



# **DELAWARE'S**

## ***Climate Action Plan***

Welcome to Workshop No. 1:  
Minimizing Greenhouse Gas Emissions  
September 15, 2020  
11:30 a.m. – 1:00 p.m.

# Workshop Facilitators and Presenters



**Shawn M. Garvin**  
Secretary  
DNREC



**Susan Love**  
Administrator  
Climate and Sustainability  
Programs, DNREC



**Kari Hewitt**  
Consultant  
KLA



**Ann Steedly**  
Consultant  
Planning Communities

# Virtual Workshop Logistics

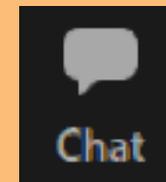
## Make Sure Your Sound Works

- You will be muted upon entry to the workshop.
- To test incoming sound, click the “up” arrow next to the microphone icon at the bottom of your screen. Select “Test Speaker & Microphone”.
- If you can’t get computer/mobile device sound to work, either re-launch Zoom or click the “up” arrow and “Switch to Phone Audio”.
- Note: *You may not hear sound until the webinar begins.*



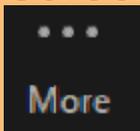
## Get Tech Support or Ask a Question

- Click the “Chat” icon at the bottom of your screen. You can ask the meeting host for tech support or ask the Climate Action Plan team a question.
- We may not be able to answer all questions during the workshop. However, we will capture all questions from the chat box and include a Q&A section in our workshop summary report.



## Closed Captioning



- To turn on captions, click the  icon at the bottom of your screen and select “Show Subtitle”. If you don’t see this icon, click  at the bottom of your screen, select “Closed Caption”, and then “Show Subtitle”. To view captions that were typed previously, select “Show Full Transcript”.
- To change caption size, click the “Closed Caption” icon again and select “Subtitle Settings”. Use the slider to change caption size.

## Workshop Materials and Additional Input

- Workshop materials are available at [declimateplan.org](https://declimateplan.org). Workshop recordings will be posted there afterwards.
- You can provide additional comments via our online survey or our comment form. Details at [declimateplan.org](https://declimateplan.org).
- We will email you a feedback form after the workshop. Let us know how we can improve these online workshops!

# Virtual Workshop Logistics



# GOALS FOR THIS WORKSHOP

Describe potential actions Delaware is considering for its Climate Action Plan

Examine which actions have the greatest potential to reduce emissions in Delaware

Explore the challenges associated with prioritizing climate action and competing priorities

# Agenda

11:30 a.m. – 11:40 a.m.

11:40 a.m. – 12:05 p.m.

12:05 p.m. – 12:40 p.m.

12:40 p.m. – 1:00 p.m.

1:00 p.m.

Welcome and Overview

Presentation and Polling

Small Group Breakout Session

Wrap-Up and Polling

Workshop Ends

# **DELAWARE'S** ***Climate Action Plan***

## **A Plan to Protect and Strengthen Delaware**

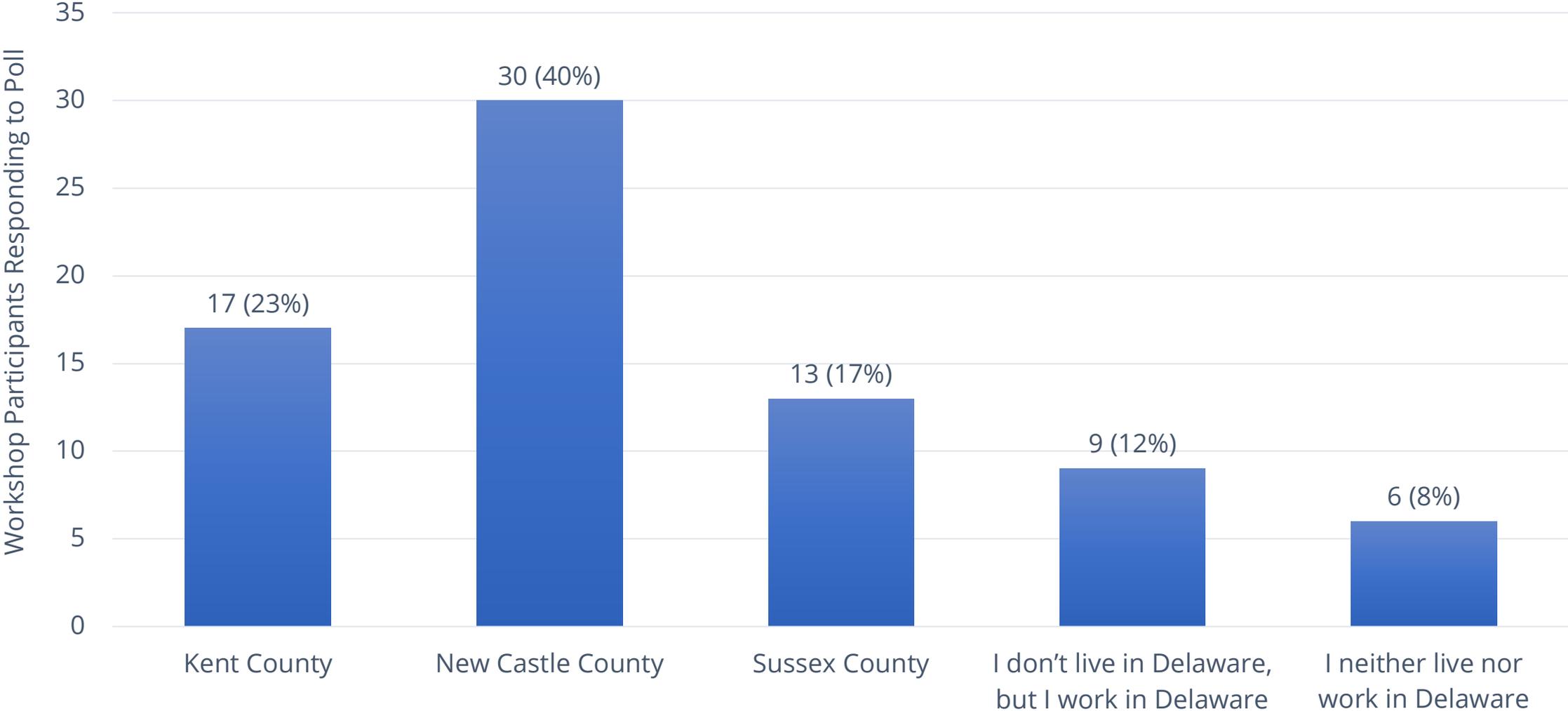
Implementing Delaware's Climate Action Plan will protect and strengthen:

- Our agricultural and tourism economies
- The natural places we enjoy for recreation
- Our infrastructure
- The health of our residents and visitors
- Access to clean energy and transportation for all Delawareans

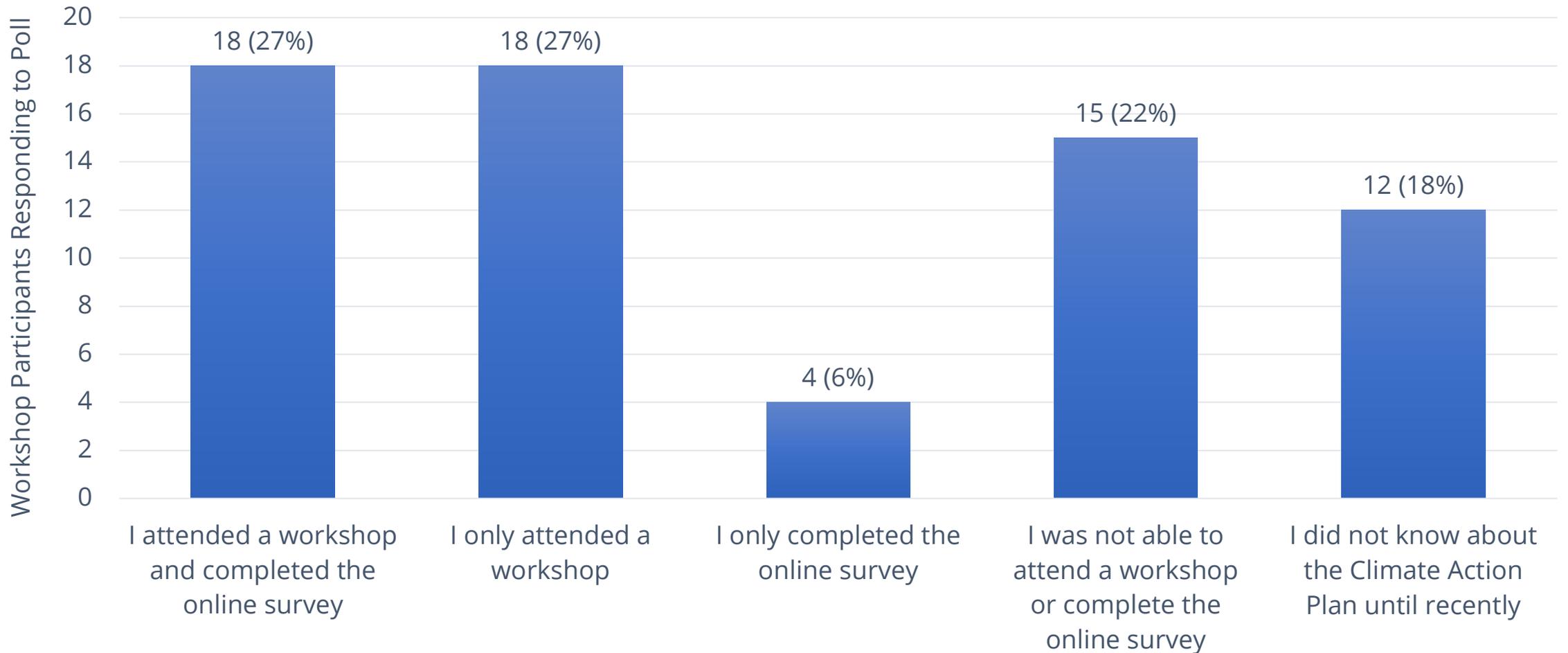


# Zoom Polling

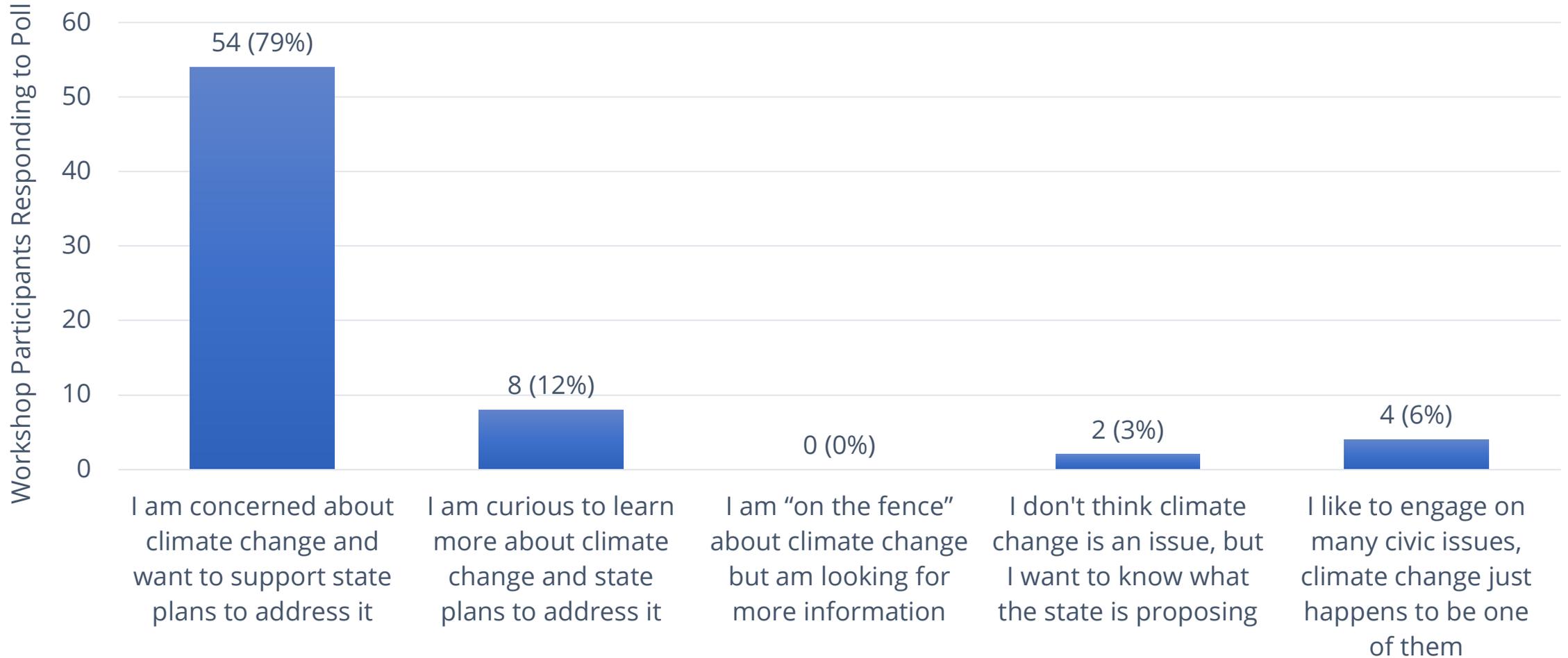
# Zoom Poll Results: Who is joining us today? I live in...



## Zoom Poll Results: Did you participate in the Round 1 workshops or take the online survey (in March)?



## Zoom Poll Results: What is your PRIMARY interest in Delaware's Climate Action Plan?



# Why is It Important to Take Action Now?

There is broad consensus among climate scientists that minimizing the risk of catastrophic climate change impacts requires significant reductions in greenhouse gas emissions by mid-century.

While there is no single pathway to do this, strategies include:

- Making our buildings and vehicles more efficient
- Switching to low-carbon fuels
- Electrifying both buildings and the transportation sector
- Adding solar and wind power to the electricity supply

# Why is It Important to Take Action Now?

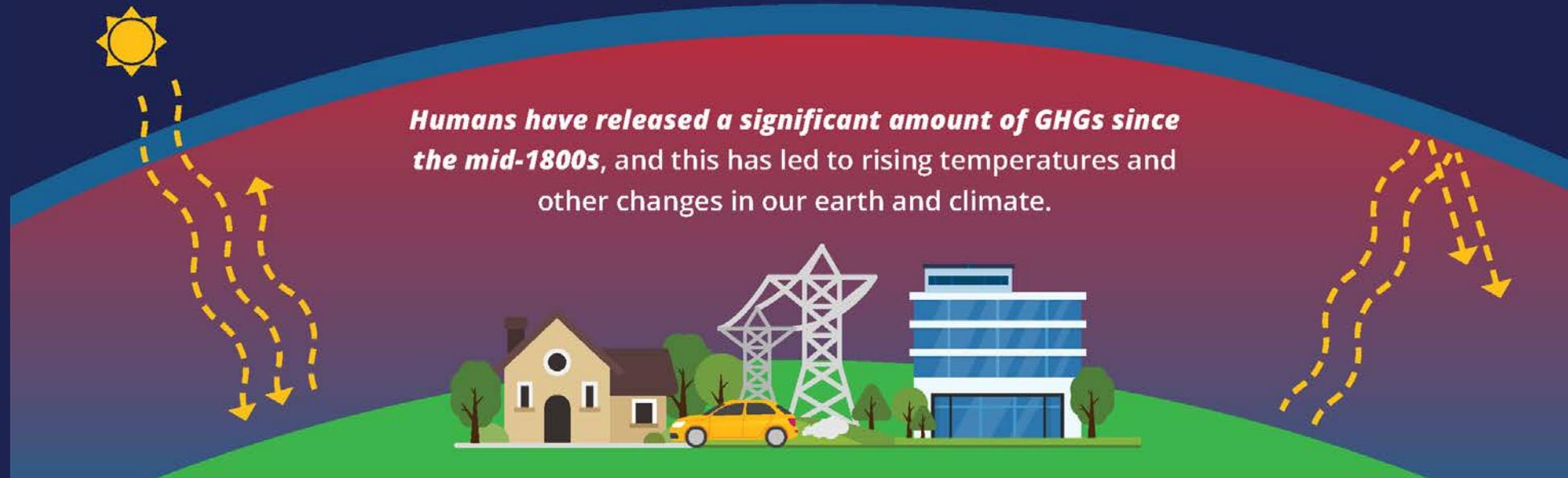
Many countries – and 16 U.S. states – have set mandates, targets and/or goals to reduce greenhouse gas emissions by at least 80% by 2050.

Delaware currently has a short-term emissions reduction target of 26-28% from 2005 levels by 2025.

# A Plan to Minimize Emissions

## Climate Change: Causes

Greenhouse gases (GHGs) are vapors in the atmosphere, like carbon dioxide, that trap heat around the earth. When we use fossil fuels like coal, natural gas, and oil to power our homes, businesses, and vehicles, we release even more GHGs into the atmosphere.



## Sources of Emissions



Electricity



Transportation



Industrial



Buildings



Waste



Agriculture

# A Plan to Maximize Resilience

## *Climate Change: Consequences*

Delawareans are already experiencing the impacts of climate change, with more on the way.



### **Increased Temperatures**

Delaware temperatures have risen 2°F since 1900.

#### **PROJECTED:**

Delaware temperatures are expected to increase another 2.5-4.5°F by 2050, with an up to 8°F increase by 2100.



### **Hotter, Longer Summers**

Historically, days above 100°F in Delaware have occurred less than once per year.

#### **PROJECTED:**

By 2050, Delaware can expect 2-8 days per year to reach above 100°F.



### **Rising Sea Levels**

Sea levels at the Lewes tide gate have risen more than a foot over the last century.

#### **PROJECTED:**

Sea levels at the Lewes tide gate are expected to rise an additional 9-23" by 2050.



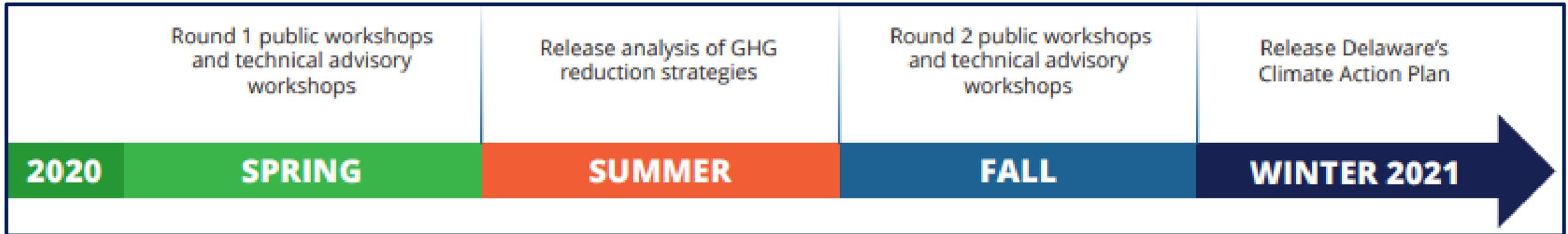
### **Increased Precipitation**

Delaware averages 45" of rain per year, typically evenly distributed among seasons. Rainfall in the autumn has been increasing 0.27" per decade.

#### **PROJECTED:**

Overall rainfall in Delaware is expected to increase by 10% by 2100. The number of very wet days (2" or more of rainfall) will also increase.

# Climate Action Plan Timeline

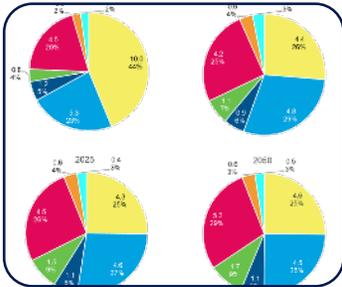


# Developing the Climate Action Plan



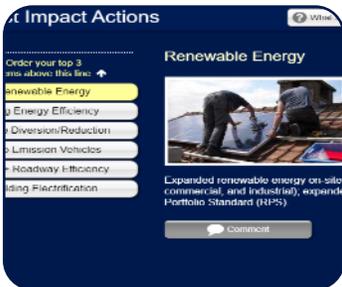
## WHAT WE HEARD

- Survey
- Spring workshops



## WHAT WE'VE LEARNED

- Technical Advisory Workshop
- GHG modeling and analysis



## WHERE DO WE GO FROM HERE?

- Fall workshops
- Survey

# What We Heard

- **Energy**
  - Renewable energy
  - Energy efficiency
  - Green building design
- **Transportation**
  - High density development
  - Improved public transit options
  - Accessibility to electric vehicles and charging stations
  - More walkable, bikeable communities
- **Resilience**
  - Adapting to sea level rise
  - Alleviating flooding
  - Emergency preparedness planning
  - Habitat restoration
- **Accessibility and equity considerations throughout**
- **Education and skills training**

People signed in, by location	256 people (76 Sussex, 118 New Castle, 62 Kent)
Total number of climate action ideas provided by participants	870 comments
Total number of ideas about the causes and consequences of climate change	315 ideas
Total video stories shared	33 stories
Location-specific "Social Pinpoint" comments	65 comments



# What We've Learned

In collaboration with consultants who are experts in modeling greenhouse gas emissions, **we learned what Delaware emissions could look like in the next three decades.**

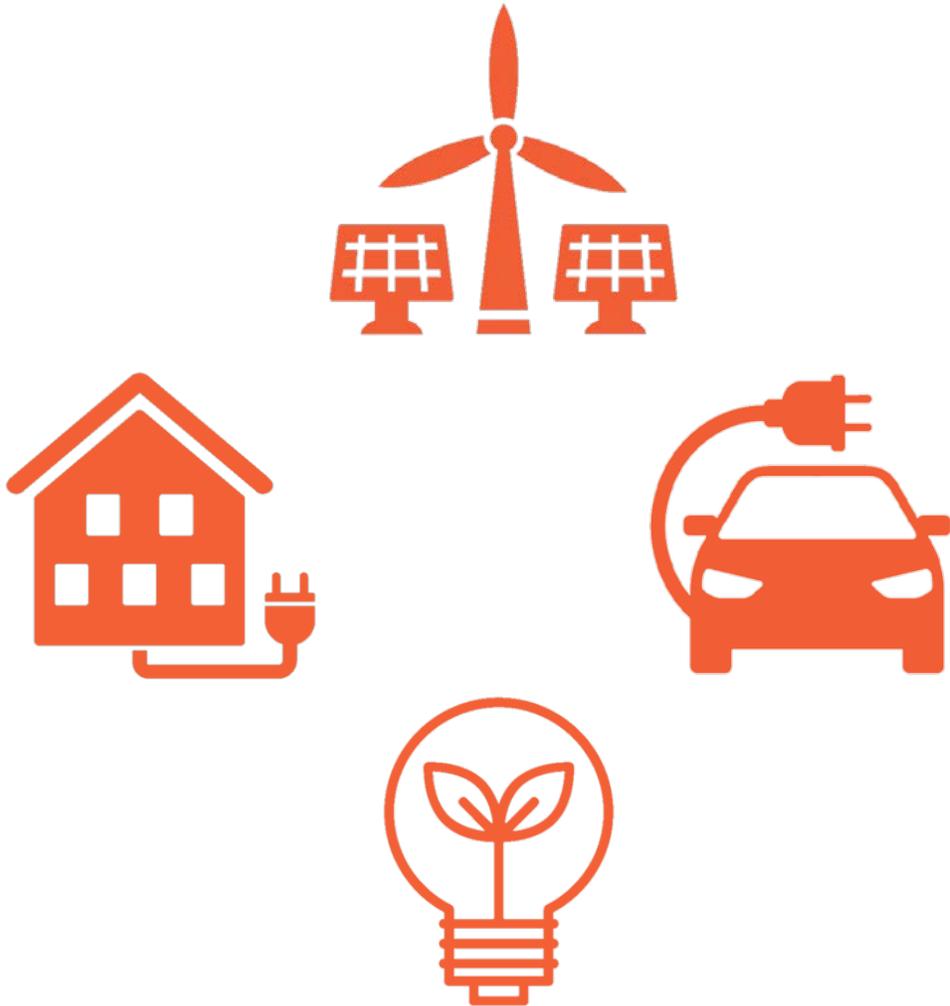
## Without new action...

**Delaware will just miss its 2025 target** to reduce emissions by 26-28% from 2005 levels, only reducing emissions by 25.4% by 2025. Moreover, emissions will start to rise again around 2030.

## With modeled actions...

**Delaware can meet or exceed its 2025 target** and set the stage for even greater emissions reductions going forward.

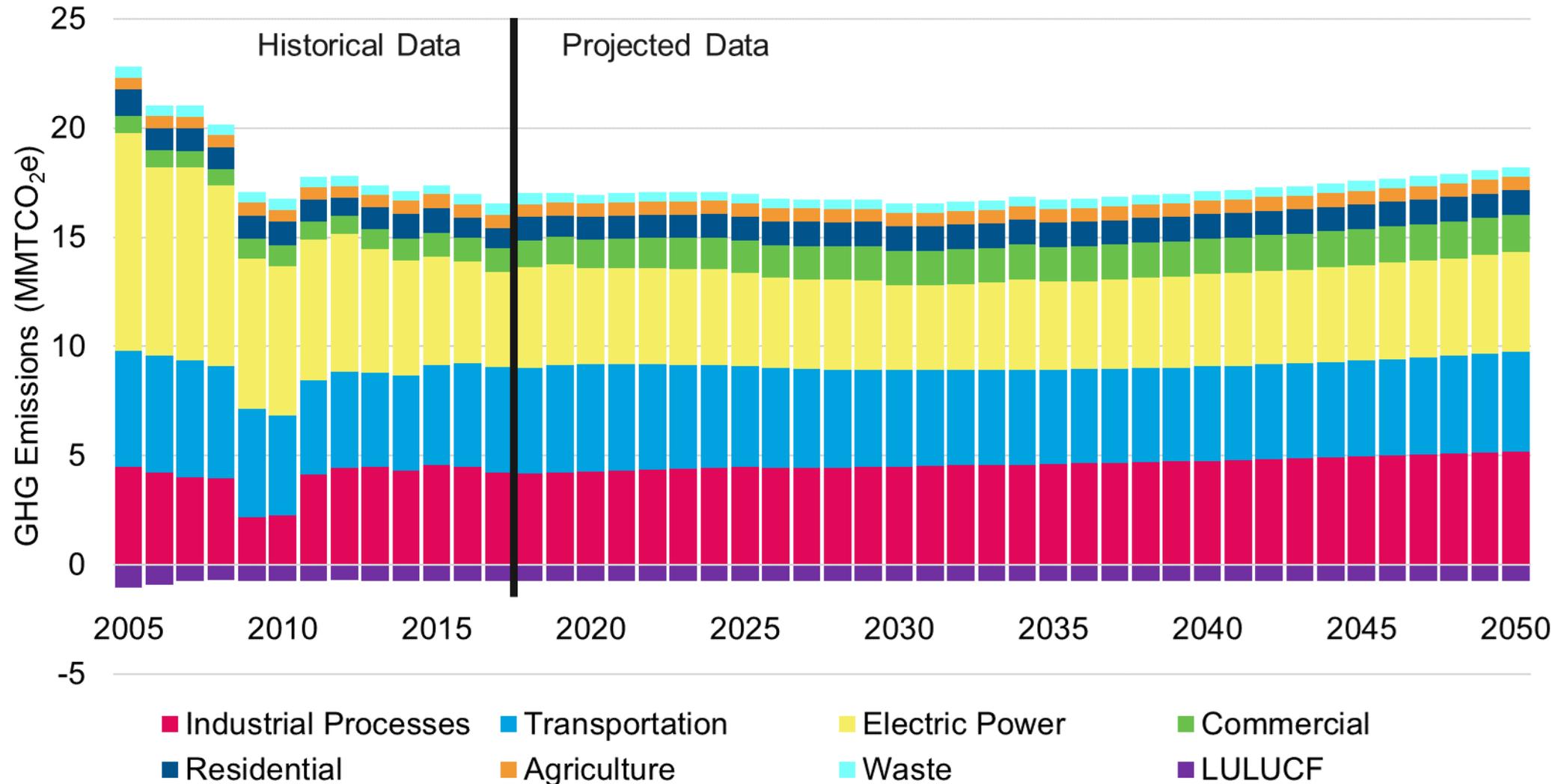
# What We've Learned



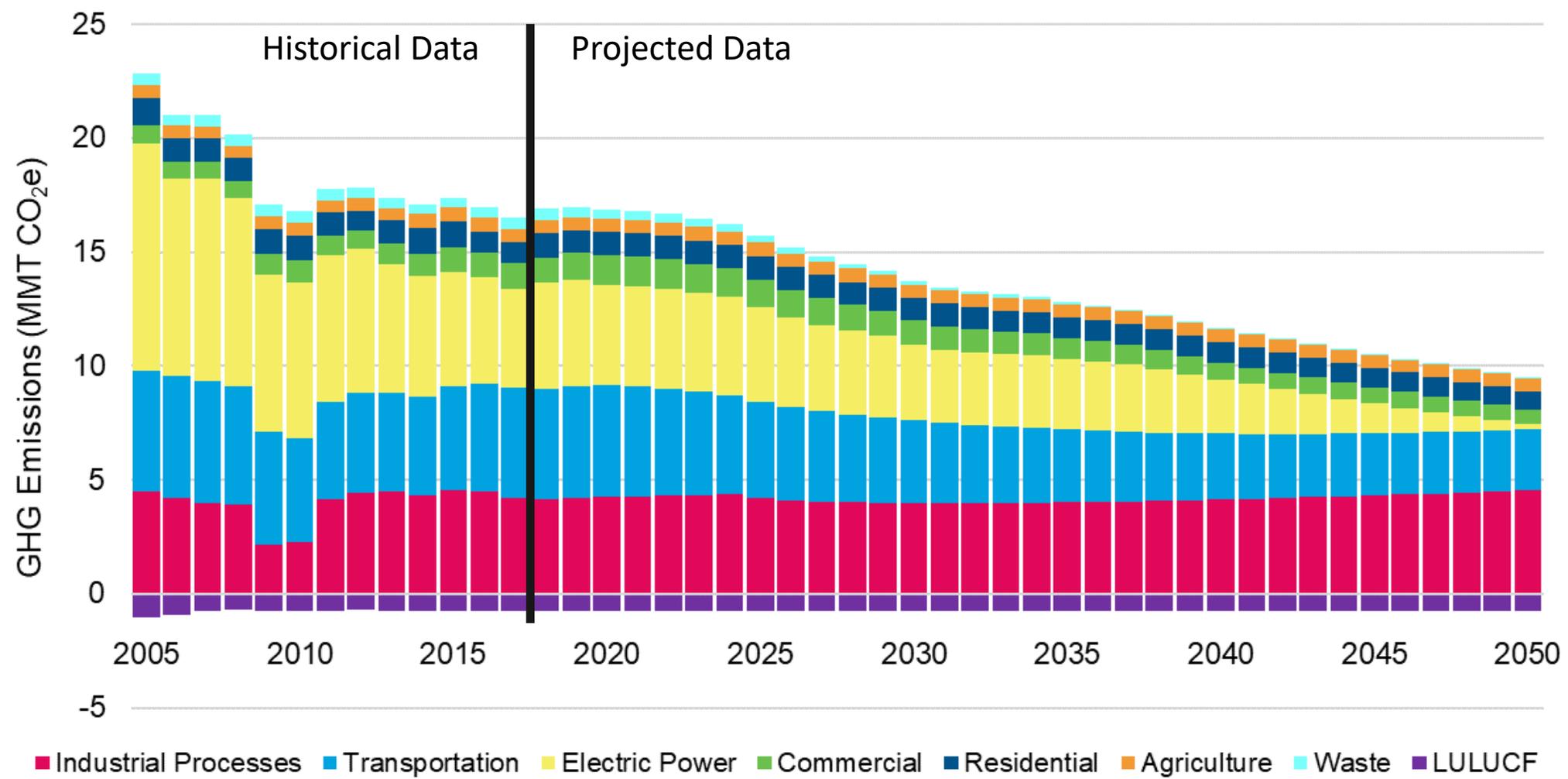
## With modeled actions...

- **Decarbonizing the electricity grid** has the greatest potential in the medium and long terms
- **Electrification of buildings and the transportation sector** can achieve significant emissions reductions over time
- **Energy efficiency** is an important short-term (and a relatively lower cost) strategy

# Without new action: 25.4% reduction by 2025



# With modeled actions: 31.1% by 2025, 59.7% by 2050



**CO-BENEFITS**

-  IMPROVED AIR QUALITY
-  JOB CREATION
-  COST SAVINGS
-  ENERGY RESILIENCE
-  ENHANCED MOBILITY

**What is MTCO<sub>2</sub>e?**

**METRIC TONS OF CARBON DIOXIDE EQUIVALENT**

Each greenhouse gas (GHG) has a different ability to trap heat in the atmosphere. We can compare each GHG's heat-trapping ability to that of the GHG carbon dioxide (CO<sub>2</sub>). This is called the CO<sub>2</sub> equivalent (CO<sub>2</sub>e) and allows us to use a single measure to calculate all GHG emissions: metric tons of CO<sub>2</sub>e (MTCO<sub>2</sub>e).

The values on top of each bar indicate the **2050 GHG emissions reduction potential** for implementing that strategy. Reduction potential values come from GHG modeling carried out in the summer of 2020, taking into account market feasibility for the earliest time each strategy could be put into place.

**4,333,200 MTCO<sub>2</sub>e**

GHG reduction potential



**Renewable Energy**

Installation of on-site renewable energy at homes and businesses

More renewables in the grid

**1,184,500 MTCO<sub>2</sub>e**

GHG reduction potential



**Zero-Emission Vehicles**

More electric, plug-in hybrid and fuel cell vehicles available

More charging infrastructure

Vehicle purchase incentives

**732,200 MTCO<sub>2</sub>e**

GHG reduction potential



**Building Energy Efficiency**

Higher standards for energy performance

Buildings cost less to operate

More financial incentives available to implement upgrades

**649,800 MTCO<sub>2</sub>e**

GHG reduction potential



**Fuel and Roadway Efficiency**

More efficient, cleaner running vehicles

More options to get around without a car

More walking and biking opportunities

**545,700 MTCO<sub>2</sub>e**

GHG reduction potential



**Building Electrification**

Buildings increasingly rely on electricity for all energy uses to maximize renewable benefits

Options for homes and businesses to upgrade building systems

**211,400 MTCO<sub>2</sub>e**

GHG reduction potential



**Waste Diversion and Reduction**

Increased options to divert waste through recycling and composting

Encourage the principles of "reduce, reuse, recycle (or compost)"

**What does it mean?**



## Renewable Energy

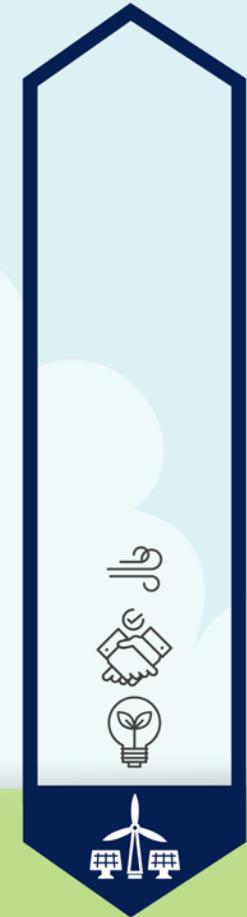
2050 GHG Reduction Potential = 4,333,200 MTCO<sub>2</sub>e

Efforts to increase the amount of clean, renewable energy (such as wind and solar) on the electricity grid has the largest long-term potential to reduce emissions. Strategies include:

- Increasing the number of homes and businesses with solar panels
- Increasing solar and geothermal systems on industrial properties
- Phasing out fossil fuels in utility scale electric generation

4,333,200 MTCO<sub>2</sub>e

GHG reduction potential



## Renewable Energy

Installation of on-site renewable energy at homes and businesses

-----  
More renewables  
in the grid



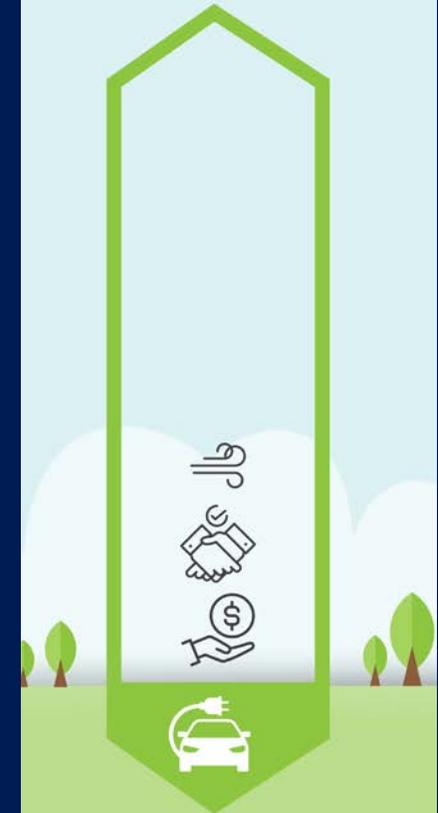
### Zero-Emission Vehicles

2050 GHG Reduction Potential = 1,184,500 MTCO<sub>2</sub>e

Zero-emission vehicles (ZEVs) rely on electricity or hydrogen fuel cells to power them, creating no direct emissions. As our electric supply comes increasingly from renewable sources, electric vehicles (EVs) will increasingly be free of emissions. Strategies include:

- Providing more EV charging infrastructure
- Consumer incentives for purchasing ZEVs
- Increasing the number ZEVs in the state fleet

1,184,500 MTCO<sub>2</sub>e  
GHG reduction potential



### Zero-Emission Vehicles

More electric, plug-in hybrid and fuel cell vehicles available

-----  
More charging infrastructure

-----  
Vehicle purchase incentives



### Building Energy Efficiency

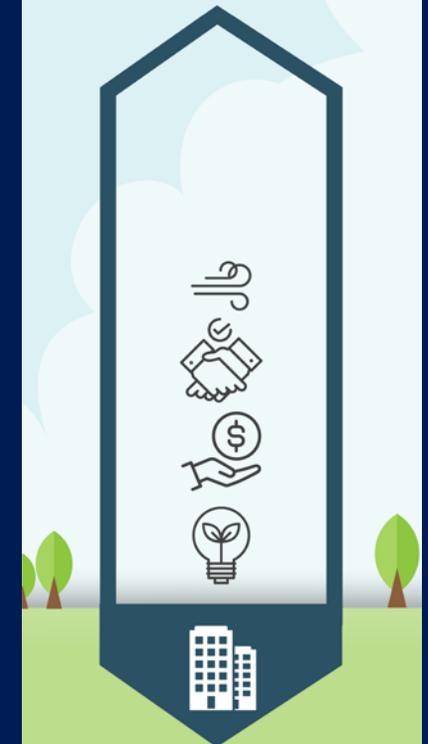
2050 GHG Reduction Potential = 732,200 MTCO<sub>2</sub>e

Reducing the amount of energy we need to power our homes, offices and industries is an easy way to reduce energy demand. Strategies include:

- Increasing the energy performance standards that new buildings must meet
- Providing incentives to upgrade existing building systems and envelope
- Identifying operational efficiencies to save money

732,200 MTCO<sub>2</sub>e

GHG reduction potential



### Building Energy Efficiency

Higher standards for energy performance

----

Buildings cost less to operate

----

More financial incentives available to implement upgrades



### Fuel and Roadway Efficiency

2050 GHG Reduction Potential = 649,800 MTCO<sub>2</sub>e

The transportation sector currently accounts for about a third of GHG emissions in Delaware. Along with more zero-emissions vehicles, reducing the amount of fuel used by vehicles already on the road is critical. Strategies include:

- Improving the efficiency with which we transport goods and materials
- Enhancing public transit options and creating more bikeable and walkable neighborhoods

649,800 MTCO<sub>2</sub>e

GHG reduction potential



### Fuel and Roadway Efficiency

More efficient, cleaner running vehicles

-----

More options to get around without a car

-----

More walking and biking opportunities



### Building Electrification

2050 GHG Reduction Potential = 545,700 MTCO<sub>2</sub>e

Building electrification is the shift from fossil fuel-powered appliances (gas and propane furnaces and hot water heaters) to clean electric appliances (electric heat pumps and hot water heaters), ideally powered by renewable energy. Strategies include:

- Transitioning existing buildings to utilize an all-electric energy source for heating and cooling spaces and water
- Moving the electricity grid toward 100% clean, renewable energy to multiply the impact of electrification

545,700 MTCO<sub>2</sub>e  
GHG reduction potential



### Building Electrification

Buildings increasingly rely on electricity for all energy uses to maximize renewable benefits

-----

Options for homes and businesses to upgrade building systems



### Waste Diversion and Reduction

2050 GHG Reduction Potential = 211,400 MTCO<sub>2</sub>e

Diverting and reducing waste applies to the entire life cycle of the goods we buy and use – from the energy, water and raw materials required to make them to the emissions associated with tossing them in landfills. Waste diversion strategies include:

- Reducing the amount of new materials we need to create by promoting the reuse of existing products
- Enhancing opportunities to compost and recycle those materials we cannot reuse

211,400 MTCO<sub>2</sub>e

GHG reduction potential



### Waste Diversion and Reduction

Increased options to divert waste through recycling and composting

-----

Encourage the principles of "reduce, reuse, recycle (or compost)"

**What is MTCO<sub>2</sub>e?**

**METRIC TONS OF CARBON DIOXIDE EQUIVALENT**

Each greenhouse gas (GHG) has a different ability to trap heat in the atmosphere. We can compare each GHG's heat-trapping ability to that of the GHG carbon dioxide (CO<sub>2</sub>). This is called the CO<sub>2</sub> equivalent (CO<sub>2</sub>e) and allows us to use a single measure to calculate all GHG emissions: metric tons of CO<sub>2</sub>e (MTCO<sub>2</sub>e).

**CO-BENEFITS**

-  IMPROVED AIR QUALITY
-  JOB CREATION
-  COST SAVINGS
-  ENERGY RESILIENCE
-  ENHANCED MOBILITY

The values on top of each bar indicate the **2050 GHG emissions reduction potential** for implementing that strategy. Reduction potential values come from GHG modeling carried out in the summer of 2020, taking into account market feasibility for the earliest time each strategy could be put into place.

**4,333,200 MTCO<sub>2</sub>e**

GHG reduction potential



**Renewable Energy**

Installation of on-site renewable energy at homes and businesses

More renewables in the grid

**1,184,500 MTCO<sub>2</sub>e**

GHG reduction potential



**Zero-Emission Vehicles**

More electric, plug-in hybrid and fuel cell vehicles available

More charging infrastructure

Vehicle purchase incentives

**732,200 MTCO<sub>2</sub>e**

GHG reduction potential



**Building Energy Efficiency**

Higher standards for energy performance

Buildings cost less to operate

More financial incentives available to implement upgrades

**649,800 MTCO<sub>2</sub>e**

GHG reduction potential



**Fuel and Roadway Efficiency**

More efficient, cleaner running vehicles

More options to get around without a car

More walking and biking opportunities

**545,700 MTCO<sub>2</sub>e**

GHG reduction potential



**Building Electrification**

Buildings increasingly rely on electricity for all energy uses to maximize renewable benefits

Options for homes and businesses to upgrade building systems

**211,400 MTCO<sub>2</sub>e**

GHG reduction potential



**Waste Diversion and Reduction**

Increased options to divert waste through recycling and composting

Encourage the principles of "reduce, reuse, recycle (or compost)"

**What does it mean?**



**Breakout Group Exercise:**  
*Where do we go from here?*



## Breakout Debrief

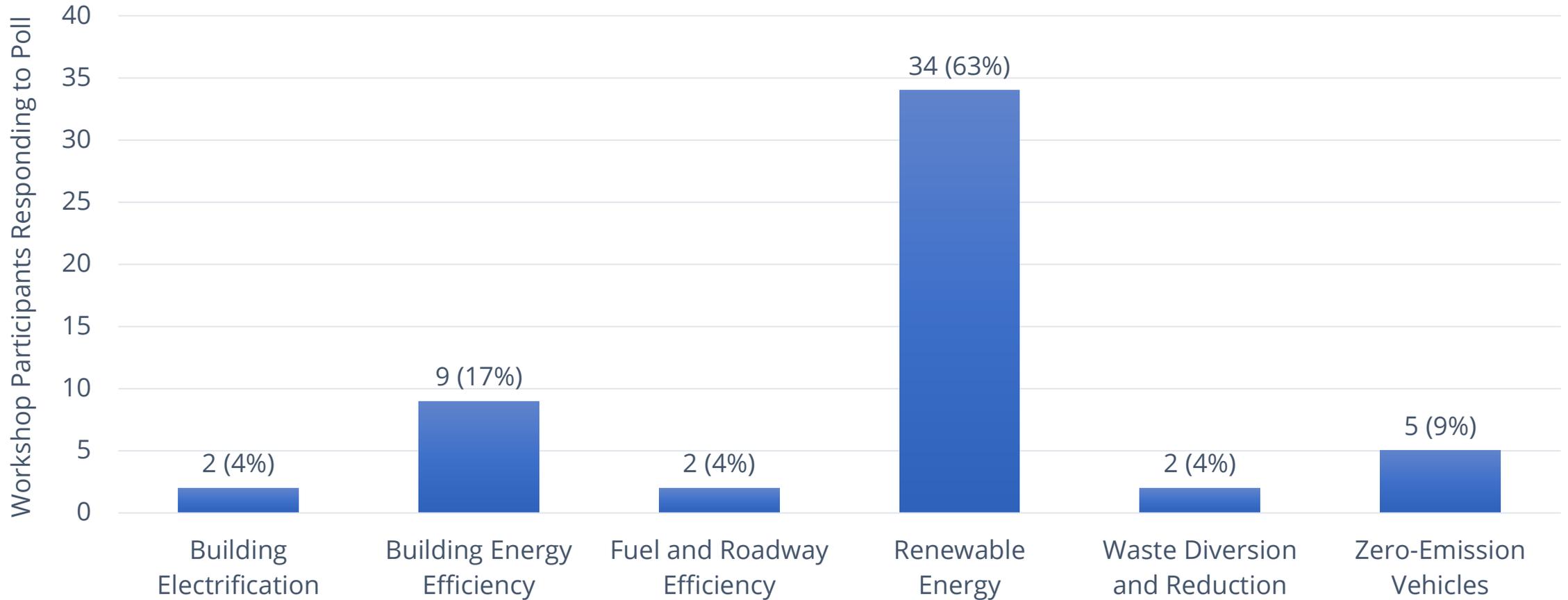
Which measures do you think have the most impact and are most cost-effective?



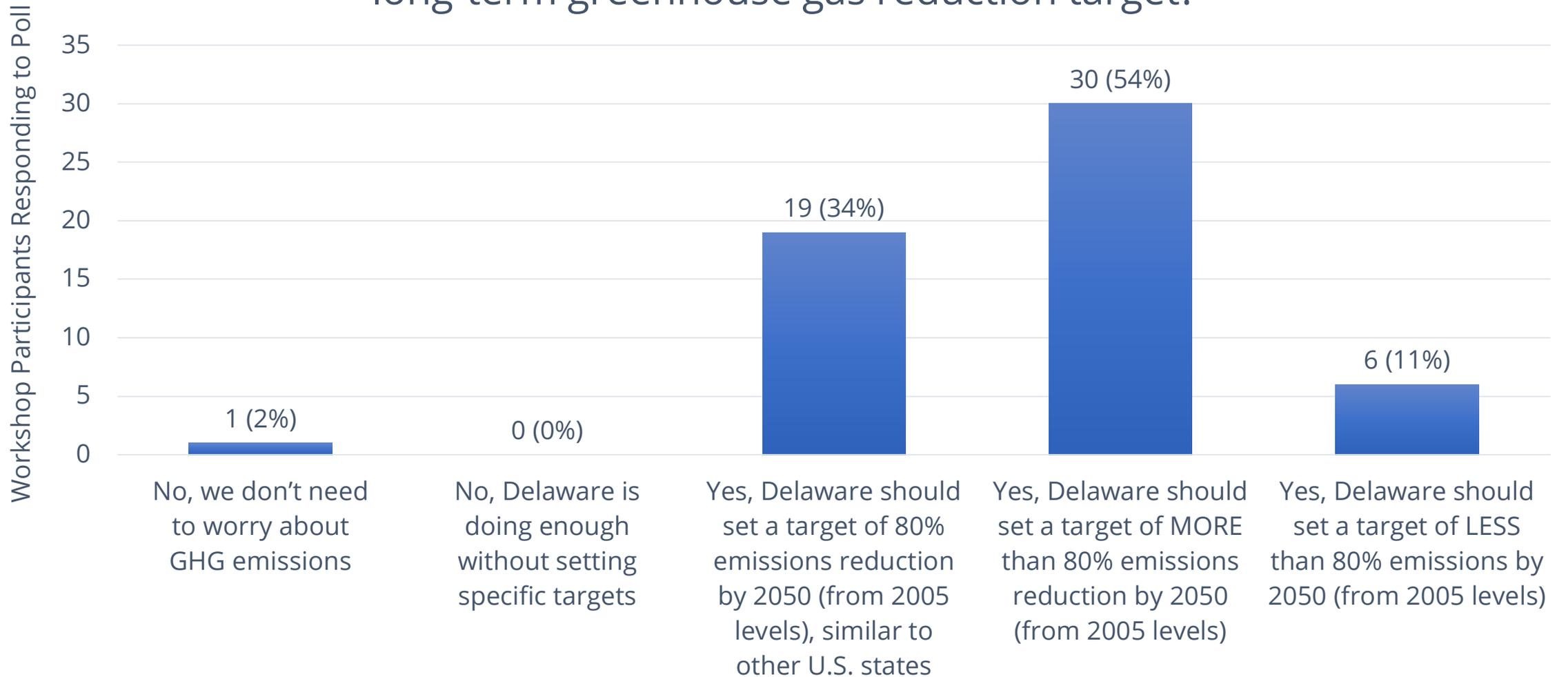


Zoom Polling

**Zoom Poll Results:** Based on everything you've heard and discussed today, which category of actions do you think Delaware should take first to minimize emissions?



## Zoom Poll Results: Do you think Delaware should adopt a long-term greenhouse gas reduction target?



# MAKE YOUR VOICE HEARD

- › Public input is an important part of the Plan development process.
- › Please provide your feedback by **October 16, 2020**.

## "In Person"



Attend public workshops.

## Online



Visit [declimateplan.org](https://declimateplan.org).  
Take a survey.  
Engage on social media.

## Word of Mouth



Tell your family, friends, neighbors and coworkers.

# Other Workshops in our Virtual Series

**Workshop #2** – Maximizing Resilience to Sea Level Rise  
Sept. 24 , 5:30 p.m. to 7 p.m.

**Workshop #3** – Maximizing Resilience to Increased Temperatures  
Sept. 29, 5:30 p.m. to 7 p.m.

**Workshop #4** – Maximizing Resilience to Heavy Precipitation and Flooding  
Oct. 1 , 5:30 p.m. to 7 p.m.

**Details and Registration:**     **[declimateplan.org](https://declimateplan.org)**



# THANK YOU

***DELAWARE'S***  
***Climate Action Plan***

[www.declimateplan.org](http://www.declimateplan.org) | [declimateplan@delaware.gov](mailto:declimateplan@delaware.gov) | [@EnergyClimateDE](https://twitter.com/EnergyClimateDE)