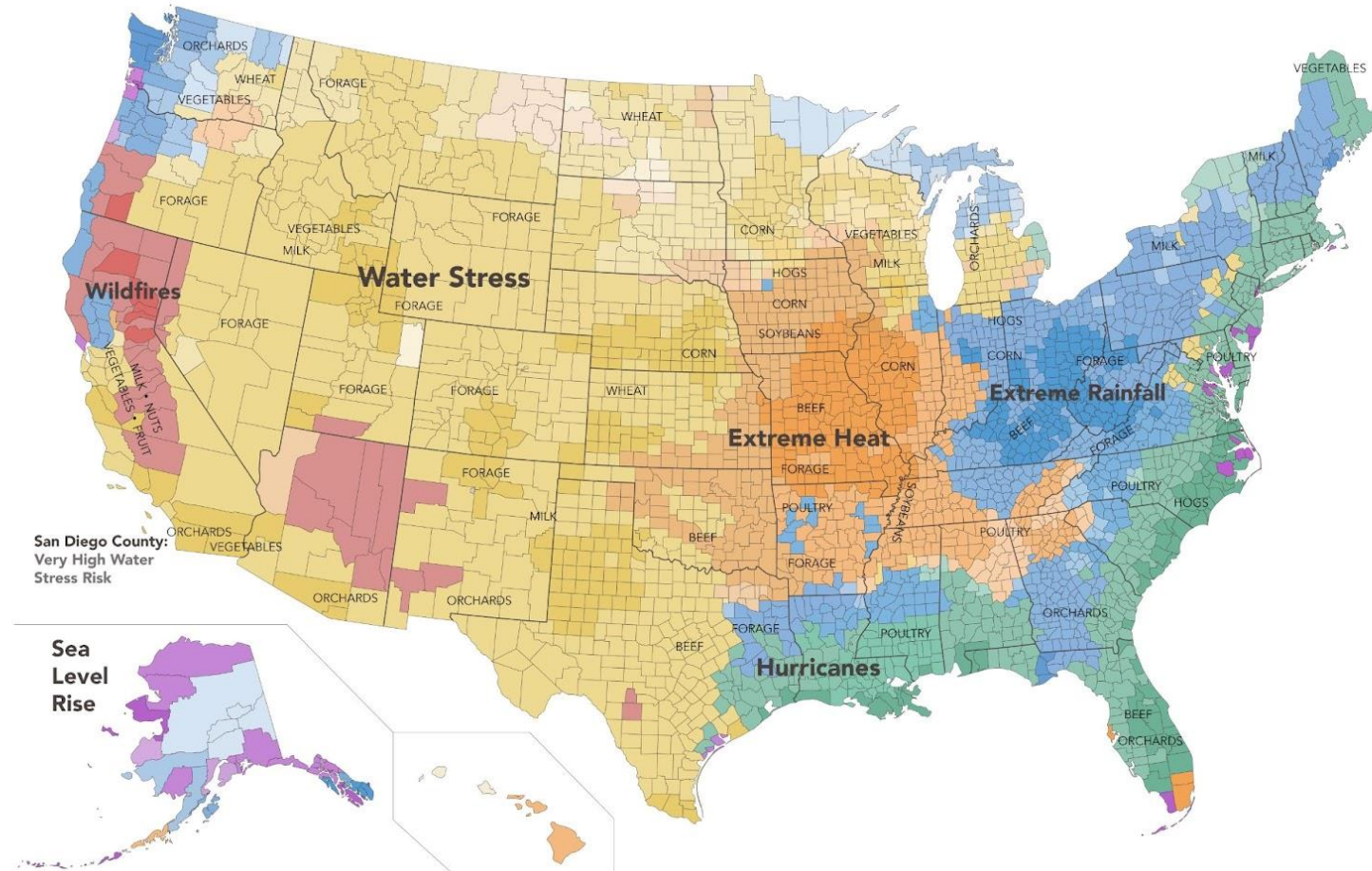
source: Lin, X., Ruess, P. J., Marston, L., & Konar, M. (2019). Food flows between counties in the United States. *Environmental Research Letters*, 14(8), 084011.

Agricultural Product (SCTG 3) Flows Into New England



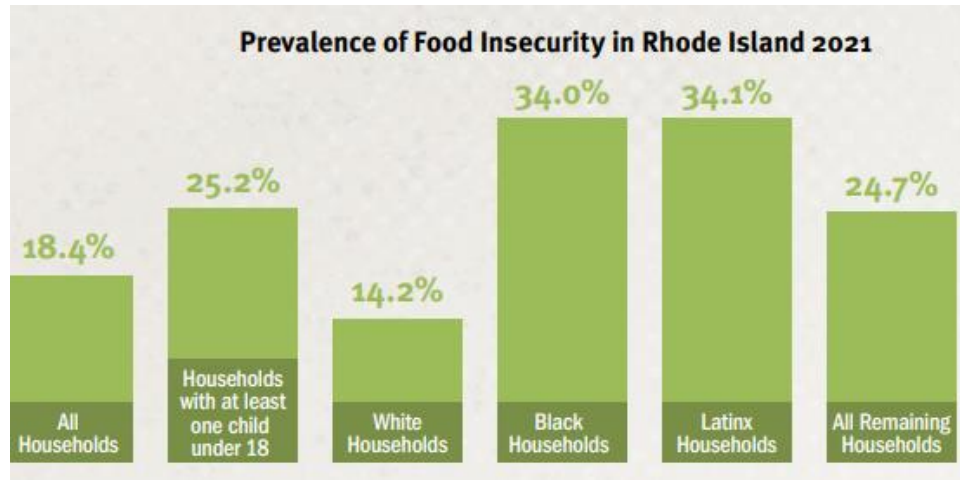
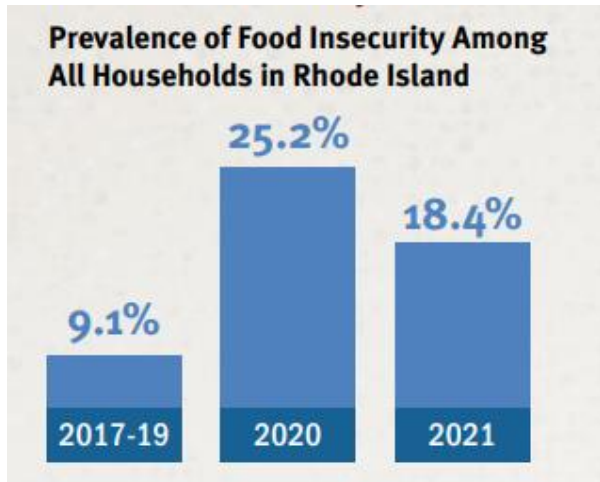
Most of our food comes from high risk regions

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

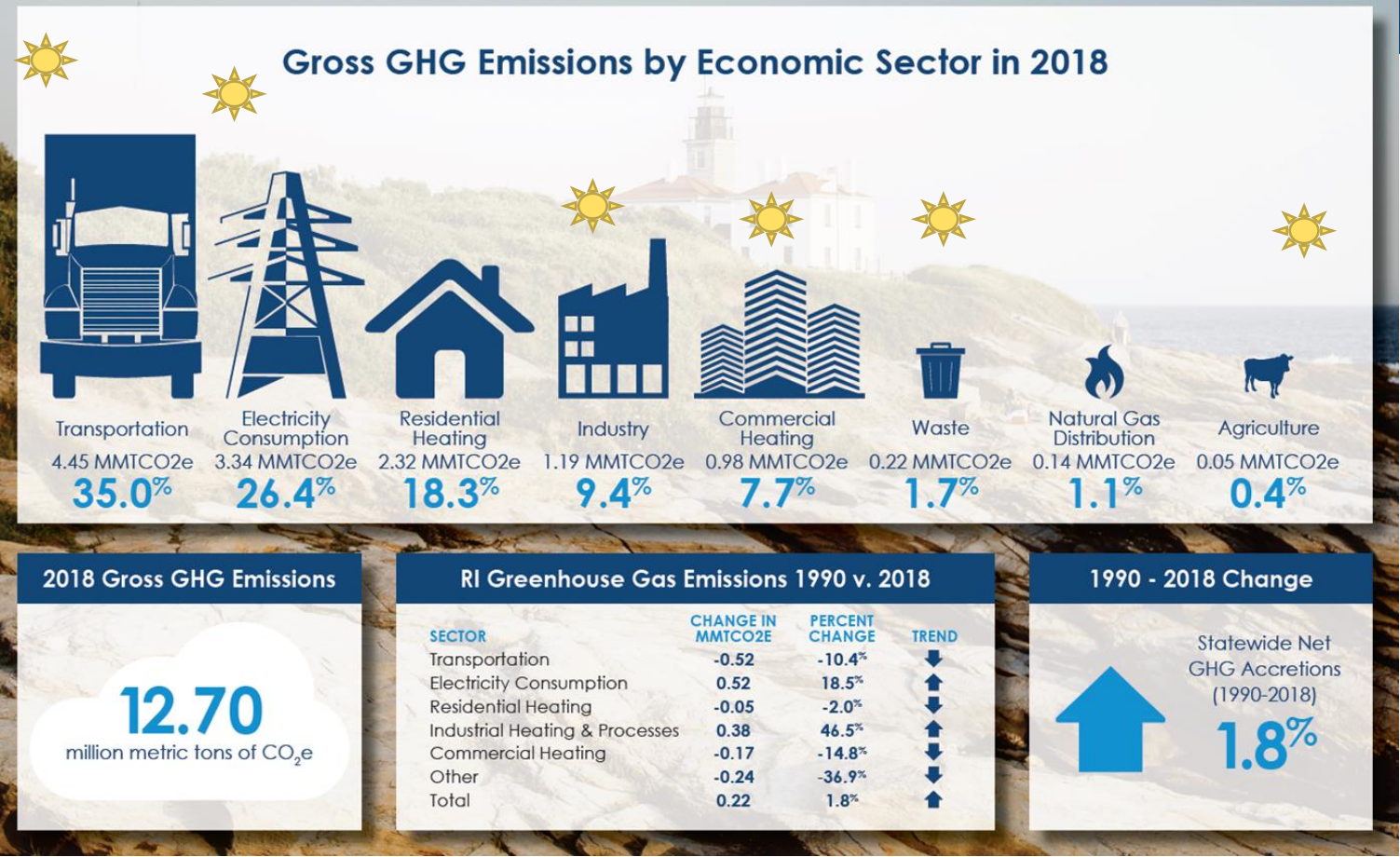
The prices have climbed to their highest level since 2011, according to a U.N. index. It could cause social unrest "on a widespread scale," one expert said.



Source: [NYT February 23 2022](#)

RI Food Systems x GHG Emissions

 Distributed emissions from food and agriculture



THE FOOD SUPPLY CHAIN



source: [Neufeld, Visual Capitalist \(2020\)](#)



How might we measure food emissions in Rhode Island?

**322,290 TONS WASTE
FOOD GOES TO LANDFILL**



TONS OF COMPOSTABLE WASTE
GOING INTO THE CENTRAL RI
LANDFILL (2017)

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?



Today's Panel



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Director of Food
Strategy
Rhode Island
Commerce



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Policy Manager
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North Kingstown, RI



Diane Lynch

Board President
RI Food Policy
Council



Adaptation involves modifying our decisions, activities and ways of thinking to adjust to a changing climate

Goals



Increasing our capacity to adapt



Improving our ability to thrive under different climate conditions



Building resilience to extreme weather and climate changes

Examples



Forest protection



Infrastructure and building design



Flood protection



Changing agricultural practices
Planting different crops to respond to changing growing seasons and temperatures, or planting a variety of crops to reduce damage from pests that could migrate northward

Overlapping examples



Green infrastructure



Water and energy conservation

Mitigation aims to reduce the causes of climate change

Goal



Cut down greenhouse gas emissions

Examples



Energy efficient technology



Sustainable transportation



Industrial process improvements



Renewable energy



Creating community and home gardens
Increasing local agricultural capacity helps reduce the need to import food over long distances, and by extension the consumption of fossil fuels

Climate Change: Adaptation and Mitigation

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

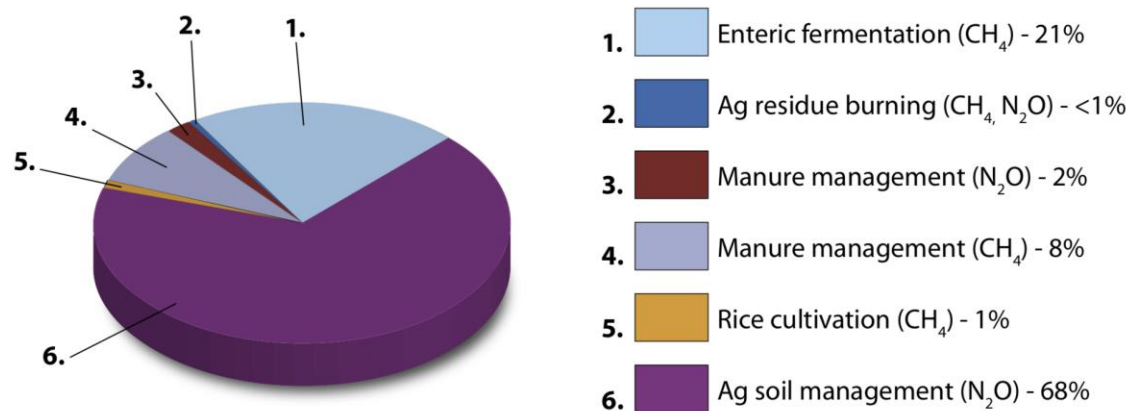


GHG DIRECTLY FROM AGRICULTURE

WHAT WE MUST REDUCE/ELIMINATE



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



Methane (CH_4) is 25x more potent than CO_2 (cow burps and manure management)

Nitrous Oxide (N_2O) 300x more potent than CO_2 - and long lasting. Chemical fertilizers

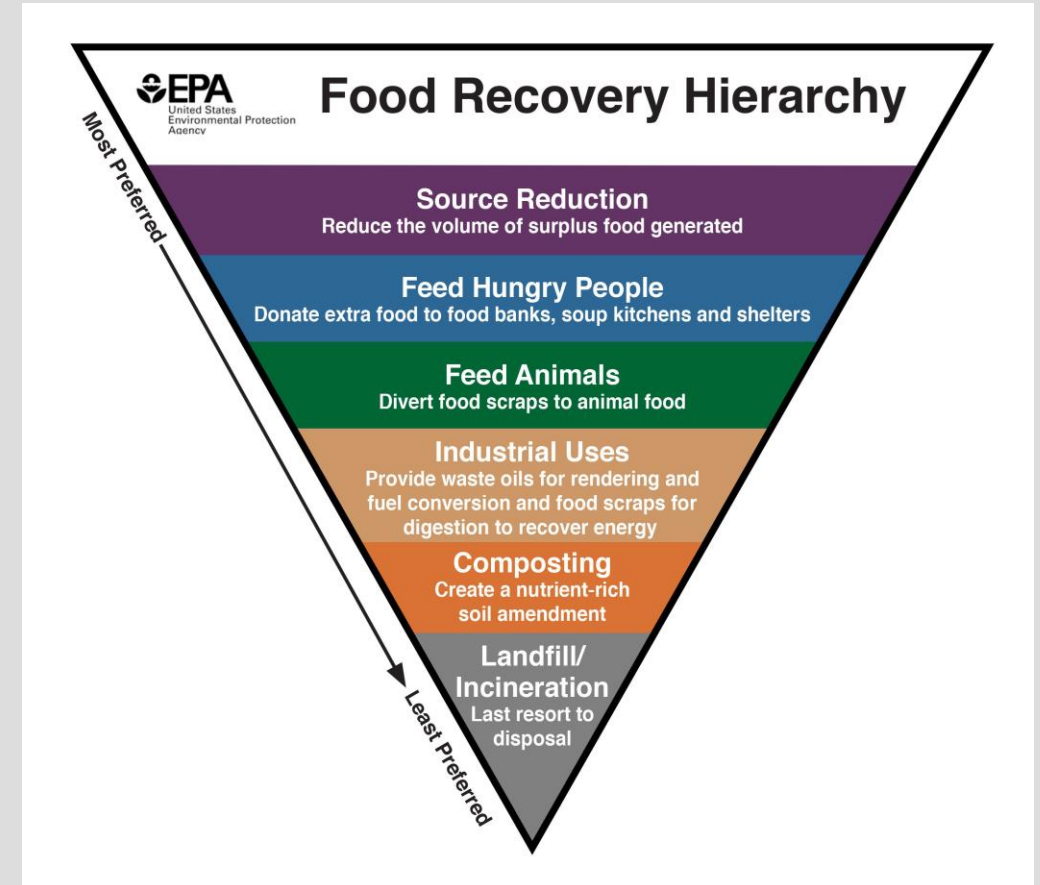


WASTED FOOD

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)

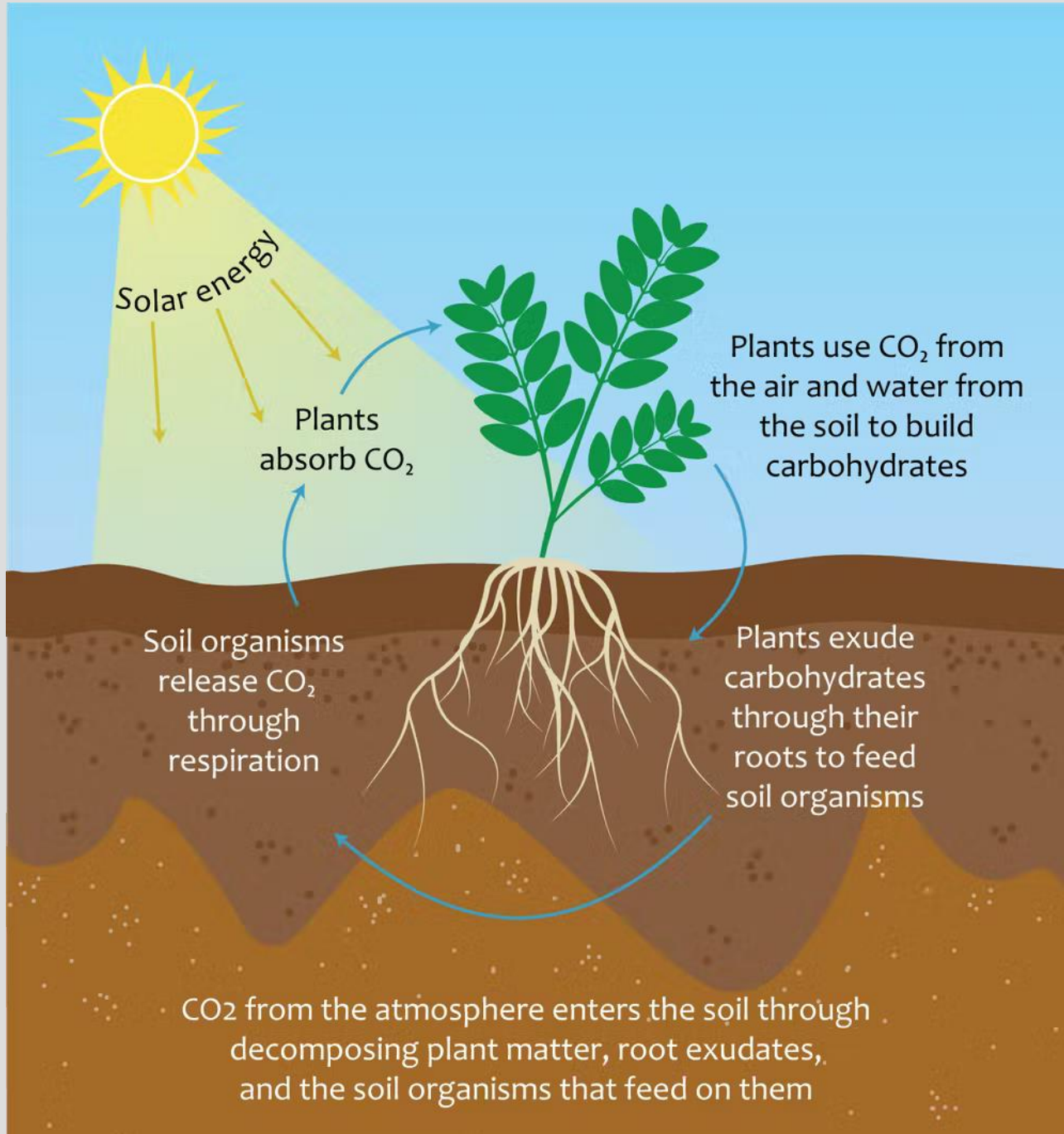
Many levels to reduce food waste!



SOIL HEALTH – SEQUESTRATION AND ADAPTATION

5 Core Principles of **REGENERATIVE AGRICULTURE**

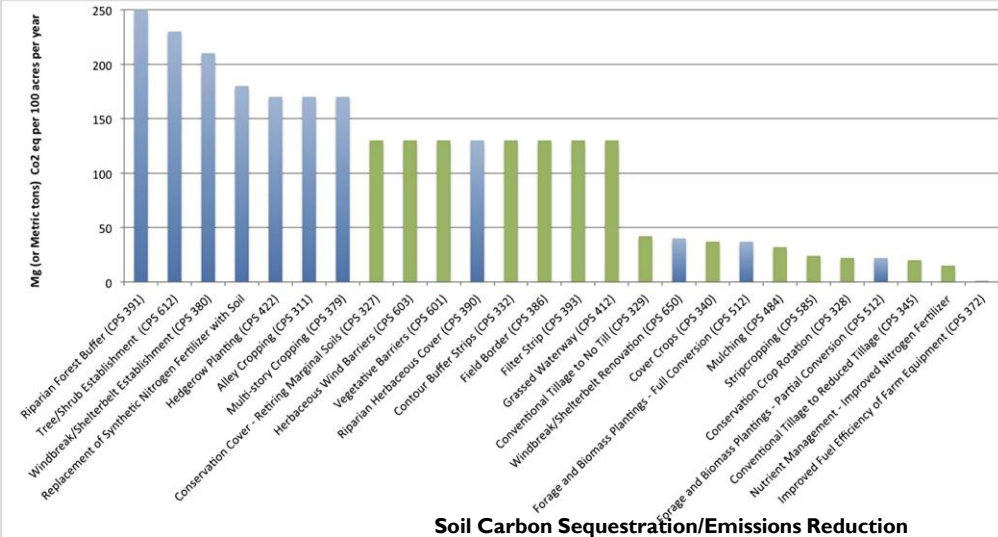




ADAPTATION



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-PlanPotential by Management Practice
 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



Climate, Farmland, and Agriculture

RHODE ISLAND EXECUTIVE CLIMATE CHANGE COORDINATING COUNCIL

American Farmland Trust
Chelsea Gazillo
New England Policy Manager

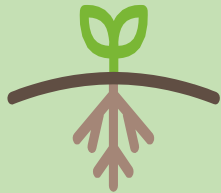
American Farmland Trust

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.

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



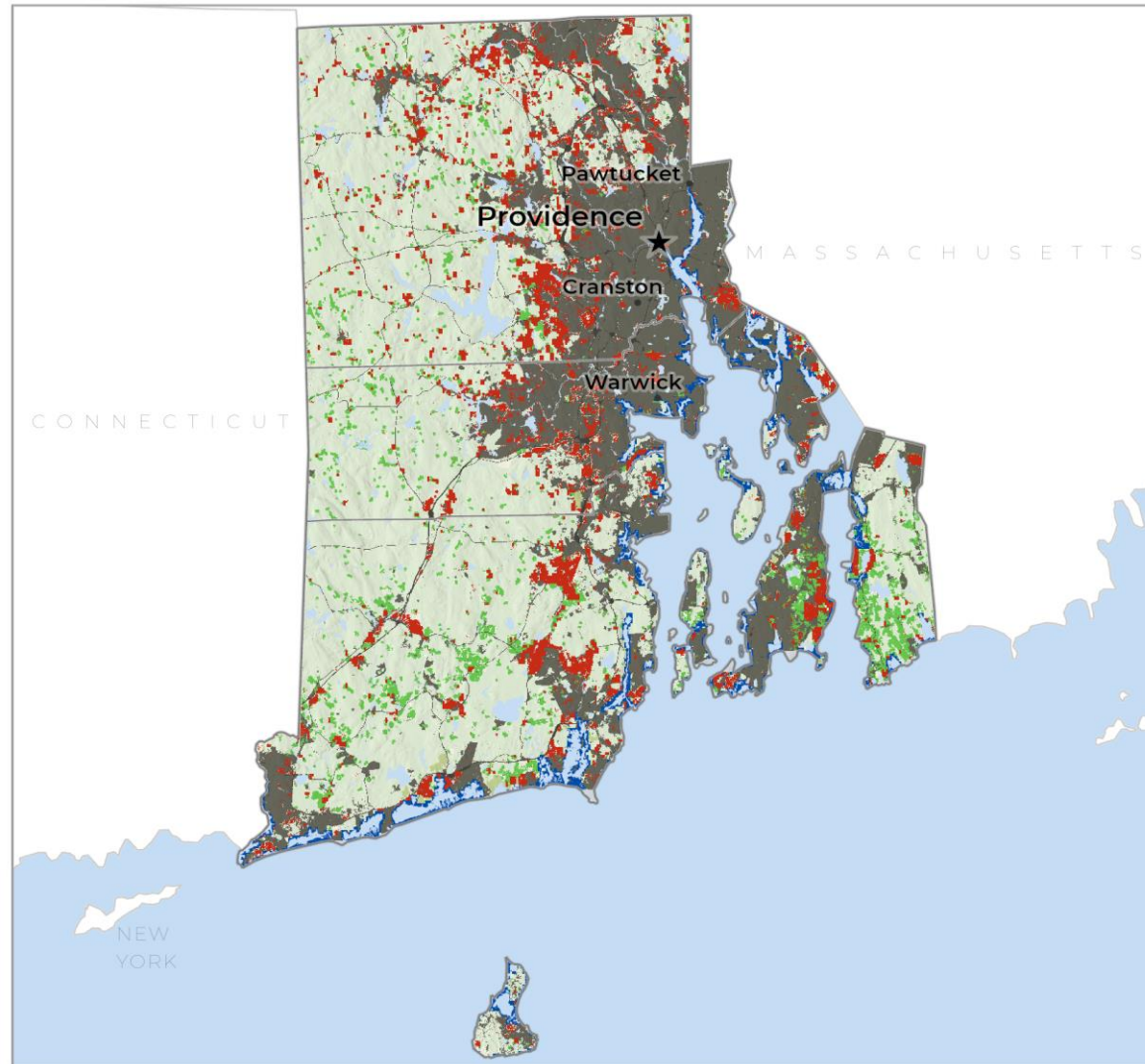
The U.S. Continues to Lose Farmland

- 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

Farms Under Threat 2040 -- *Business as Usual Scenario*



Projected Agricultural Land Conversion and Coastal Flooding (2040)

- Urban and highly developed (UHD) and low-density residential (LDR)
- Coastal flooding

Land Cover (2016)

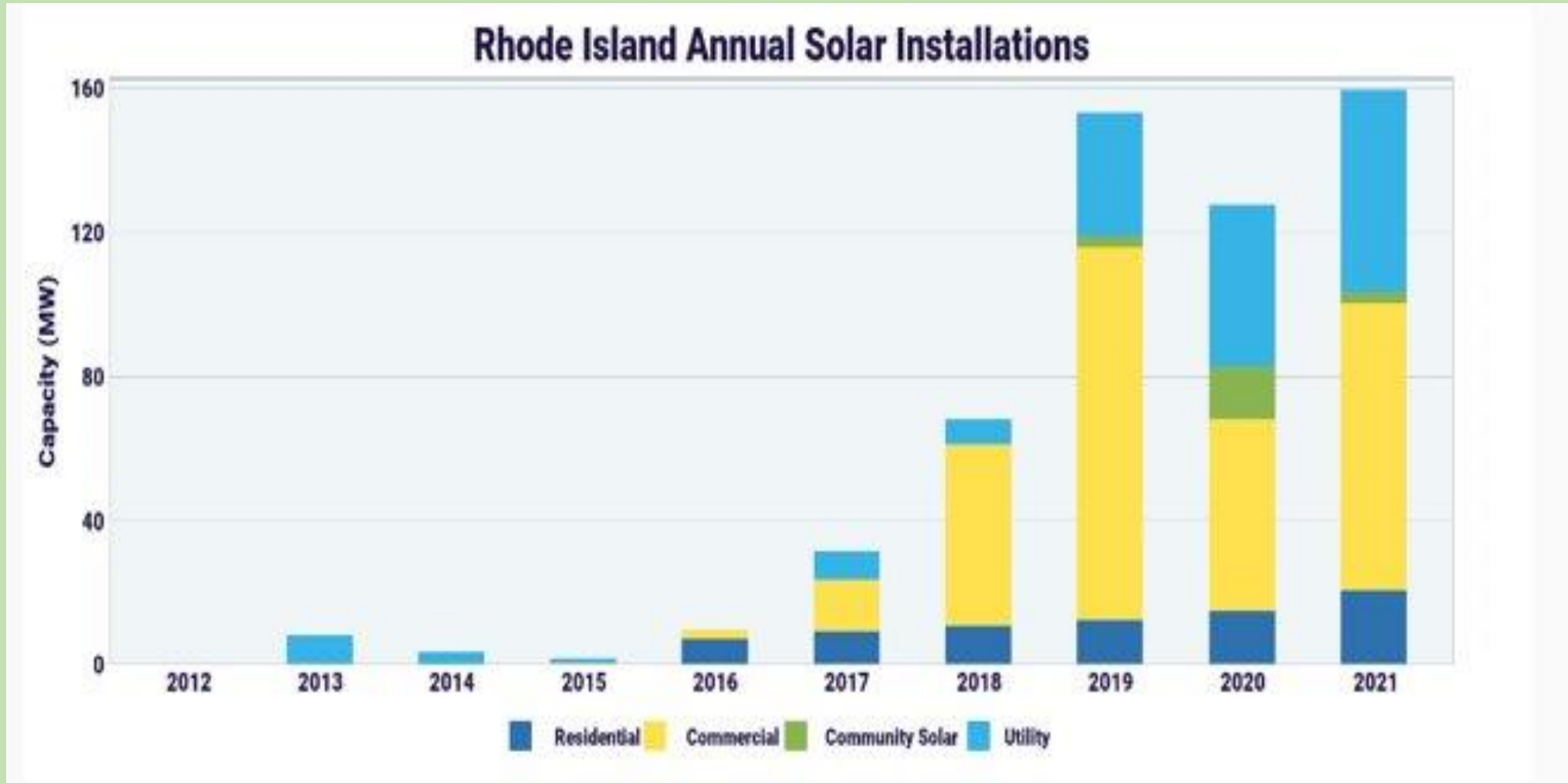
- Farmland*
- Forestland
- Urban areas
- Federal (no grazing)
- Other lands
- Water

*Farmland is composed of cropland, pastureland, and woodland associated with farms.

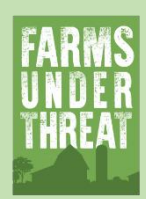
American Farmland Trust makes no warranties as to the suitability of the data and information found here for any particular purpose or user. These maps are not intended to predict the future or to show how development should occur. Instead, they illustrate one potential future. At the local level, the results should not be evaluated against specific zoning ordinances in precise locations. Please refer to the report (<https://farmlandinfo.org/publications/farms-under-threat-2040>) for more information.

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

Competing Farmland Uses –Solar Development



Rhode Island's Annual Solar Installations



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/>



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

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

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Producer Perspective: Agriculture



Earth Care Farm
Working in Harmony With Nature

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



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: 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

Develop metrics to capture emissions from the food system as a whole

QUANTIFY

Quantify carbon sequestration in agricultural lands (& oceans?) as part of the state's greenhouse gas inventory

PUBLICIZE

Include metrics in online public dashboard

INCLUDE

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



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)

