



# A ZERO-CARBON GRID: HOW WE GET THERE

**MREA ENERGY FAIR** – SUNDAY JUNE 26, 2022

**ANDREW KELL** – RENEW WISCONSIN

WITH SPECIAL GUEST, **MARIA REDMOND**, OFFICE OF SUSTAINABILITY AND CLEAN ENERGY



# OVERVIEW OF ZERO-CARBON GRID WORKSHOP

- Energy Trivia
- Wisconsin's Clean Energy Plan
- Public Service Commission's Planning Role
- RENEW/Clean Wisconsin's Zero Carbon Study



**30** YEARS  
1991-2021



**RENEW**  
WISCONSIN

FIGHTING FOR CLEAN ENERGY NEVER GETS OLD

SUPPORT FOR:

- SOLAR
- WIND
- GEOTHERMAL
- HYDROPOWER
- BIOGAS
- ELECTRIC VEHICLES
- ENERGY STORAGE
- BENEFICIAL ELECTRIFICATION





## WHAT WE DO:

### Events

- Annual Renewable Energy Summit
- Ribbon cuttings, Tours, EV ride and drives, Fundraisers, Webinars, Special events

### Solar & EV Grant Programs

- MadiSun, Solar for Good, EVs for Good

### Government Affairs

- Legislature, Governor's Office, State Agencies, Businesses, Non-profit Orgs

### Policy Analysis

- Public Service Commission, MISO, etc.

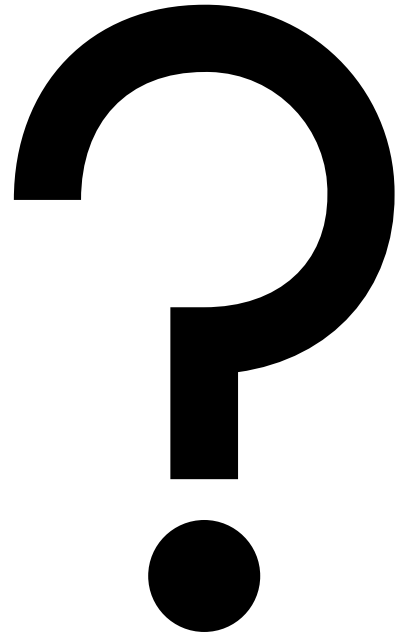




# ENERGY TRIVIA

...

BECAUSE KNOWING IS HALF THE BATTLE



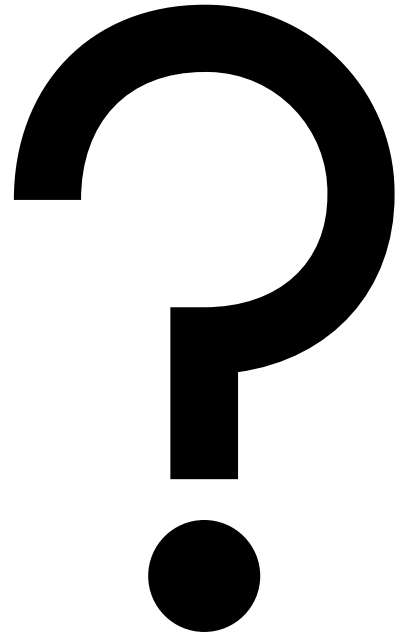
“IF YOU FAIL TO PLAN, YOU PLAN TO FAIL.”

**Who said it?**



“IF YOU FAIL TO PLAN, YOU PLAN TO FAIL.”

-BENJAMIN FRANKLIN



## CO<sub>2</sub> EMISSIONS PER PERSON, BY STATE

**Where does Wisconsin stand compared to other states?**

**5<sup>th</sup>, 24<sup>th</sup>, 38<sup>th</sup>, or 48<sup>th</sup> most CO<sub>2</sub> emissions among states?**



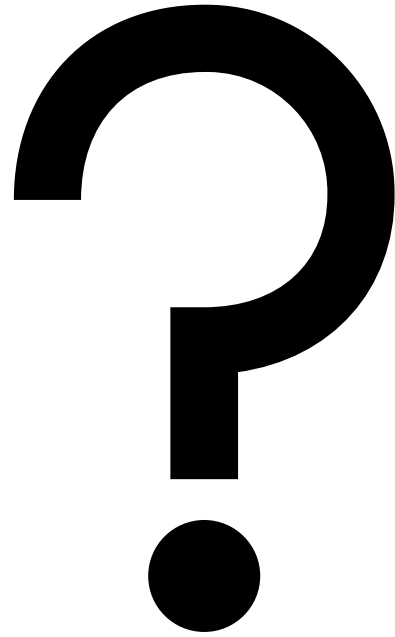
Highest Emitters	State	Metric Tons CO2/Person (2019)
1	Wyoming	101.9
2	North Dakota	74.8
3	West Virginia	47.6
4	Alaska	46.7
5	Louisiana	41.8
6	Montana	30.2
7	Indiana	26.2
8	Nebraska	26.1
9	Kentucky	25.8
10	Iowa	24.5
11	Texas	23.6
12	New Mexico	23.3
13	Oklahoma	22.9
14	Alabama	21.6
15	Arkansas	21.5
16	Mississippi	21.0
17	Kansas	20.8
18	Utah	19.2
19	Missouri	19.1
20	South Dakota	18.0
21	Pennsylvania	17.1
22	Ohio	16.8
23	Minnesota	16.3
24	Wisconsin	16.3
25	Illinois	16.1

Highest Emitters	State	Metric Tons CO2/Person (2019)
26	Michigan	15.9
27	Colorado	15.9
28	Hawaii	14.5
29	Delaware	13.9
30	Tennessee	13.5
31	Nevada	13.5
32	South Carolina	13.5
33	Georgia	12.8
34	Arizona	12.7
35	Virginia	12.5
36	North Carolina	11.7
37	New Jersey	11.3
38	Idaho	11.2
39	Washington	11.1
40	Florida	10.9
41	Maine	10.7
42	Connecticut	10.3
43	New Hampshire	10.2
44	Oregon	9.9
45	Rhode Island	9.8
46	Vermont	9.6
47	Maryland	9.4
48	Massachusetts	9.2
49	California	9.1
50	New York	8.7
51	District of Columbia	4.0
<b>Average all states</b>		<b>15.7</b>

Source: U.S. Energy Information Administration



## CO<sub>2</sub> Emissions per person, by state



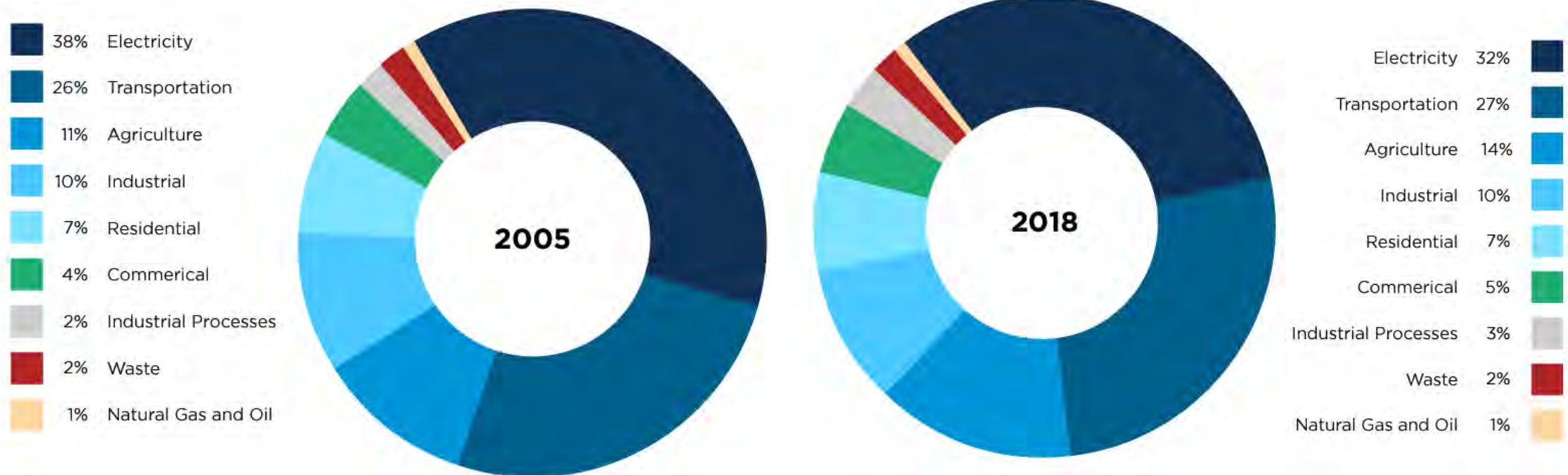
## WISCONSIN'S GHG EMISSIONS

**Which economic sector produces the most GHG in WI?**

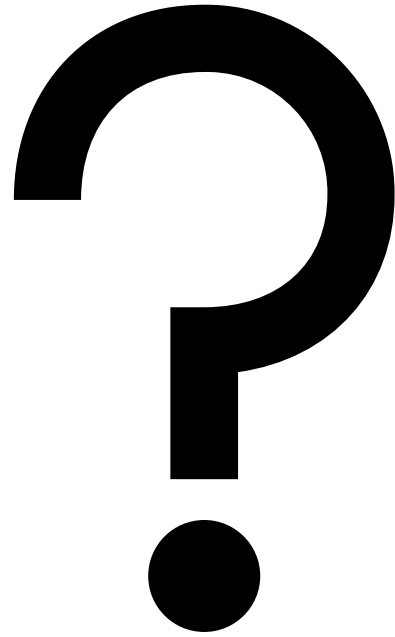
**Agriculture, Transportation, Electricity, or Industrial?**

# EMISSIONS INVENTORY

## WISCONSIN GHG EMISSIONS BY ECONOMIC SECTOR BY PERCENT



From Clean Energy Plan presentation



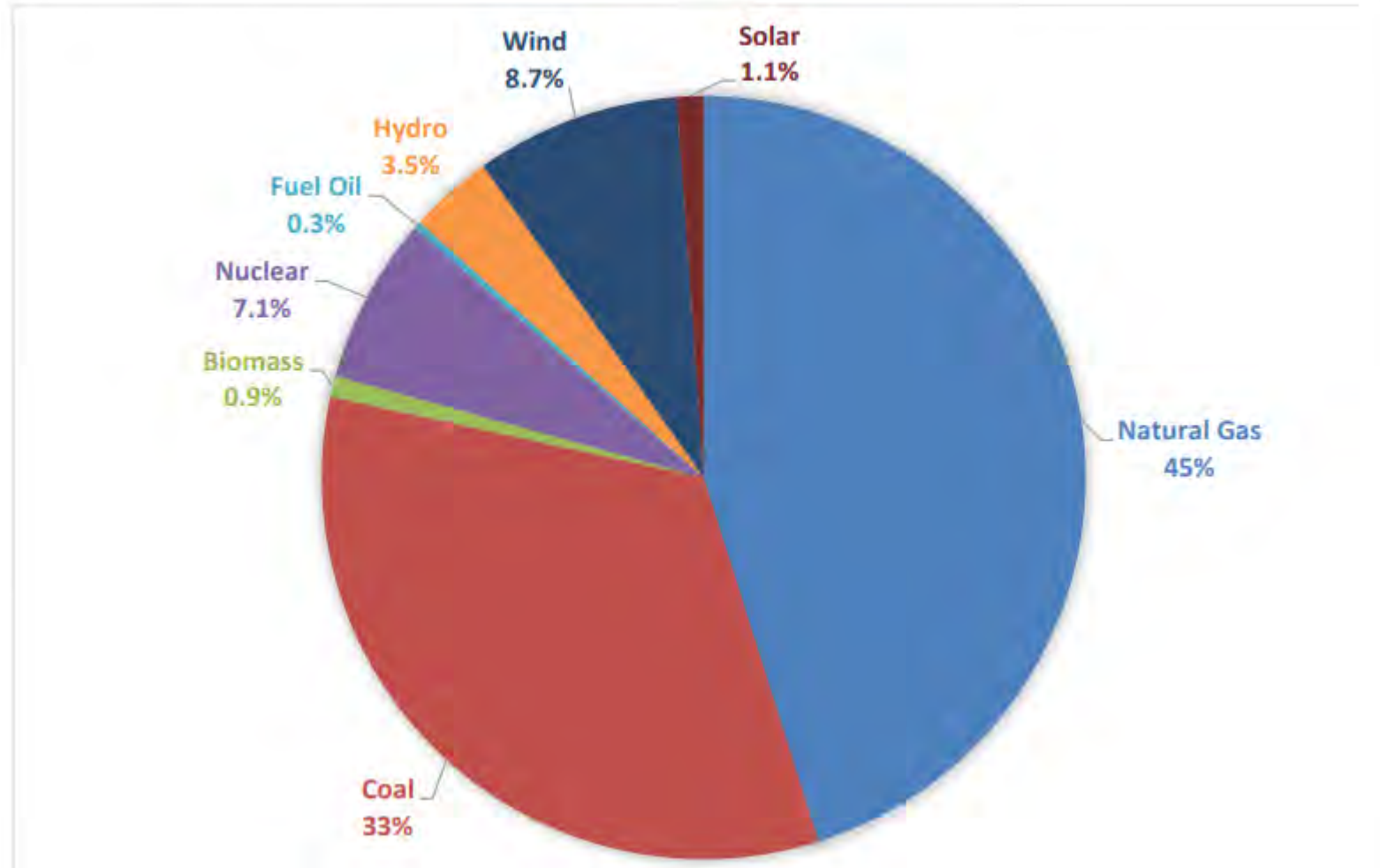
# WISCONSIN'S ELECTRICITY RESOURCES

**Which resource has the highest generating capacity in WI?**

**Coal, natural gas, nuclear, hydro, or wind?**

Figure 1-6

Wisconsin Electric Provider Capacity by Resource – December 2020



# WISCONSIN'S ELECTRICITY RESOURCES

## PSC SEA 2028

# ZERO CARBON PLANNING

## The Executive Branch & The Office of Sustainability and Clean Energy



# CLEAN ENERGY PLANNING BY EXECUTIVE ORDER

## Governor Evers has initiated state government action

- **Executive Order #38: Relating to Clean Energy in Wisconsin**
  - Created the Office of Sustainability and Clean Energy (OSCE)
  - Initiated Wisconsin's first Clean Energy Plan
- **Executive Order #52: Relating to the Creation of the Governor's Task Force on Climate Change**
  - Task Force issued Climate Change Report with 55 climate solutions in December of 2020
- **Executive Order #161: Relating to the Creation of the Office of Environmental Justice**
  - Will coordinate with Governor's Office, Department of Administration, and OSCE

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The following slides were prepared by Maria Redmond,  
Director of the Office of Sustainability and Clean Energy




# STATE OF WISCONSIN ACTION GOVERNOR'S TASK FORCE ON CLIMATE CHANGE

- From industry professionals to youth activists, from elected and tribal officials to entrepreneurs, these diverse perspectives are further informed by research and data from climate scientists, subject matter experts, and public participation.
- Final Report, December 2020 – 55 climate solutions

**9** **Sectors:**  
Climate justice, energy, transportation, agriculture, resilient systems, clean economy, education, food systems, forestry

**3** **Policy Pathways:**  
Agency actions, budget, legislation

 **Tier 2: Nine Policy Options**  
Drew both support and concern from task force members, reflection of the diversity of perspective and worldview of the members

(WI EO 52, 2019; GFTCC, 2020)

*climatechange.wi.gov*

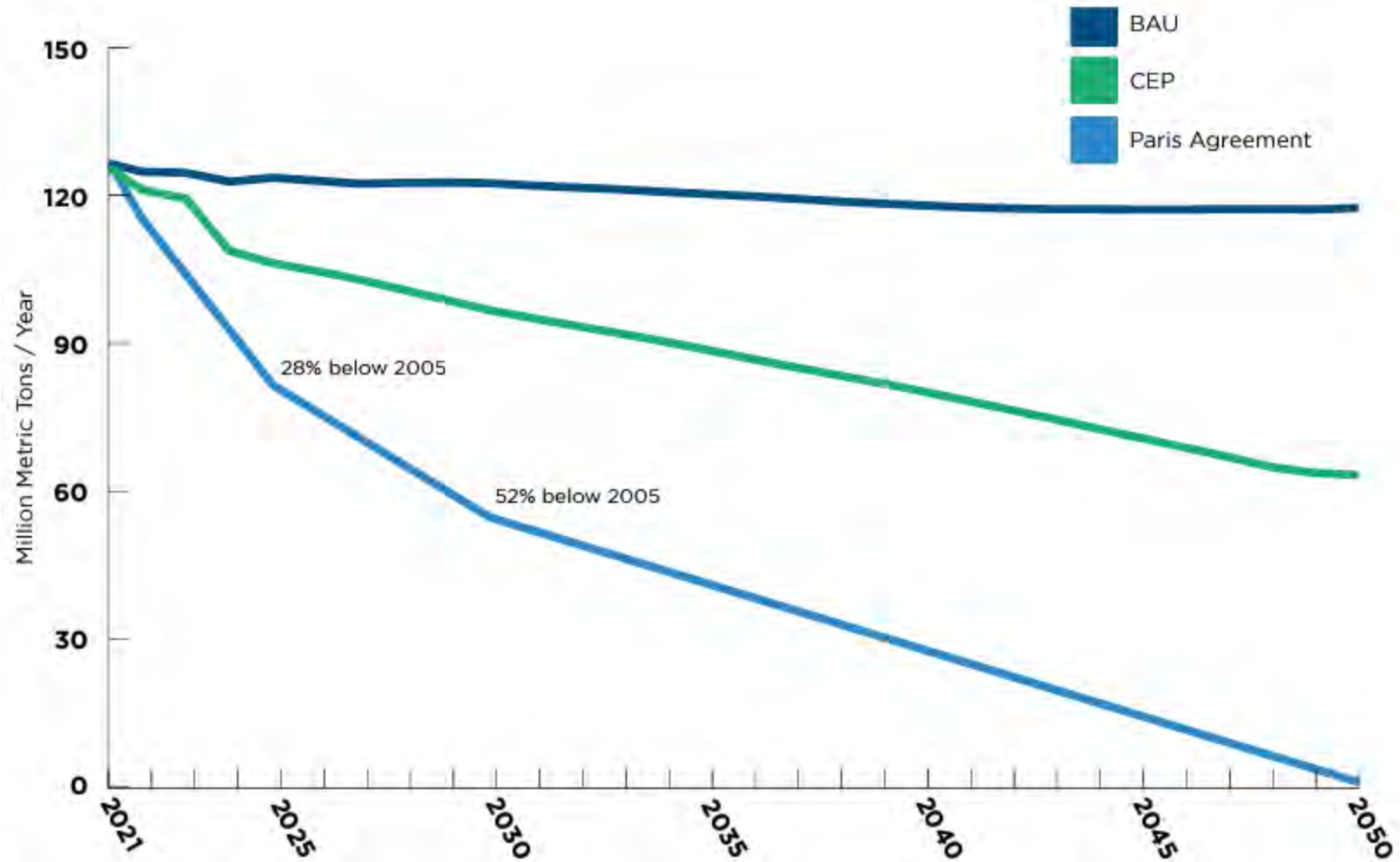
GOVERNOR'S TASK FORCE ON  
CLIMATE CHANGE REPORT



PUBLISHED BY THE STATE OF WISCONSIN, DECEMBER 2020.



# CLEAN ENERGY PLAN EMISSION IMPACT





# STATE OF WISCONSIN ACTION CLEAN ENERGY PLAN

- Developing key pathways and strategies to transition to a clean energy economy – actionable, high impact
- Focus on multi-sector deep decarbonization:
  - 100% carbon-free electricity consumed by 2050 (Power Sector)
  - Wisconsin's contribution to emissions reduction related to the Paris Climate Accord
    - economy-wide target for the US to reduce its net greenhouse gas (GHG) emissions by 50-52% below 2005 levels in 2030



## ADDITIONAL CEP OBJECTIVES

- Reduce the disproportionate impacts of energy generation/use on low-income and communities of color
- Maximize the creation of, and equitable opportunities for clean energy jobs
- Improve reliability and affordability of the energy system
- Strengthen the clean energy workforce through training and education and focus on a just transition
- Protect human and environmental health by reducing ecosystem pollution from fossil fuels.



# VALUE STATEMENT

Three core values during the transition: justice, equity, and collective action.

- Ensure a just and equitable transition
  - individuals who have been most impacted by pollution and climate change must be part of the decision-making process and this process must include diversity as it relates to race and ethnicity, sex and gender, socioeconomic status, and geography through this transition.
- Job creation, business and community development, and resources must be shared across the state and across communities
  - communities that have most felt the impacts of climate change and have faced systemic barriers to wealth and opportunity must see and feel the benefits of this transition.
- Shared responsibility among all levels of government and governing bodies, the utility, energy, and transportation industries, the private sector, and non-governmental organizations.

# WHAT'S NEXT?

- Living document and process for equitable, inclusive, and impactful clean energy planning and implementation
- Work Plan Development
- Measurement and Verification
- Room for adjustments along the way
- Meetings, Online Comments



## CONTACT INFORMATION

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# ZERO CARBON PLANNING

## Public Service Commission (PSC)



Chairperson Rebecca  
Cameron Valcq



Commissioner Ellen  
Nowak



Commissioner Tyler  
Huebner



# PUBLIC SERVICE COMMISSION

## PSC regulates Wisconsin electric, gas, and water utilities

- **Determines retail rates** that Wisconsin residents and business pay to utilities
- **Reviews** and authorizes **utility applications** for new infrastructure
- Investigates statewide policy and planning issues
  - Biennial **Strategic Energy Assessment (SEA)**
  - Quadrennial **Focus on Energy** Review
  - Ad-hoc Investigations
    - **Zero Carbon Roadmap**

# PSC STRATEGIC ENERGY ASSESSMENT

## Brief SEA History for Background

- Many states with regulated utilities have **Integrated Resource Plans (IRP)**
- IRPs require utilities to submit comprehensive generation and transmission plans
- Wisconsin used to have an IRP, called the Advanced Plan
- 1997 Wisconsin Act 204 did away with Advance Plan and **created SEA** in its place
- PSC required to assess utility planning info every even-numbered year via SEA
- Authorization of new utility infrastructure done in separate case proceedings

# PSC STRATEGIC ENERGY ASSESSMENT

## General Statutory Requirements of SEA:

- Identify utility plans for **large generation** within the next 3 years
- Identify utility plans for **transmission** within the next 3 years
- Assess **reliability** and future demand needs
- Identify plans for **new renewable generation** resources
- Assess **impact** to wholesale market, economy, public, and electric retail rates
- Has been PSC practice to provide 6-year outlook

# PSC STRATEGIC ENERGY ASSESSMENT

## **General Statutory Requirements of SEA (continued):**

- PSC to collect information from utilities
- PSC to issue Draft version by July 1, and submit for comment
- PSC to hold hearing, incorporate comments, and issue Final version

**The PSC recently issued 'SEA 2028' for comment  
Docket 5-ES-111**

# PSC

## ZERO CARBON ROADMAP INVESTIGATION

### Events

- PSC issued a Notice of Investigation in March 2021
- PSC issued Memo for Comment on investigation scope in April 2021
- PSC staff submitted Memo to Commission on options to further investigate
- PSC issued order on initial issues to investigate in September 2021
  - See next slide

# PSC

## ZERO CARBON ROADMAP INVESTIGATION

### Commission Decision on Initial Steps

- Gather more robust carbon-reduction planning info in **SEA**
- Incorporate carbon-reduction goals in **Focus on Energy Quadrennial Planning**
- Organize workshops on **Performance Based Regulation**
- Analyze **customer affordability** issues within activities listed above

# ECONOMYWIDE ZERO CARBON PLANNING COLLABORATIVE APPROACH



EVOLVED  
ENERGY  
RESEARCH

# ECONOMYWIDE ZERO CARBON STUDY

## Approach

- Detailed **modeling** of all energy sectors
  - Multiple zero-carbon **pathway scenarios**
- Economic, environmental, and health **impacts**
- Policy consideration and **recommendations**



# ECONOMYWIDE ZERO CARBON STUDY

## Initial Results:

### Electricity Demand by Sector

Beneficial Electrification  
causes approx. doubling of  
electricity usage in WI

**DRAFT FIGURE**

# ECONOMYWIDE ZERO CARBON STUDY

## Initial Results:

Economywide Zero Carbon  
Electricity Capacity

Projections by 2050

**Guesses at %s?**

# ECONOMYWIDE ZERO CARBON STUDY

**Initial Results:**

**DRAFT FIGURE**

**Economywide Zero Carbon  
Electricity Capacity**

**Projections by 2050**



Q&A

THANK YOU FOR ATTENDING OUR WORKSHOP!

