

REGIONAL CLIMATE ACTION PRIORITIES WORKSHOP

Day 2, Emissions Reductions
November 29, 2023



Goals for the day

- **Understand context for emissions reduction planning in Northeast Ohio**
 - Funding opportunities
 - Regional GHG Inventory
 - Public engagement
- **Prioritize emissions reduction actions for region**

Agenda

Morning Session

9:00 – 9:30 AM	Welcome and ice breaker
9:30 – 10:30 AM	Funding opportunities and climate action co-benefits
10:30 – 10:45 AM	Break
10:45 AM – 12:00 PM	Greenhouse gas inventory and public outreach results
12:00 – 12:30 PM	Lunch Break

Afternoon Session

12:30 – 12:45 PM	Climate solutions overview
1:30 – 3:50 PM	Ranking regional emissions reduction actions ranking activity (includes a 10-minute break)
3:50-4:15 PM	Participant commitments and workshop close-out

Ice breaker activity

- Find one other person near you to partner with.
- Each share one place, business or experience in the region that is special to you.
- 5 minutes.

Emissions reduction overview

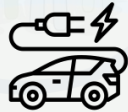
Accelerating



Decarbonizing the Grid



Building Electrification and Efficiency: New and Existing



EV Transition and VMT Reduction

Supporting



Waste and Methane



Nature-Based Solutions



Sustainable Food Systems



Circular Economy



Community Resilience, Health, and Equity (Just and Equitable Transition)

Federal Funding overview

- Credits to clean energy producers
- Direct credits to local governments for solar, EVs, etc
- Regional implementation competitive grants
- Rebates and tax credits to individuals

Direct Pay Credits

- Investment tax credits now direct payable to local government
- Solar
- Battery storage
- Community solar
- EV charging infrastructure
- Clean fleet vehicles



EPA - Regional Plan and Implementation

- \$4.2 billion competitive funding for actions to reduce GHG emissions (EPA expects about 100 awards nationwide).
- Eligibility dependent on region submitting Preliminary Climate Action Plan to EPA by March 2024.

Industry opportunities

- Hydrogen hub grants
- Materials/battery recycling
- Renewable energy components manufacturing
- Decarbonization of energy intensive industries

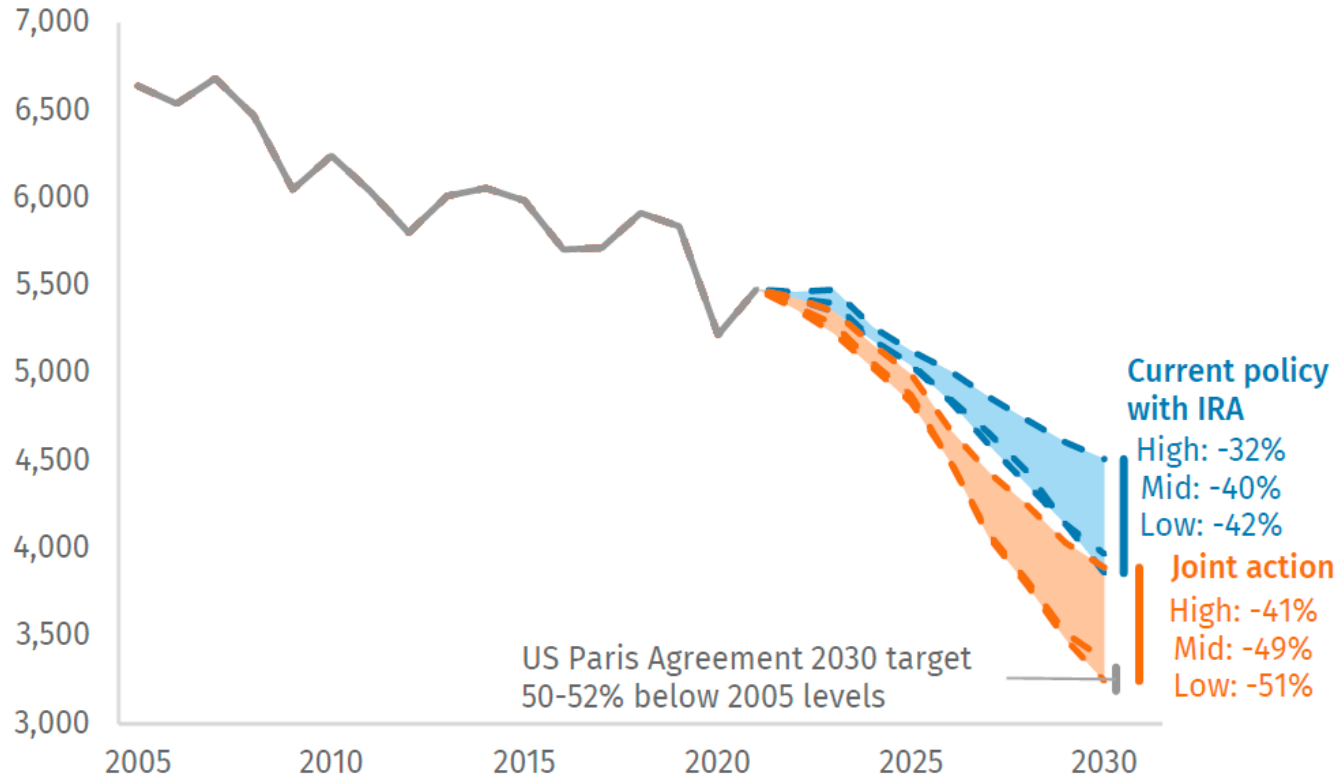


Cleveland Cliffs Direct Reduction facility in Toledo, a potential user of clean hydrogen.
Image: Ohio Capital Journal



IRA Reduction Opportunity

FIGURE 1
US greenhouse gas emissions under a joint action scenario
Net million metric tons (mmt) of CO₂-e



Source: Rhodium Group. The high, mid, low ranges reflect uncertainty around future fossil fuel prices, economic growth, and clean energy technology costs.

source: <https://rhg.com/research/ira-us-climate-policy-2030/>



Opportunities for residents and businesses

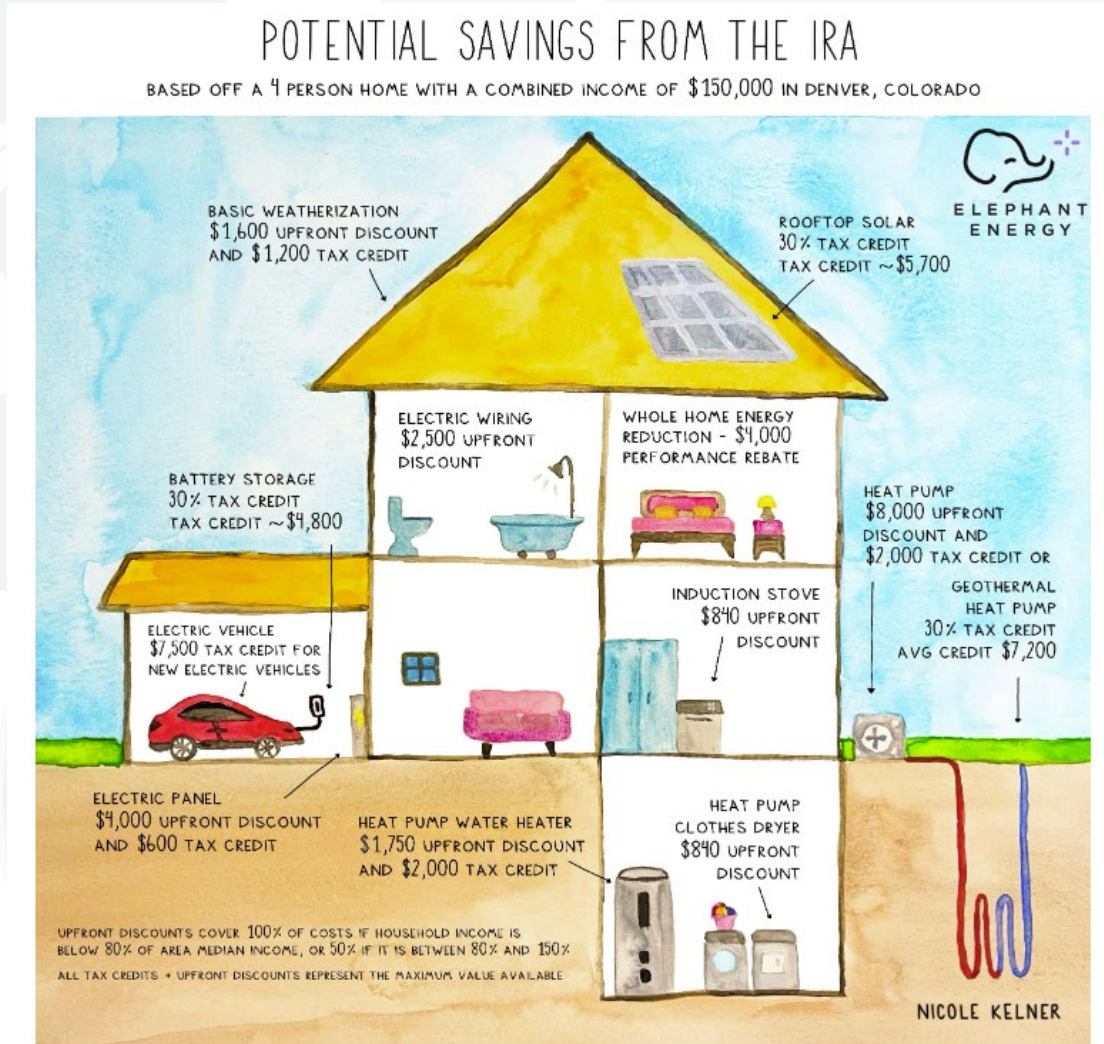
Summary of Home Energy Tax Credits and Rebates from the Inflation Reduction Act

Upgrade	Type	Max Potential	Timing
Rooftop Solar	Tax Credit	30%	Available now!
Battery Storage	Tax Credit	30%	Installs starting Jan 1st, 2023
Heat Pump (Air Source)	Tax Credit	\$2,000	Installs starting Jan 1st, 2023
Heat Pump Water Heater	Tax Credit	\$2,000	Installs starting Jan 1st, 2023
Electric Panel Upgrades	Tax Credit	\$600	Installs starting Jan 1st, 2023
Weatherization (energy efficiency)	Tax Credit	\$1,200	Installs starting Jan 1st, 2023
Heat Pump (Air Source)	Rebate	Up to \$8,000	TBD
Heat Pump Water Heater	Rebate	Up to \$1,750	TBD
Electric Panel Upgrades	Rebate	Up to \$4,000	TBD
Electric Wiring	Rebate	Up to \$2,500	TBD
Induction Stove	Rebate	Up to \$840	TBD
Weatherization (energy efficiency)	Rebate	Up to \$1,600	TBD

source: <https://elephantenergy.com/your-guide-to-making-the-most-of-the-inflation-reduction-act-ira-incentives/>



Opportunities for residents and businesses



source: <https://elephantenergy.com/your-guide-to-making-the-most-of-the-inflation-reduction-act-ira-incentives/>

Funding opportunities discussion

- Of the opportunities presented, what do you see as particularly valuable for your community?
- What do you see as valuable for the region?

Climate Action Co-Benefits

- **Air Quality (Indoor and Outdoor)**
- **Economic development/employment**
- **Equity/environmental justice**
- **Energy cost reduction**

REGIONAL CAP CO-BENEFITS

- NOACA staff has analyzed co-benefits of different CAP targets and scopes
- Staff utilized U.S. Environmental Protection Agency's COBRA tool to estimate potential public health benefits



COBRA

Co-Benefits Risk Assessment
Health Impacts Screening and Mapping Tool



REGIONAL CAP CO-BENEFITS

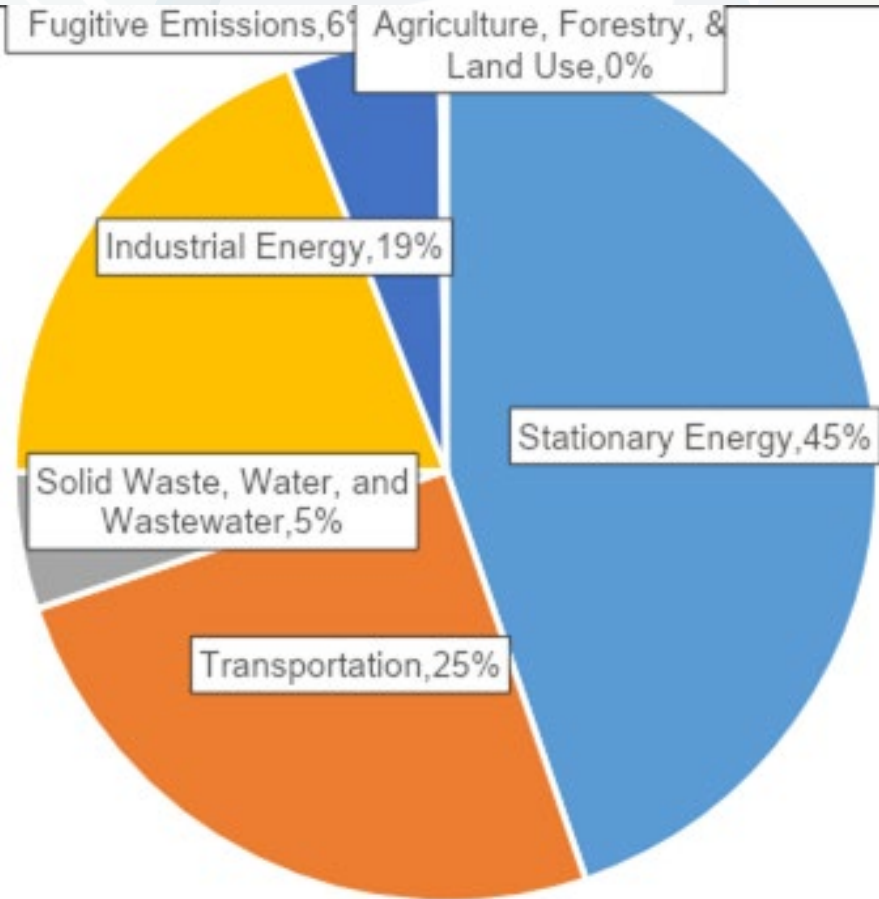
Reduction Scenario	Avoided Premature Deaths (Low)	Avoided Premature Deaths (High)	Total Health Benefits (Low)	Total Health Benefits (High)
45%	125	282	\$1.35 billion	\$3.04 billion
50%	139	314	\$1.49 billion	\$3.38 billion
60%	166	376	\$1.79 billion	\$4.05 billion
63.3%	175	397	\$1.89 billion	\$4.28 billion
65%	180	407	\$1.95 billion	\$4.39 billion
70%	194	439	\$2.09 billion	\$4.73 billion
75%	208	470	\$2.25 billion	\$5.06 billion
80%	223	504	\$2.41 billion	\$5.44 billion
100%	277	626	\$2.99 billion	\$6.74 billion

Source: NOACA Staff analysis using COBRA model

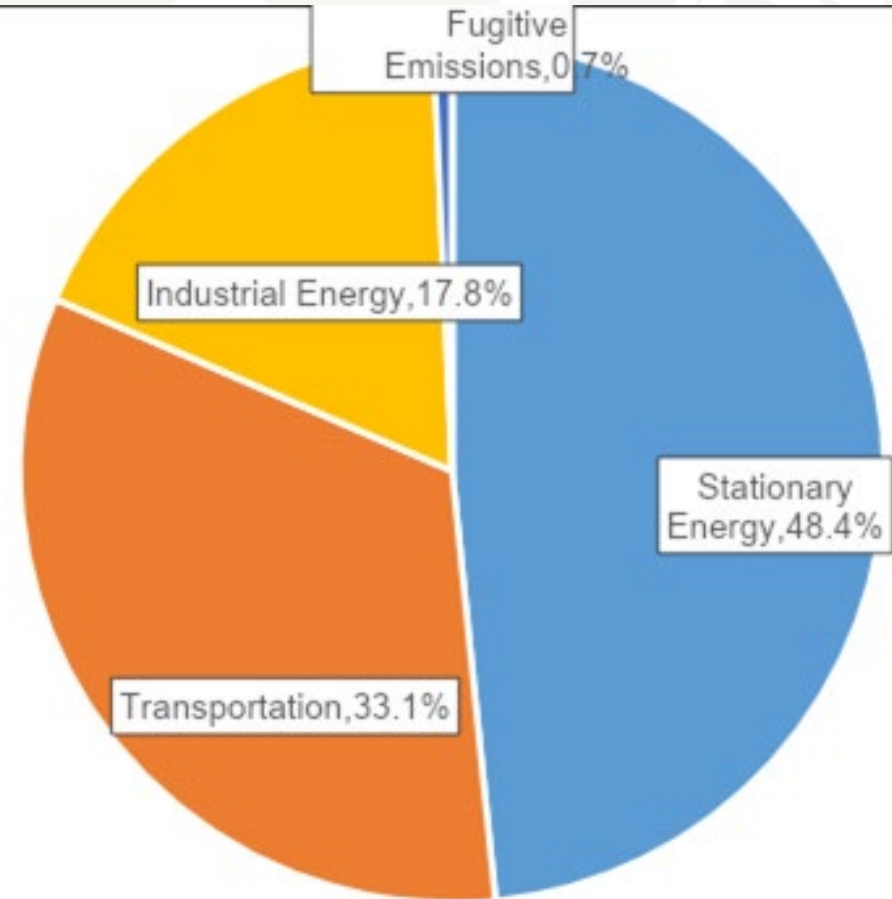


REGIONAL CAP SCOPE

GHG Emissions by Sector



Emissions Co-Benefits by Sector



Climate Action Co-Benefits

- **Economic Development**
- **Employment**



Climate Action Co-Benefits

- **Equity**
- **Environmental Justice**
- **Energy Cost Reduction**



Co-Benefits Example: Ann Arbor

ACTION SUMMARY TABLE

STRATEGY 1	Total Costs	GHG Reduction	%total emissions	\$/ton	Co-Benefits
Community Choice Aggregation	\$3,245,000	784,000	35.8%	\$4	AIR; \$\$; EQU; SCALE
Bulk Purchase of Renewables	\$605,000	85,000	3.9%	\$7	LOCAL; NRG; AIR; JOBS; RES; \$\$; SCALE
Community Solar Program	\$205,000	11,500	0.5%	\$18	LOCAL; NRG; AIR; JOBS; RES; \$\$; EQU; SCALE
Landfill Solar Project	\$80,000	23,000	1%	\$3.5	LOCAL; NRG; AIR; SCALE
STRATEGY 2	Total Costs	GHG Reduction	%total emissions	\$/ton	Co-Benefits
Home & Business Electrification	\$7,100,000	362,200	16.5%	\$ 20	LOCAL; AIR; JOBS; HEALTH; SCALE
Bus Electrification	\$86,000,000	13,800	0.6%	\$ 5,839	LOCAL; AIR; RES; HEALTH; EQU
Bulk Purchase EVs	\$700,000	122,900	5.6%	\$6	AIR; JOBS; RES; HEALTH; \$\$; SCALE
Private EV Fleets	\$123,000	Not Calculated			AIR; RES; \$\$; HEALTH; SCALE
City EV Fleet	\$4,000,000	1,100	0.05%	\$3,636	AIR; JOBS; RES; HEALTH; \$\$; SCALE
EV Infrastructure	\$42,000,000	Not Calculated			AIR; JOBS; HEALTH; SCALE

How Inventory Was Developed

- **GPC - Global standard**
- **Data collected from utilities, regional transportation model**

Usage data

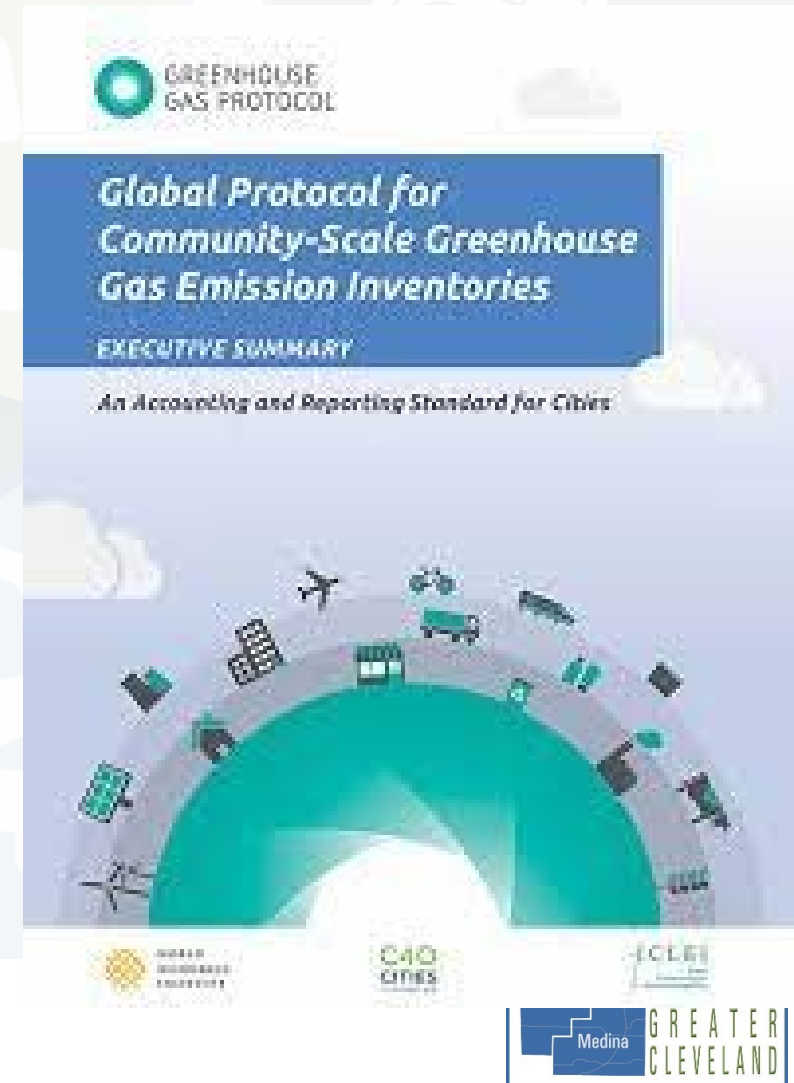
Kwh
therms
Vehicle miles

Calculation

Enter in
ClearPath tool
Multiply by
emissions
factor

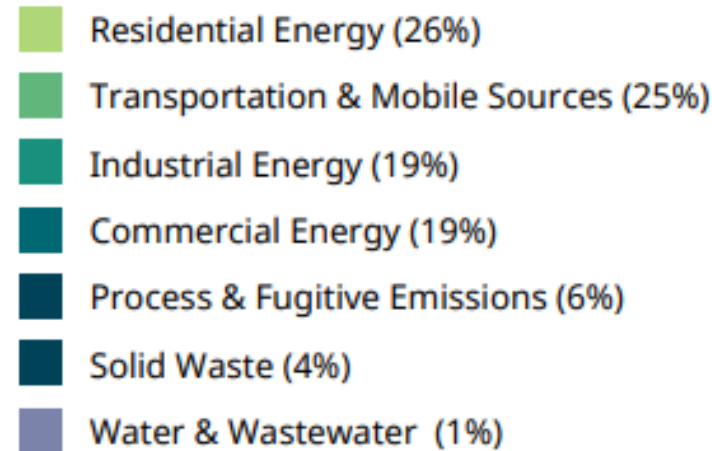
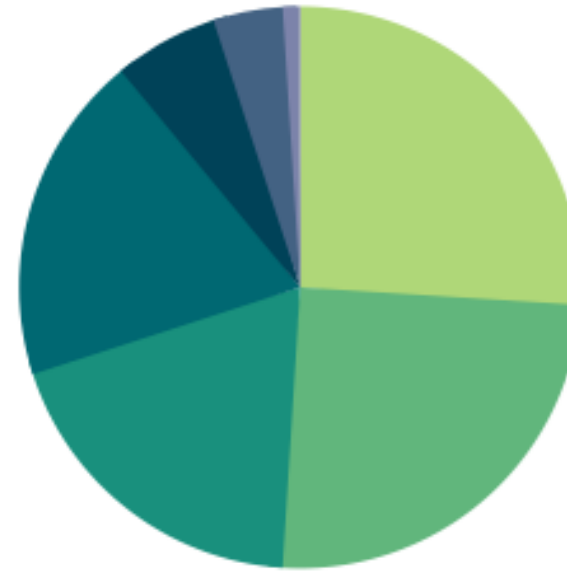
Emissions

Metric tons
CO2e by sector



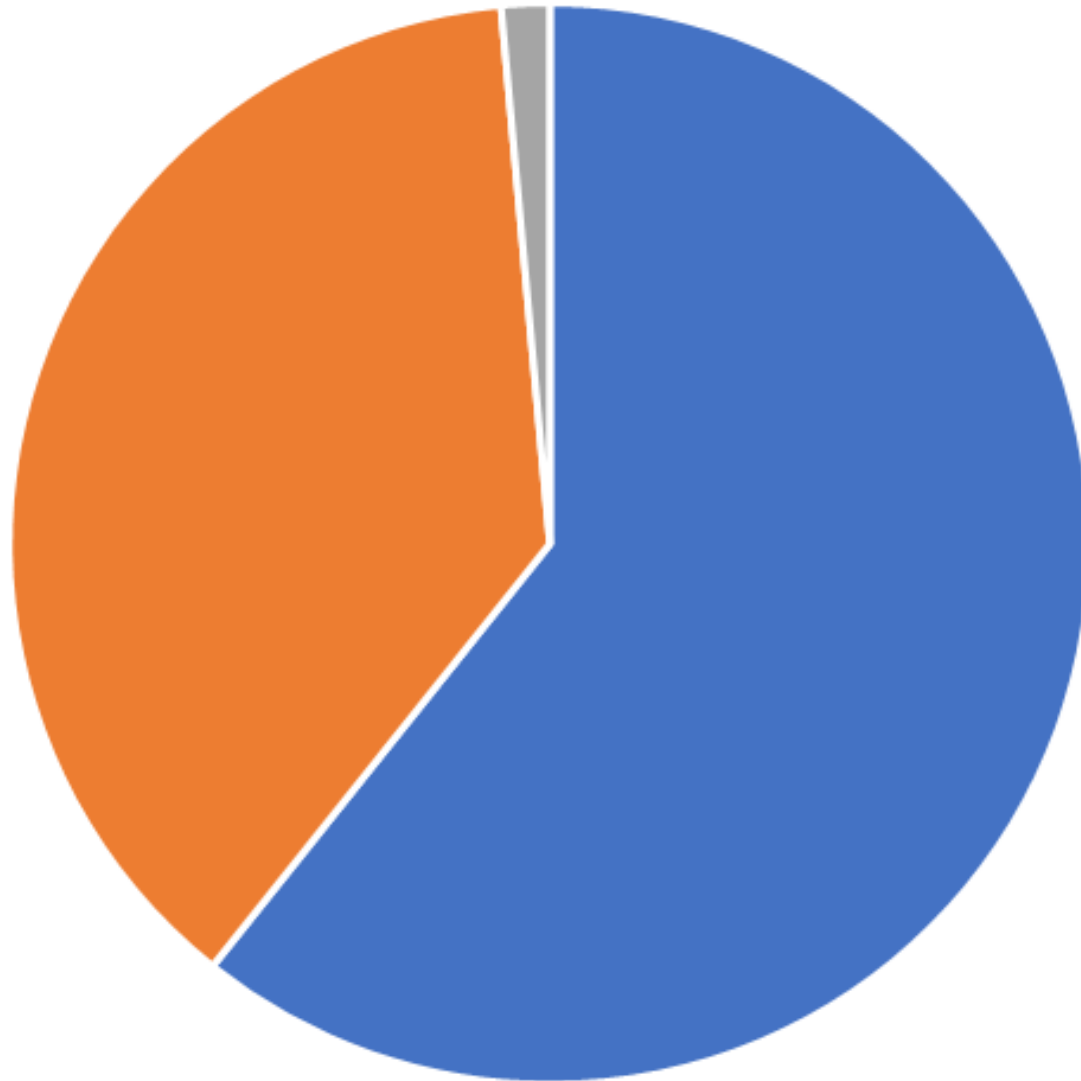
EMISSIONS AT A GLANCE

- 1 Residential Energy**
26%
- 2 Transportation**
25%
- 3 Industrial Energy**
19%
- 4 Commercial Energy**
19%



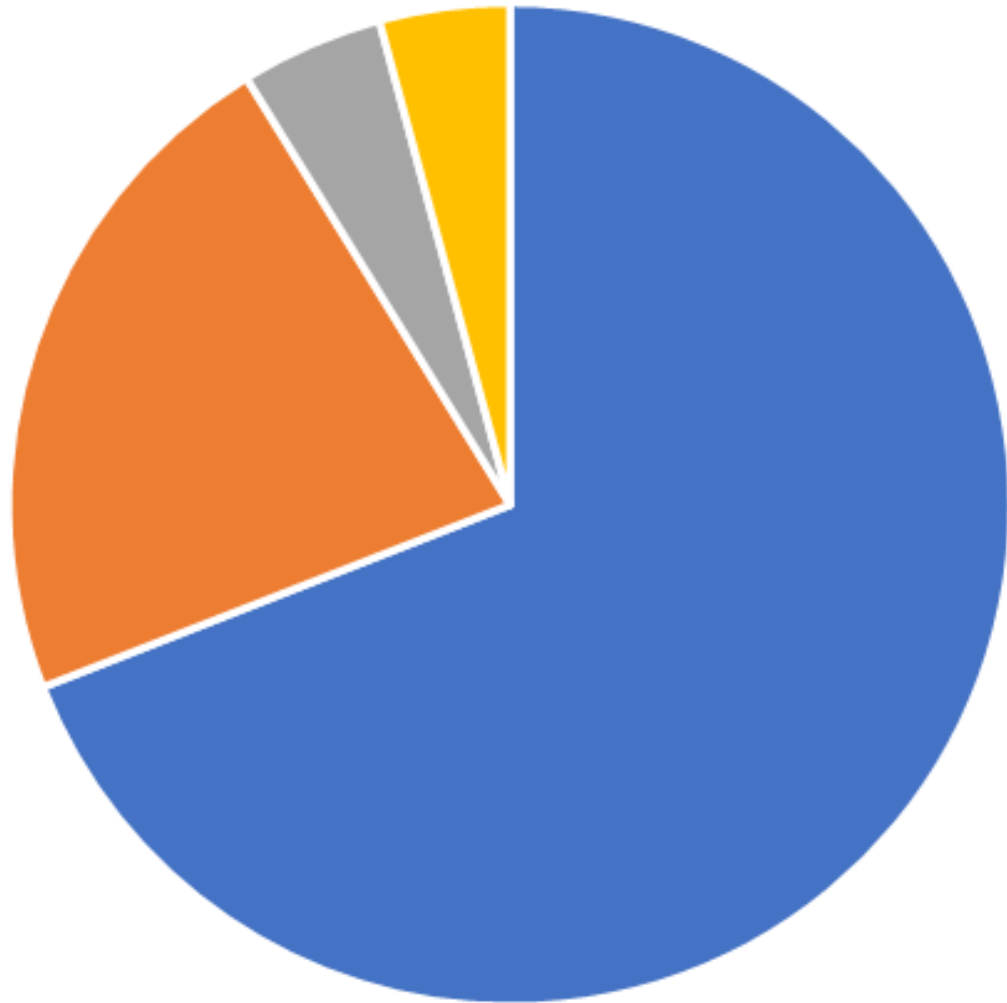
Total 35.8 million metric tons CO₂e

Residential energy (region-wide)



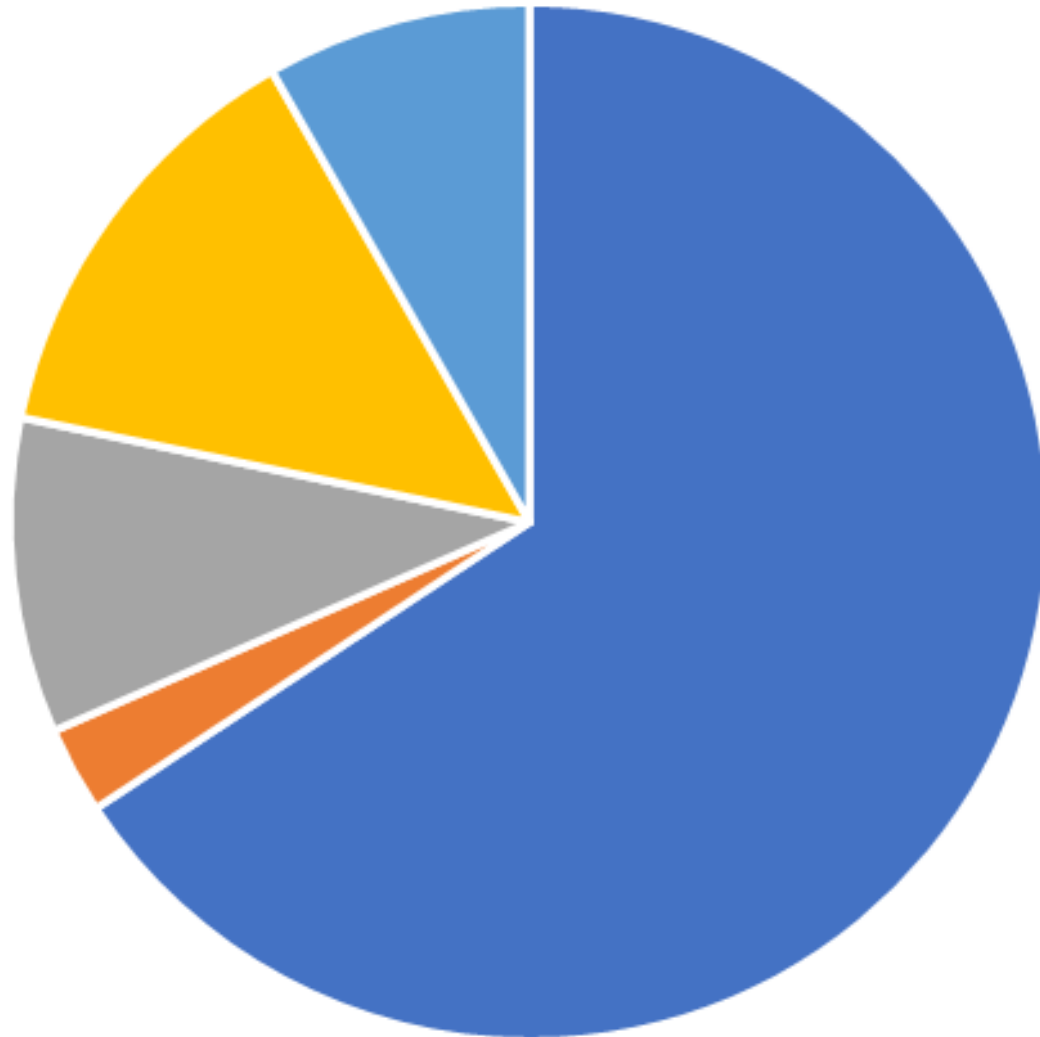
- natural gas
- electricity
- propane and fuel oil

Transportation (region-wide)



- On-road gasoline
- On-road diesel
- Air travel
- Rail, Offroad vehicles and Shipping

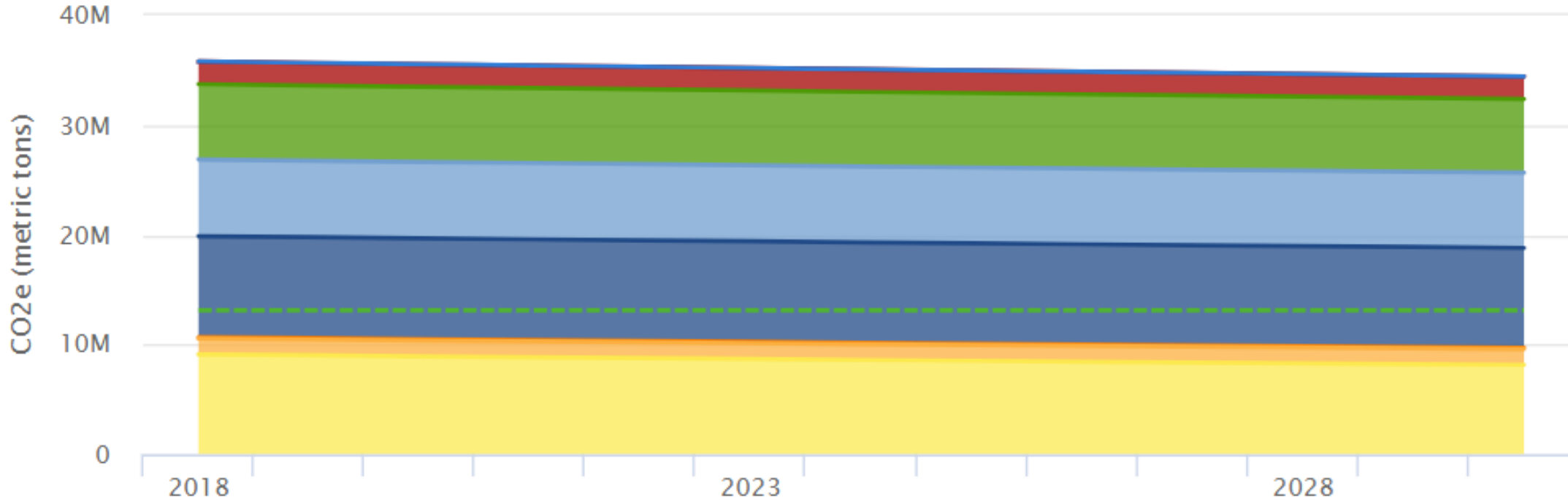
Breakdown by County



- Cuyahoga
- Geauga
- Lake
- Lorain
- Medina



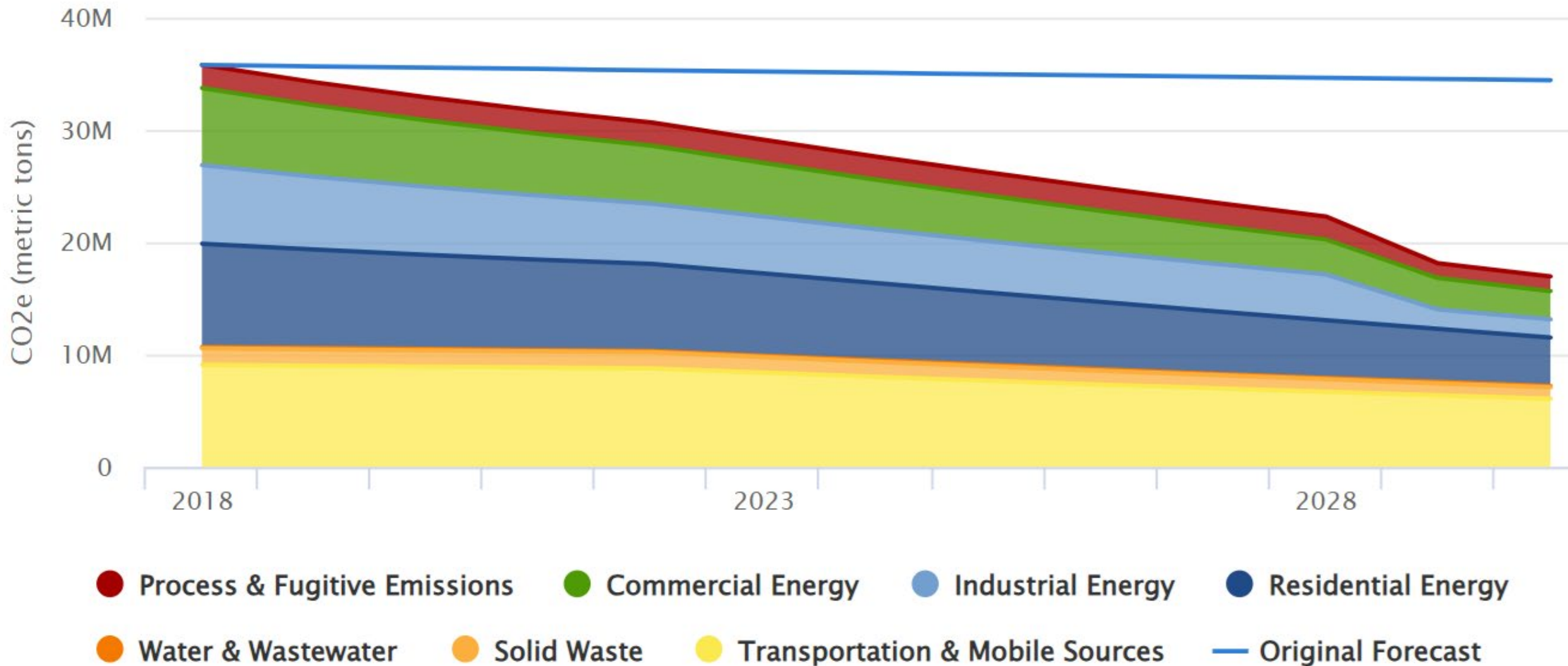
Business as usual Forecast



- Process & Fugitive Emissions
- Commercial Energy
- Industrial Energy
- Residential Energy
- Water & Wastewater
- Solid Waste
- Transportation & Mobile Sources
- Original Forecast
- Science based target Reduction Goal



Reduction Scenario



High Impact Actions

Action Category	Estimated Emissions Reduction (million metric tons CO ₂ e in 2030)
Clean electric generation	8.78
Residential and commercial building electrification and efficiency	3.28
Clean industry	2.92
Electric vehicles	1.02
Vehicle miles reduction	0.96
Composting/recycling	0.72
Refrigerant leakage reduction	0.51

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Public Engagement



Public Outreach



A TOTAL OF 29
COMMUNITY
ENGAGEMENT
SESSIONS



2 WORKSHOPS

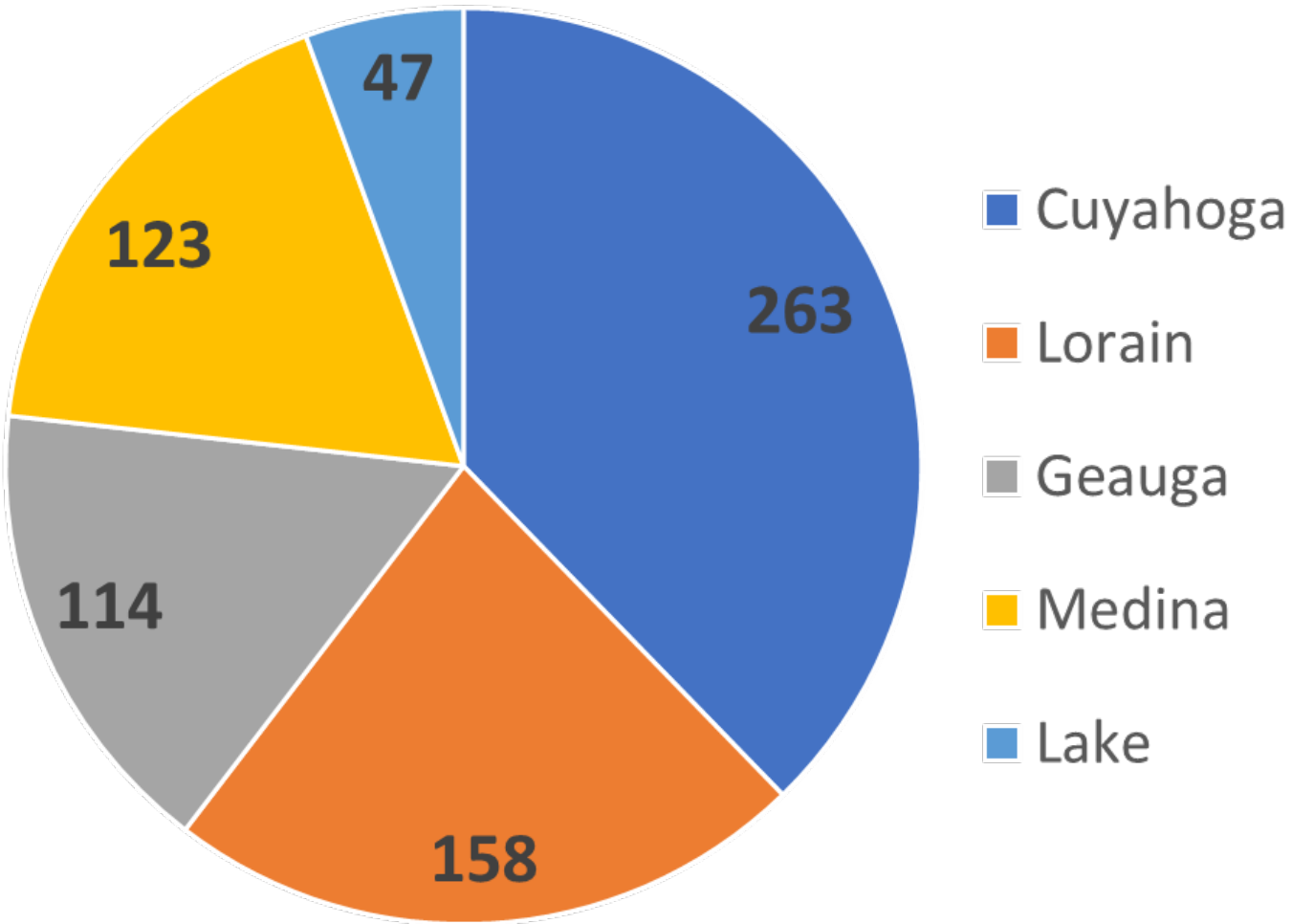


25 SESSIONS
COMPLETED



2 ADDITIONAL
SESSIONS
SCHEDULED FOR
LAKE COUNTY

Participants by County



Where We Met People



Some Themes We are Hearing From the 82% of Participants Who Are Supportive of Climate Action Planning

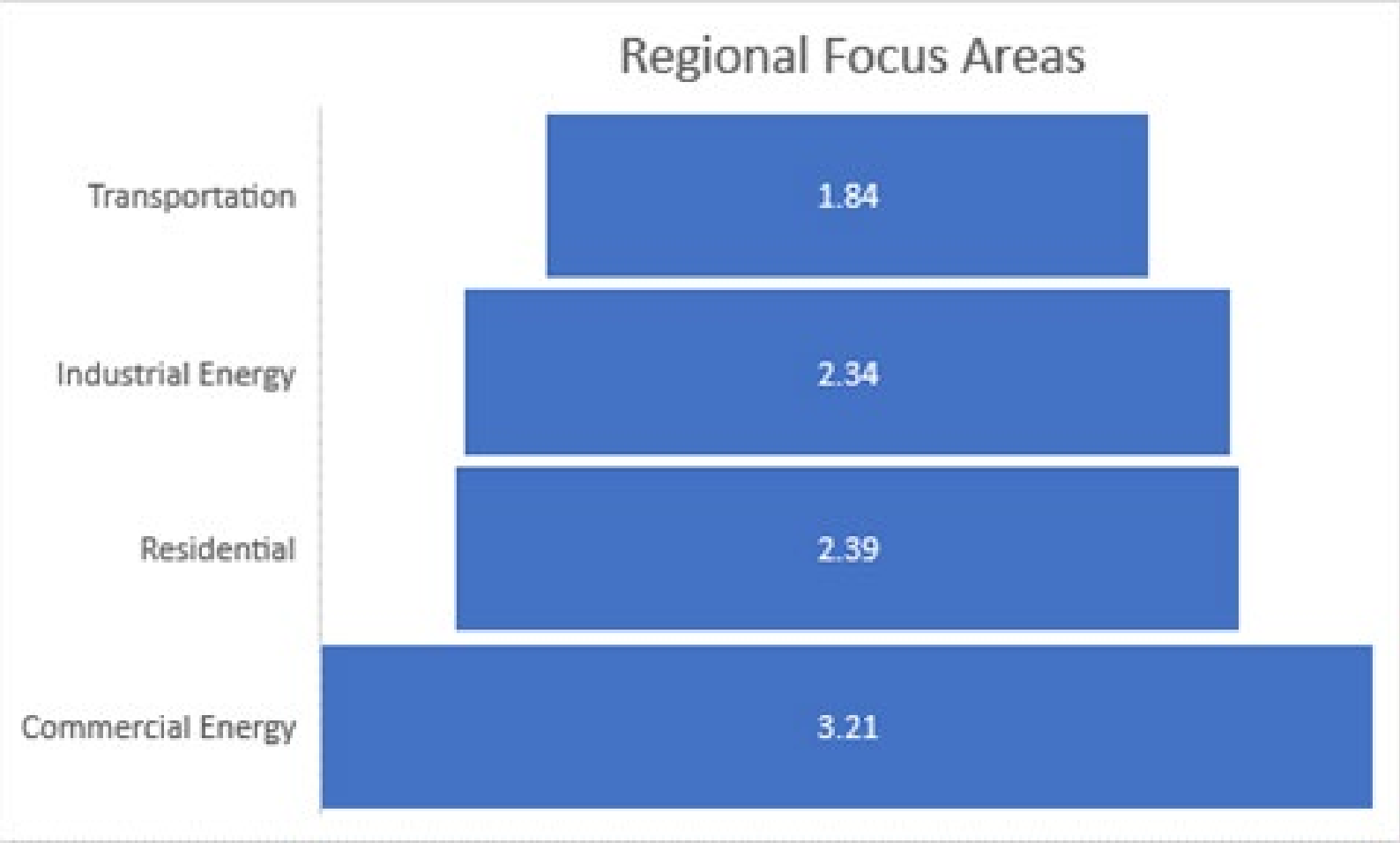
- **Extreme and unpredictable weather**
- **Air quality**
- **Concern about inaction**
- **Changing seasons/ impacts on trees and nature**
- **The future for the next generations**
- **Top three concerns among all respondents to focus group questionnaires:**
 - **Air Quality Issues/Pollution**
 - **Flooding**
 - **Extreme Heat**



Some Themes We are Hearing from the 18% Who are Not Supportive of Climate Action Planning

- **The Climate is not changing**
- **Humans are not responsible for any changes, but instead we are witnessing natural weather variability**
- **NOACA is the problem and should not be involved in Climate Action Planning**

Focus Group Questionnaire Responses: Which Greenhouse Gas Emissions Sector did People Rank Most Important to Focus Climate Pollution Reduction Efforts?

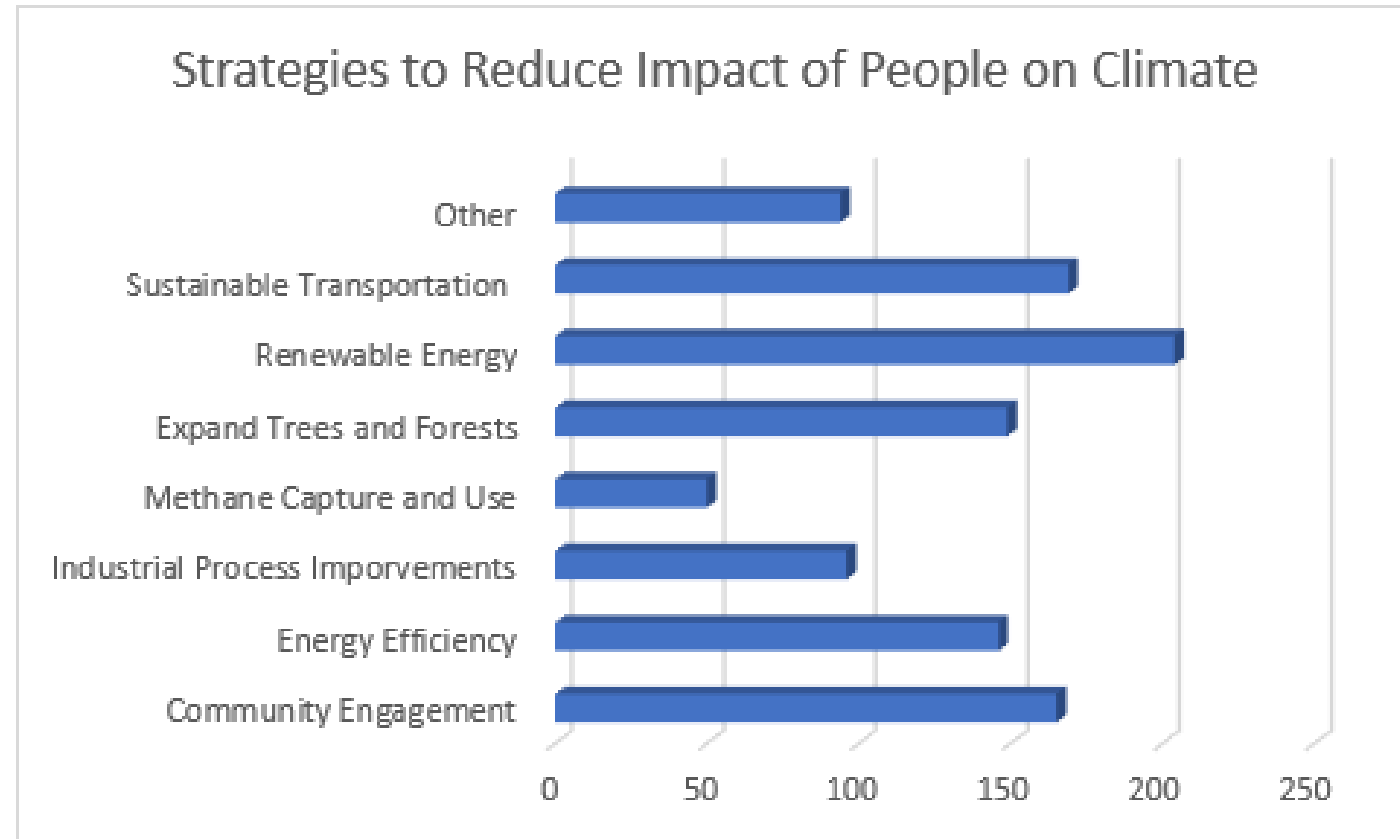


Average Rank of Sectors by Importance

Focus Group Questionnaire Responses: Best Strategies to Reduce Impact of People on Climate

Question 5 Which three strategies to reduce the impact of people on climate are most important?

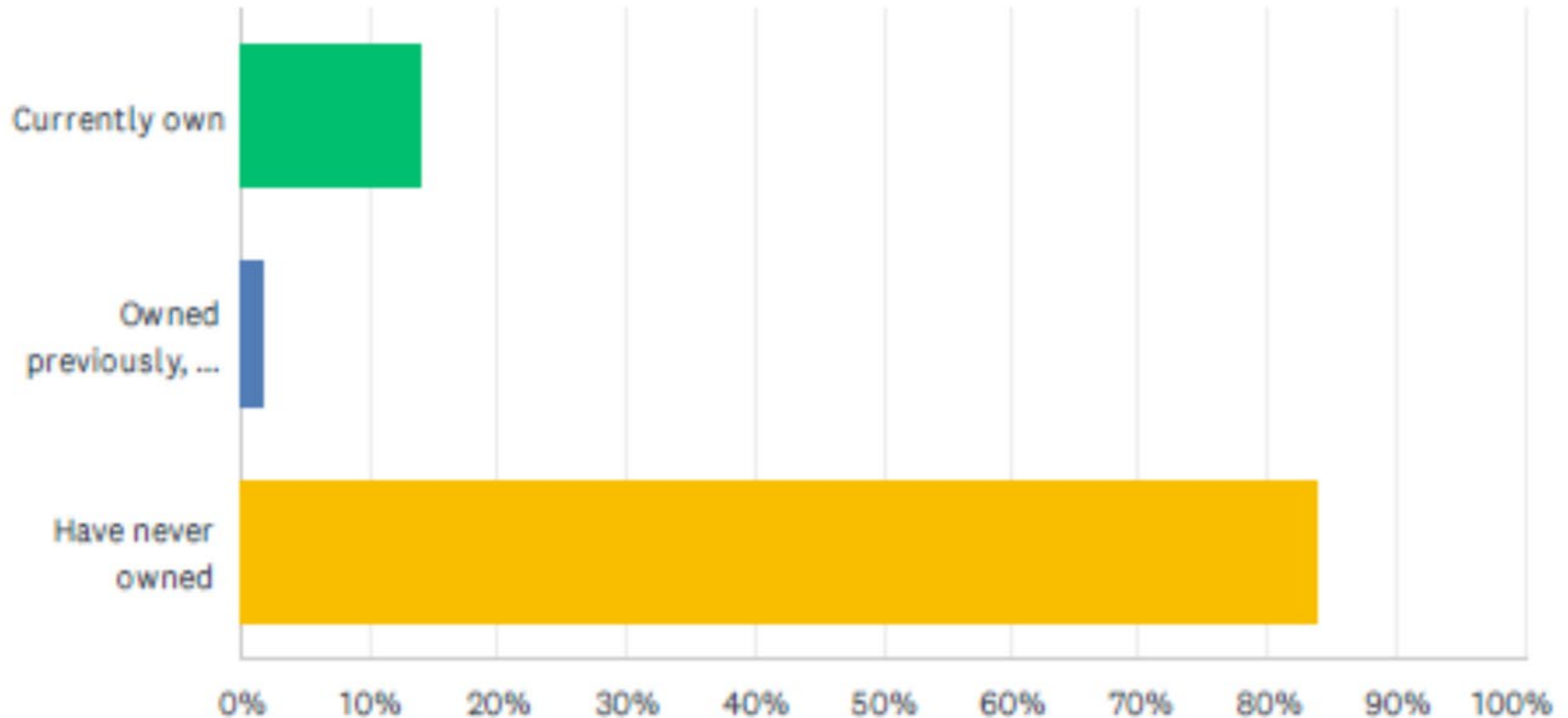
Community Engagement	165
Energy Efficiency	146
Industrial Process Improvements	96
Methane Capture and Use	50
Expand Trees and Forests	149
Renewable Energy	204
Sustainable Transportation	169
Other	94



ONLINE INPUT RESPONSES

Q11 Do you currently own an electric vehicle?

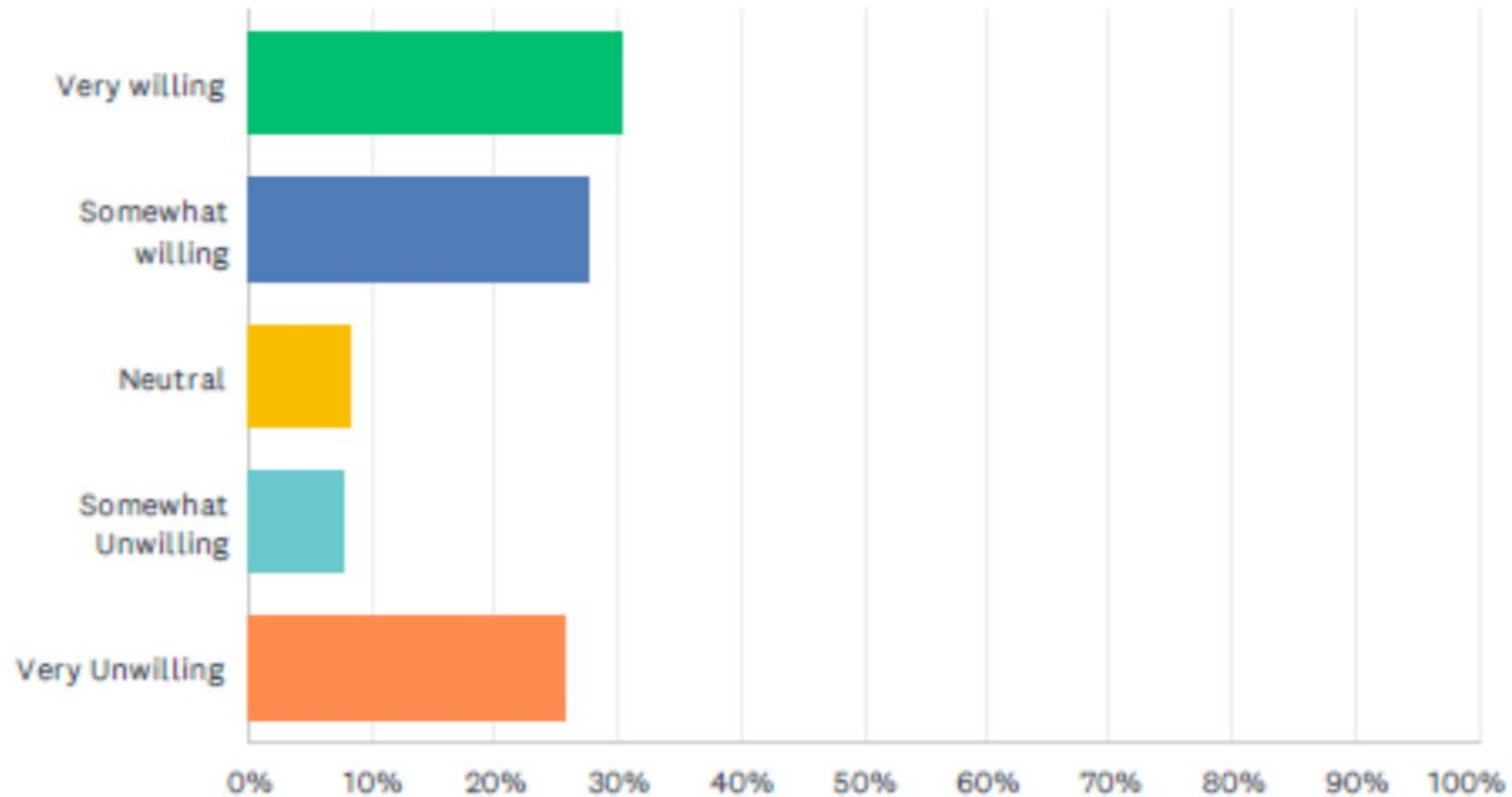
Answered: 297 Skipped: 29



ONLINE INPUT RESPONSES

Q12 If you do not currently own an electric vehicle, how willing are you to purchase an electric vehicle?

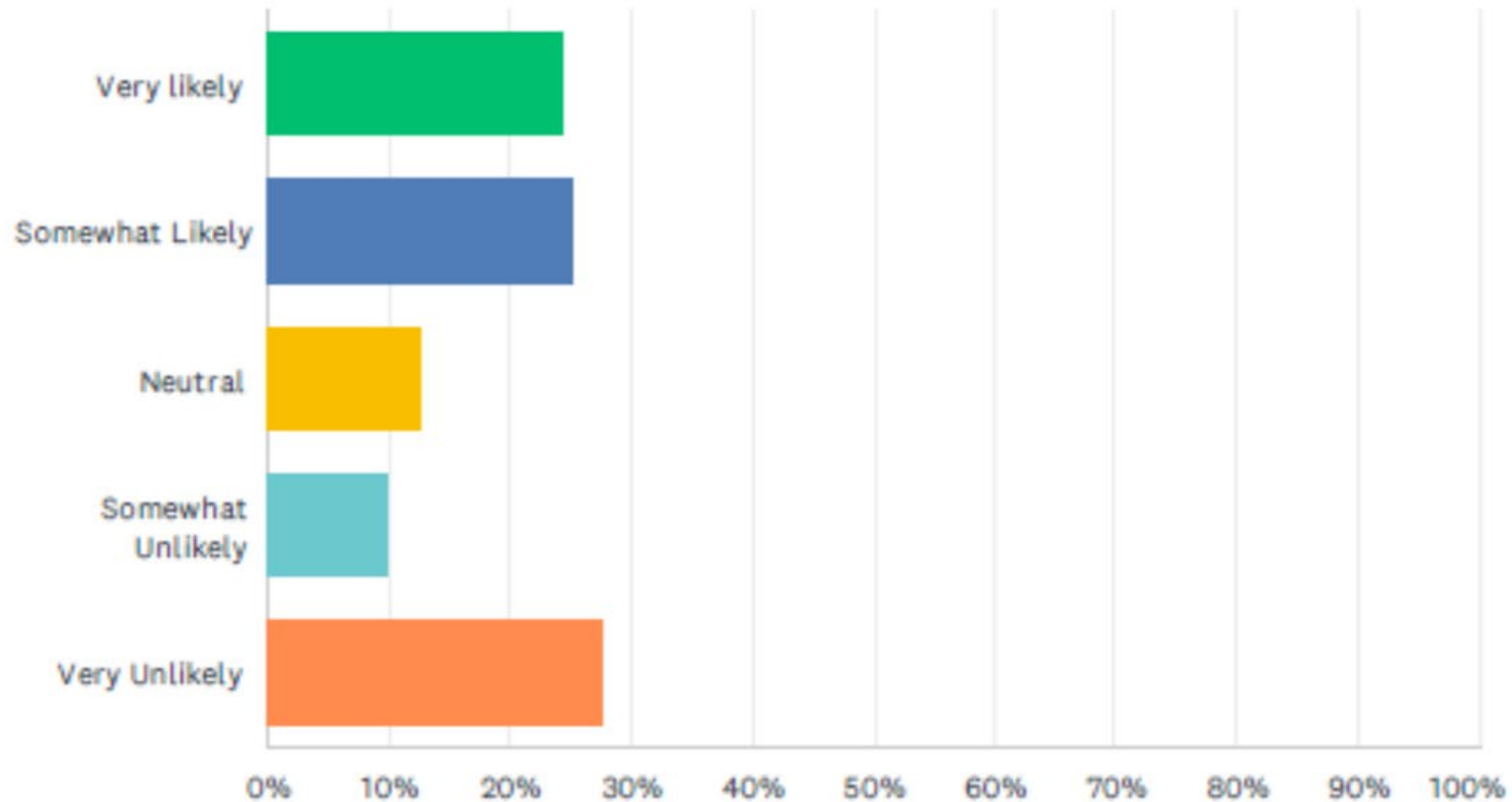
Answered: 275 Skipped: 51



ONLINE INPUT RESPONSES

Q13 How likely are you to carpool or ride public transit instead of drive to reduce your emissions production?

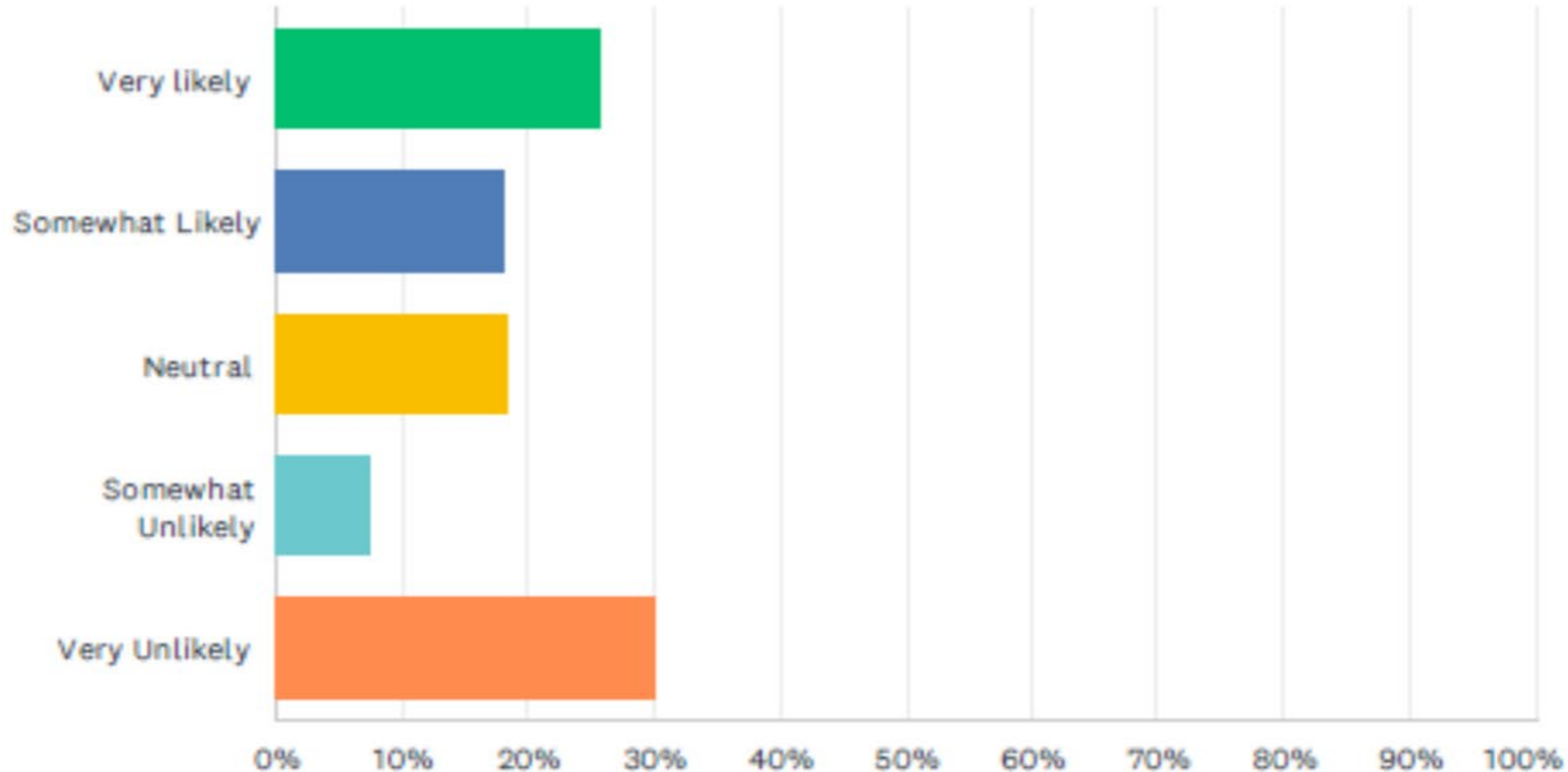
Answered: 299 Skipped: 27



ONLINE INPUT RESPONSES

Q14 How likely are you to relocate to live closer to your job or other destinations (shopping, entertainment, etc.) so you drive less?

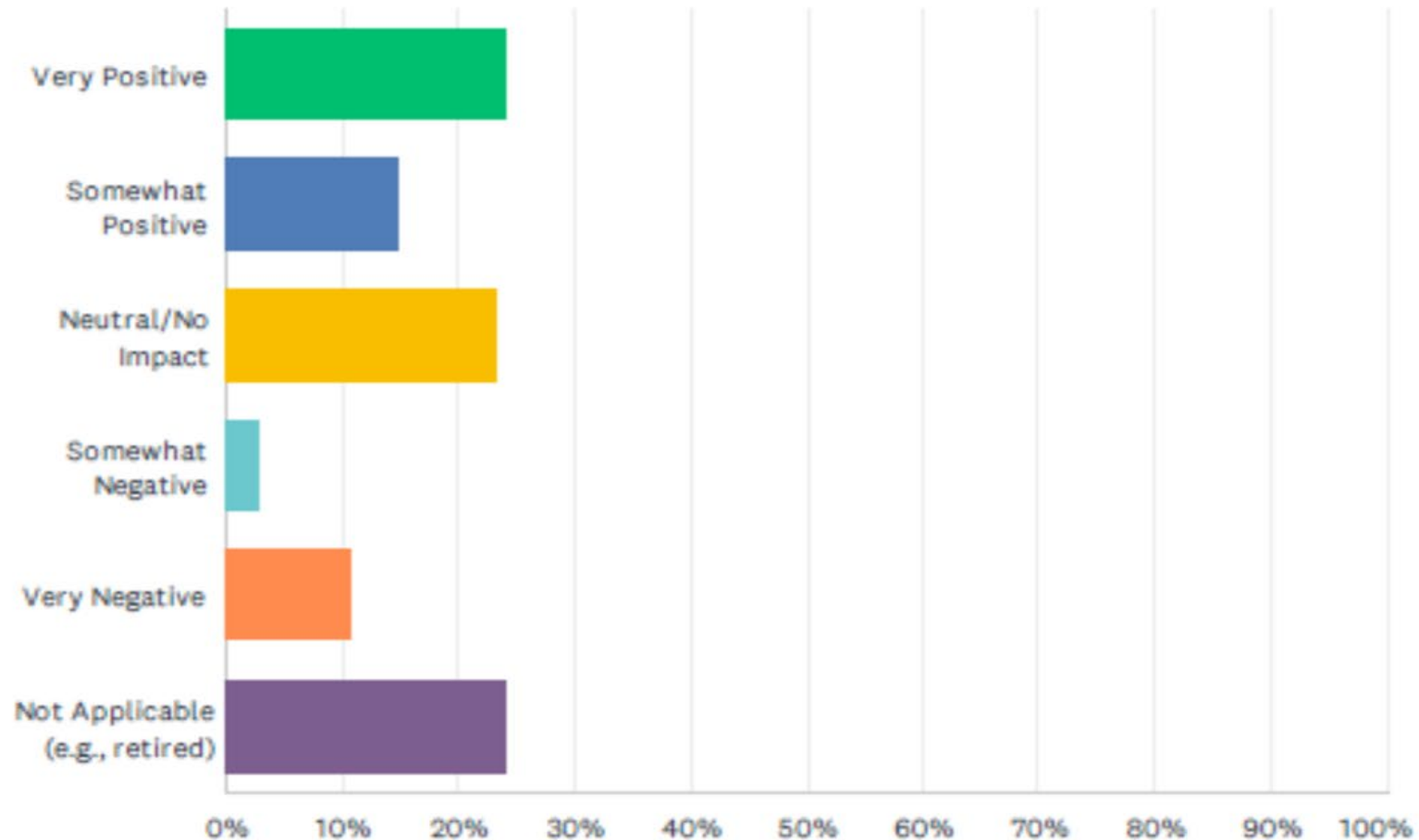
Answered: 298 Skipped: 28



ONLINE INPUT RESPONSES

Q17 Will the transition to a cleaner and more efficient industrial base have a positive or negative impact on your job?

Answered: 300 Skipped: 26



BACKGROUND

• CAP Outreach & Engagement: Climate Fresk Workshops



WANT TO LEARN ABOUT CLIMATE CHANGE AND HOW YOU GET INVOLVED?

JOIN US FOR

CLIMATE FRESK
All the cards are in your hands!

A COLLABORATIVE GAME TO TEACH YOU CLIMATE SCIENCE, AND HOW TO GET INVOLVED REGIONALLY

PRESENTED BY

NORTHEAST OHIO
Lake
Cuyahoga
Geauga
Lorain
Medina
AREAWIDE COORDINATING AGENCY
NOACA: Planning For Greater Cleveland

Climate In  Your Hands

GLOBALLY-RENOUNDED | SCIENCE-BASED

The flyer features a photograph of a group of people sitting around a table, engaged in a game. The table is covered with various cards and a small globe. The background is a warm, indoor setting with a brick wall and a window.

- Interactive, climate education workshop
- 3-hour, game-style format
- Consultant-led, with regional data and engagement content tailored to Northeast Ohio regional climate planning process



CITADEL IMPACT
CONSULTING

BACKGROUND

Climate Fresk Implementation

- Eight (8) workshops held Aug 14 -Sept 14
- Hosts included senior and family centers, metroparks, and CMHA housing complexes
- 63 total attendees
- 26 discussion surveys submitted



Madison Senior Center, Lake County



Lantern of Chagrin Valley,
Geauga County



Lorain County Metroparks,
Lorain County

Jenkins Place Center, Olmsted
Township, Cuyahoga County



Agenda

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1:30 – 3:50 PM	Ranking regional emissions reduction actions ranking activity (includes a 10-minute break)
3:50-4:15 PM	Participant commitments and workshop close-out

Active transportation/complete streets



Horsley Witten



Transit



Image from American Planning Association



Image from RTA

Transit oriented design and mixed use



EV Charging infrastructure

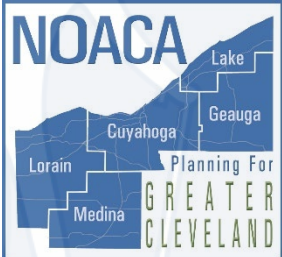


EV Buses and Fleet Vehicles



Prioritizing Transportation Actions

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Worksheet

Transportation Emissions Reduction Actions (page 1)

Action	Key Implementers	Co-Benefits?	Feasibility?
<i>VMT Reduction Actions - Potential reduction: 960,000 metric tons CO2e in 2030</i>			
Include multimodal transportation infrastructure and Complete Streets in transportation planning	Local governments, NOACA, FTA		
Build out comprehensive regional bike network (protected bike lanes, trails, greenways) that serves all ages and abilities	Local governments, NOACA, FTA		
Prioritize the safety of all road users by incentivizing the adoption of Vision Zero plans/policies	ODOT, Traffic Engineers, Local Govts		
Require highway widening projects to undergo greenhouse gas analyses to ensure they do not interfere with regional climate targets	State SIP		

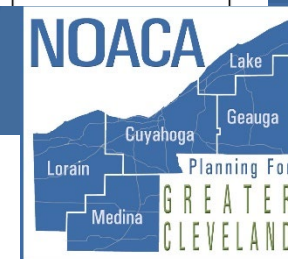
Worksheet

Rankings:



Transportation Emissions Reduction Actions (page 1)

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<i>VMT Reduction Actions - Potential reduction: 960,000 metric tons CO2e in 2030</i>			
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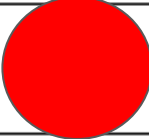
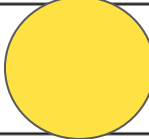
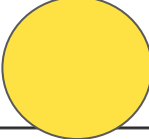
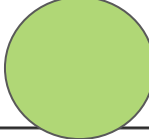
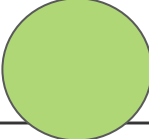


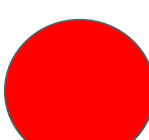
Completed worksheet should have dot added to each row for co-benefits and feasibility.

Action	Key Implementer	Co-Benefits?	Feasibility?
Identify air pollution hotspots to target for interventions	NOACA	●	●
Provide resources to individuals, households and small businesses to be more resilient during emergencies, i.e. bulk purchase of generators	Local governments	●	●
Establish community-based early warning systems to provide timely information about impending climate-related disasters such as [storms and flooding]	<i>etc.</i>	●	●
Develop and implement extreme weather preparedness plans specifically tailored to the unhoused population. This includes providing access to emergency shelters during extreme weather events.		●	●

Work until 1:20



After completing your worksheet, each table uses their 5 blue stickers to choose their top 5 actions for the region to pursue

Action	Key Implementer	Co-Benefits?	Feasibility?
Identify air pollution hotspots to target for interventions	NOACA		
Provide resources to individuals, households and small businesses to be more resilient during emergencies, i.e. bulk purchase of generators	Local governments		
Establish community-based early warning systems to provide timely information about impending climate-related disasters such as [storms and flooding]	<i>etc.</i>		
Develop and implement extreme weather preparedness plans specifically tailored to the unhoused population. This includes providing access to emergency shelters during extreme weather events.			

Work until 1:30



Buildings, Clean Energy and Industry Solutions

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Building/Clean Energy Solutions

- Clean electric grid
- Energy efficiency in buildings
- Building electrification
- Industrial efficiency, green hydrogen



While some cities can utilize existing CCAs, others are creating new ones to accelerate renewable energy adoption

Cincinnati to Construct Nation's Largest City-Led Solar Project¹

–City of Cincinnati, 11/21/19

- Signed a PPA for 100 MW of solar PV
- 35 MW to serve city needs, 65 for Cincinnati CCA participants
- Cincinnati State and IBEW Local 212 to support with a workforce training program for local workers

CITY OF BOSTON ANNOUNCES COMMUNITY CHOICE ELECTRICITY RATES, DISCOUNT FOR LOW-INCOME RESIDENTS²

–City of Boston, 12/4/20

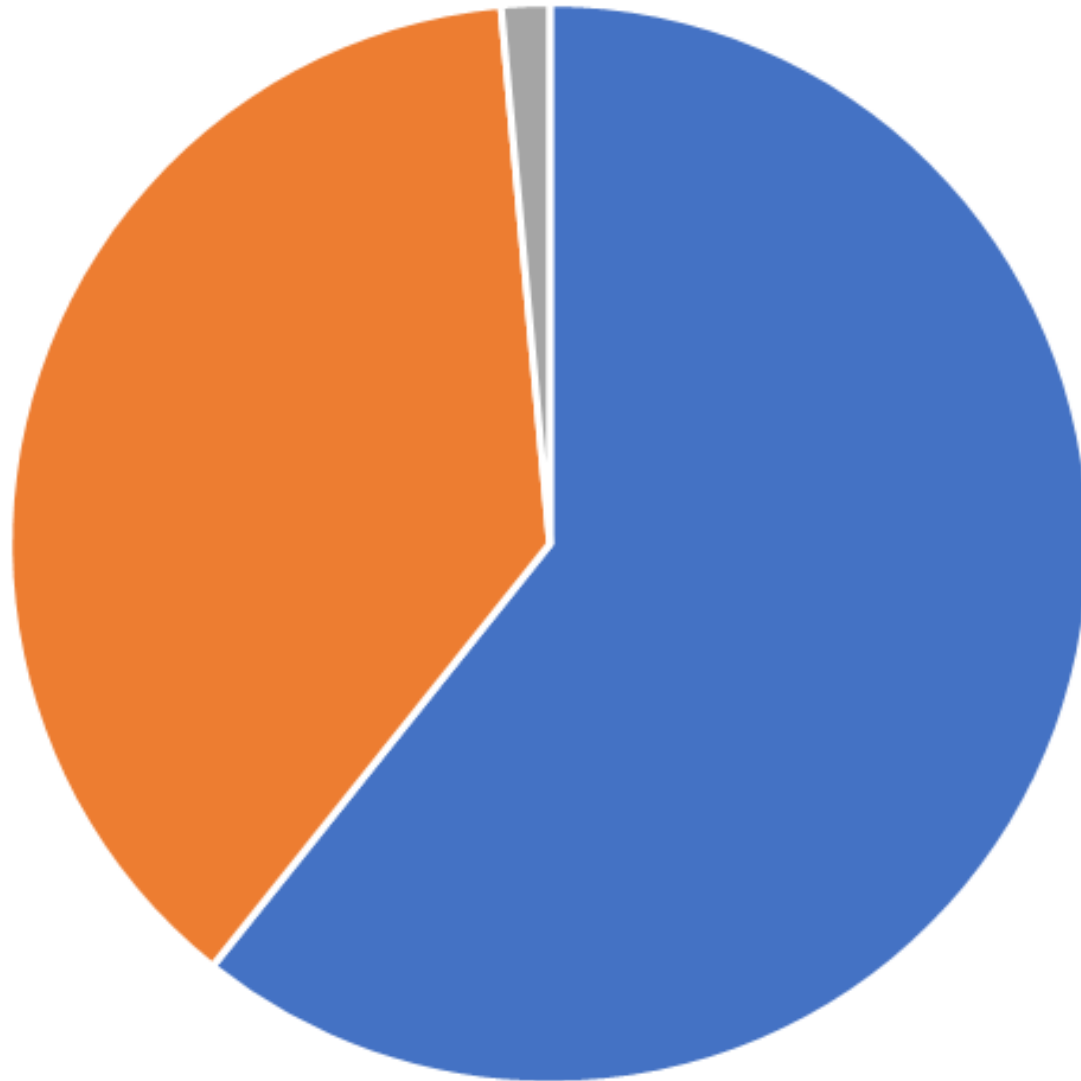
- Three options offered, including a 100% renewable energy tier
- Customers can opt-out
- Provides discounts to 20k LMI customers
- NextGrid Inc. will build 100 MW of solar PV in Massachusetts

Sources:

1. <https://www.cincinnati-oh.gov/mayor/news/cincinnati-to-construct-nation-s-largest-city-led-solar-project/>
2. <https://www.boston.gov/news/city-boston-announces-community-choice-electricity-rates-discount-low-income-residents>



Residential energy emissions (region-wide)



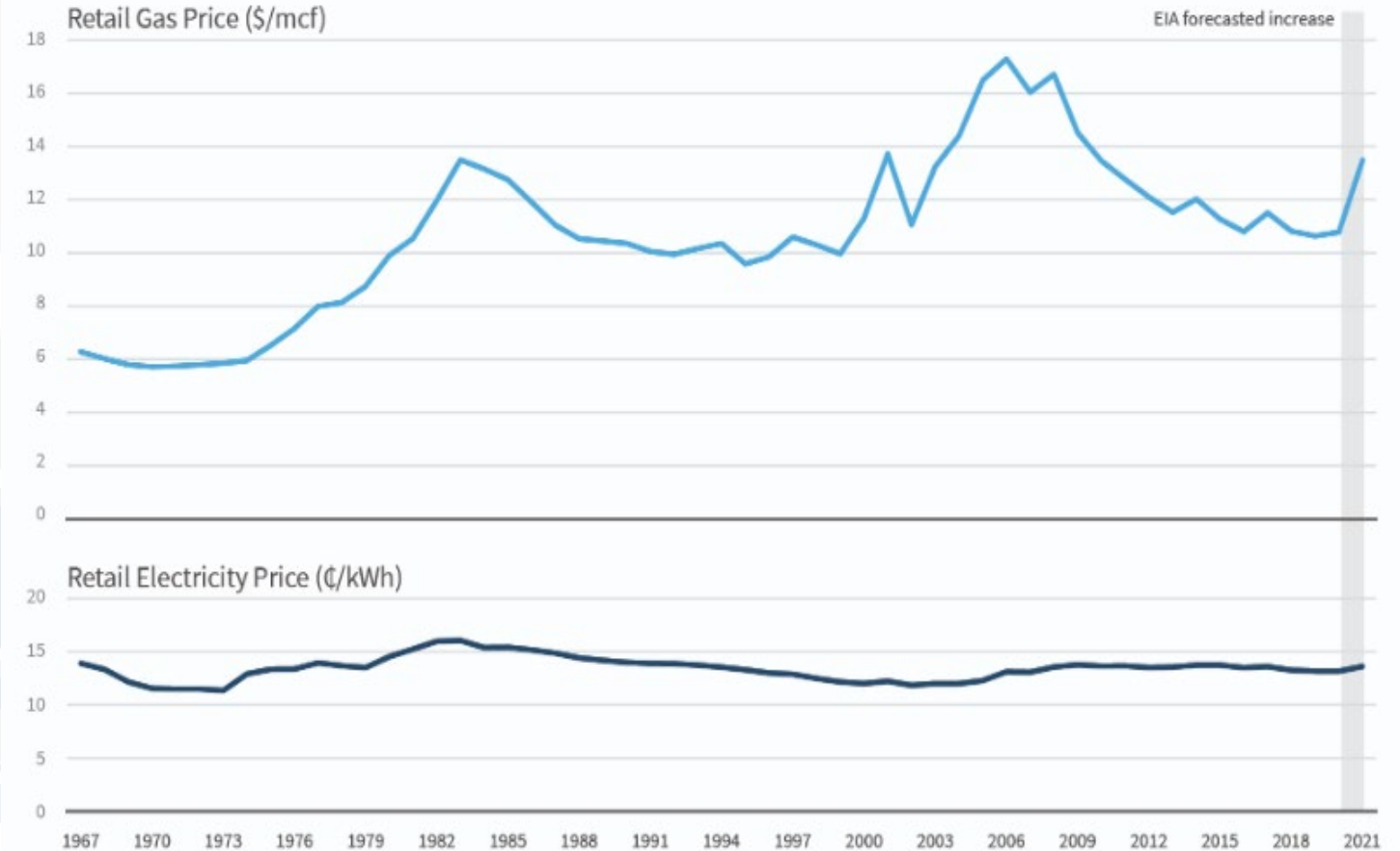
- natural gas
- electricity
- propane and fuel oil

Heat pumps - avoid spikes in heating cost

- Cold climate heat pumps can work to -15°F
- Pair with insulation/air sealing

Gas prices are historically more volatile than electricity prices

HISTORICAL GAS AND ELECTRICITY RETAIL RESIDENTIAL PRICES, INFLATION-ADJUSTED



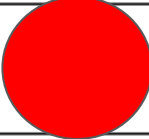
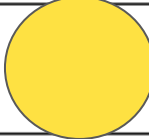
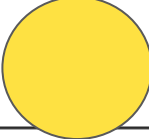
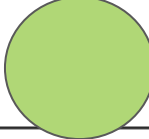
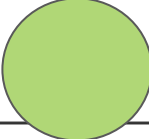


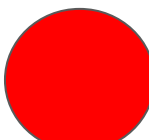
Source: RMI analysis of EIA retail gas and electricity prices and forecasts and Federal Reserve Economic Data inflation adjustment factors

Contractor training/workforce development

- Knowledgeable contractors become ambassadors for new technology



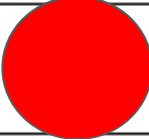
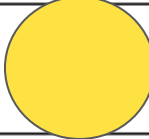
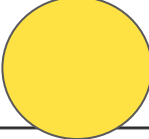
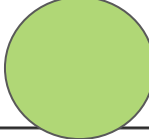
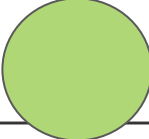


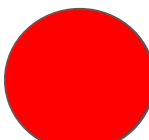
Completed worksheet should have dot added to each row for co-benefits and feasibility.

Action	Key Implementer	Co-Benefits?	Feasibility?
Identify air pollution hotspots to target for interventions	NOACA		
Provide resources to individuals, households and small businesses to be more resilient during emergencies, i.e. bulk purchase of generators	Local governments		
Establish community-based early warning systems to provide timely information about impending climate-related disasters such as [storms and flooding]	<i>etc.</i>		
Develop and implement extreme weather preparedness plans specifically tailored to the unhoused population. This includes providing access to emergency shelters during extreme weather events.			

Work until 2:20



After completing your worksheet, each table uses their 5 blue stickers to choose their top 5 actions for the region to pursue

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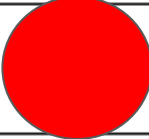
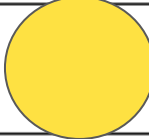
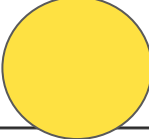
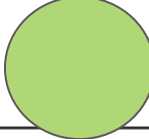
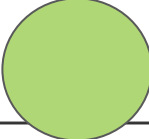


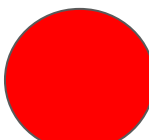


Prioritizing Energy and Industry Actions

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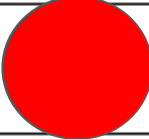
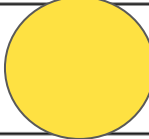
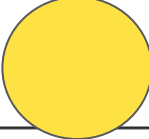
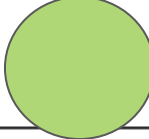
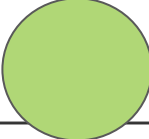


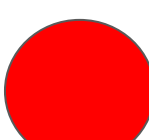
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Work until 3:30



Report Back

- *What were people at your table most excited about?*
 - *What themes came up in discussion?*

Commitments

What can you commit to implementing, 1) at home and 2) regionally?



NORTHEAST OHIO



AREAWIDE
COORDINATING
AGENCY

NOACA: Planning For Greater Cleveland

NOACA will **STRENGTHEN** regional cohesion, **PRESERVE** existing infrastructure, and **BUILD** a sustainable multimodal transportation system to **SUPPORT** economic development and **ENHANCE** quality of life in Northeast Ohio.

