

NET ZERO 2050  
ENERGY TRANSITION OPPORTUNITIES FOR ALBERTA

ENVIROTECH 2022



**VERTEX**

VERSATILITY. EXPERTISE.

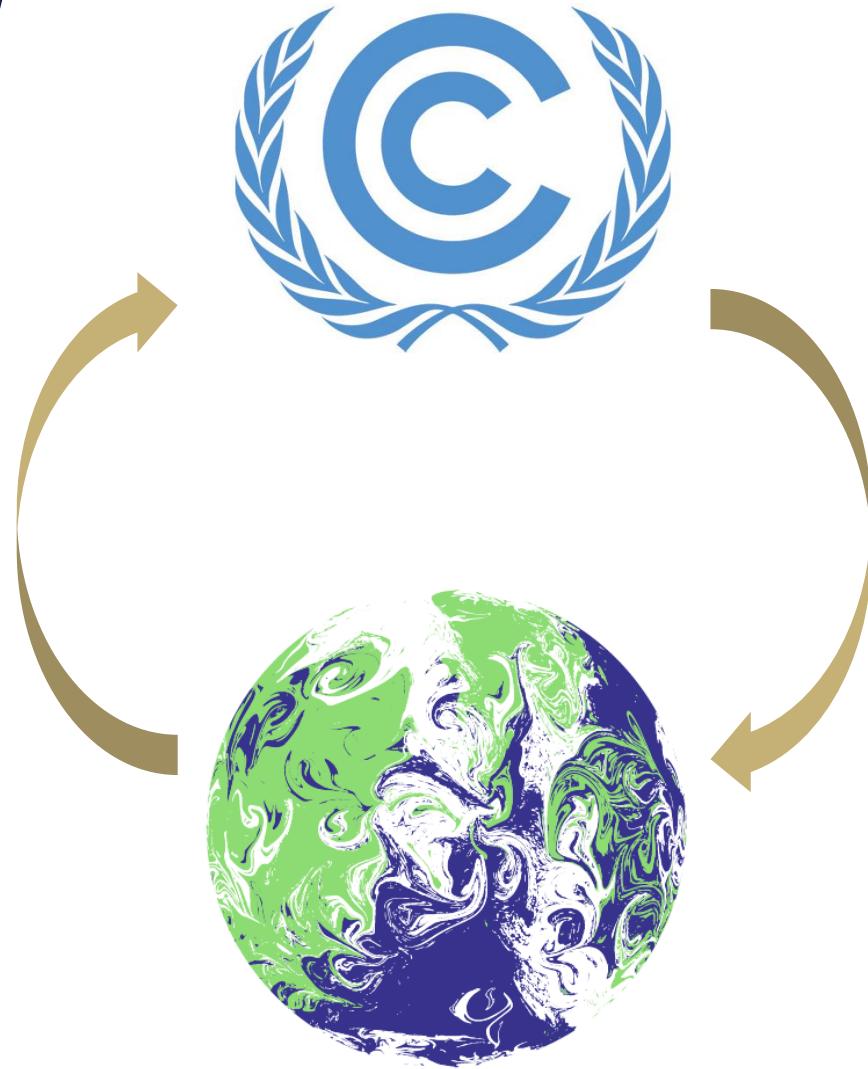
# AGENDA

- Background
- Canada's Net Zero Target
- Emissions Reduction Pathways
- Canada's Emissions Reduction Plan
- Implications for Alberta
- Opportunity Overview
  - Renewable Energy
  - Methane Reductions
  - Carbon Removals
  - CCUS
  - Hydrogen
- Looking Forward
- Questions



# BACKGROUND

- UNFCCC - United Nations Framework Convention on Climate Change
- COP - Conference of the Parties
- IPCC - Intergovernmental Panel on Climate Change
- Paris Agreement
- NDCs - Nationally Determined Contributions



# CANADA'S NET ZERO TARGET

As part of its first NDC, Canada has committed to achieving net-zero emissions by 2050, and 45% reductions by 2030.

- What does net zero mean?

Canada's commitments are backed by:

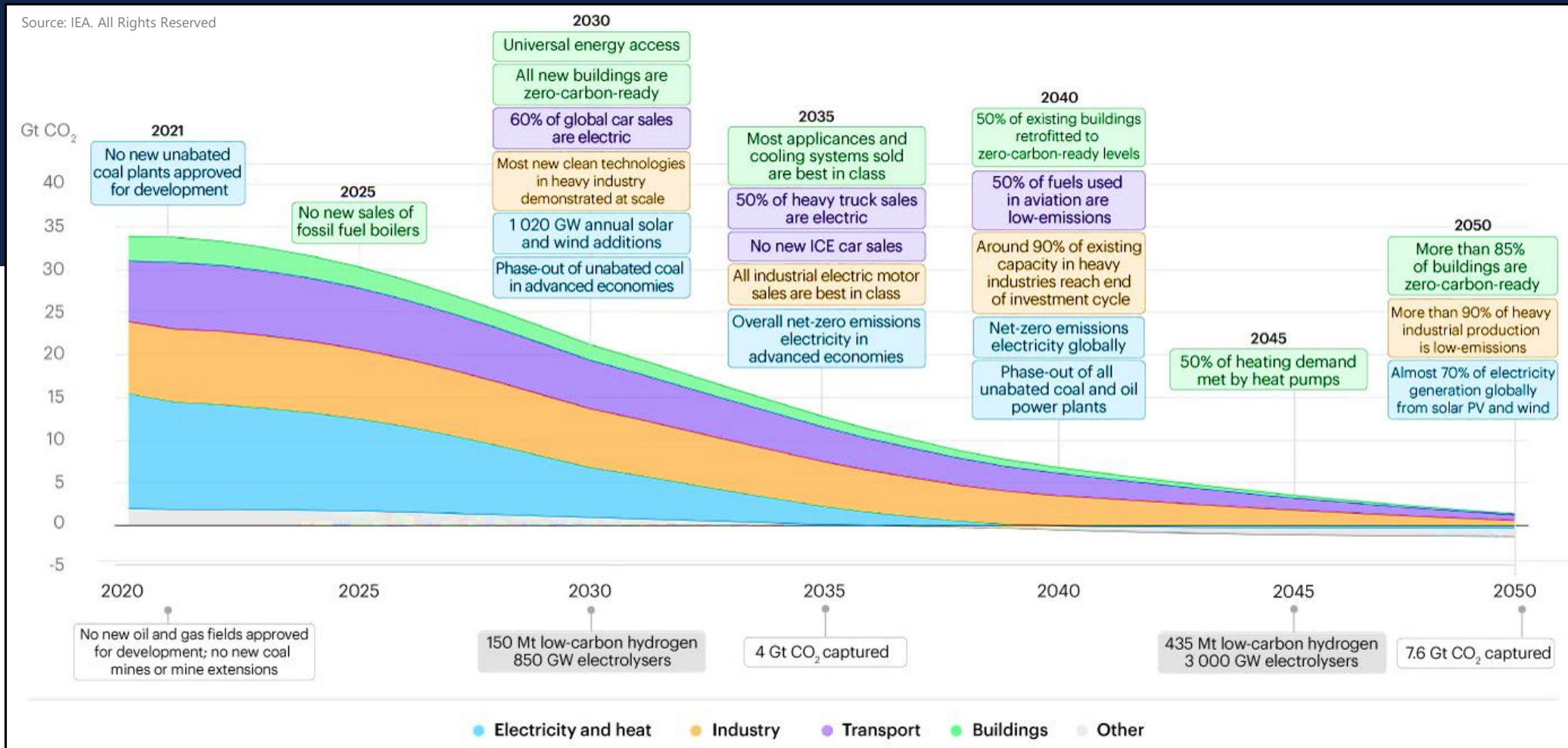
- Federal policies, plans, and funding
- Canada's 2030 Emissions Reduction Plan
- Roadmap to 2030 and net zero by 2050



# EMISSIONS REDUCTION PATHWAYS

How do we get there?

- No single pathway to achieve net zero emissions by 2050
- Many uncertainties related to clean energy transitions
- Example of an International Energy Agency-proposed global net zero pathway:



# 2030 EMISSIONS REDUCTION PLAN

- Roadmap to how Canada will meet its enhanced Paris Agreement target to reduce emissions by 40-45% from 2005 levels by 2030, on the road to net zero emissions by 2050
- Economy-wide strategies to be deployed, including initiatives across the following sectors:



# IMPLICATIONS FOR ALBERTA

These ambitious commitments and Canada's ERP identify a number of opportunities for Alberta's energy sector.



## Opportunity Overview:

- Renewable Energy
- Methane Reductions
- Carbon Removals
- CCUS
- Hydrogen

# OPPORTUNITY: RENEWABLE ENERGY

Canada's roadmap: clean, affordable, and reliable electricity

The Alberta Electric System Operator (AESO) is evaluating pathways to a Net-Zero Grid by 2050

Anticipated growth of renewables in the energy mix:

- Wind Energy
- Solar Energy
- Geothermal Power

Opportunities:

- Federal Funding
- Alberta Offsets & Renewable Energy Certificates
- Renewable Energy Services
- Geothermal Policy & Regulations (6,000 MW)





# OPPORTUNITY: METHANE REDUCTION

In Canada's emissions inventory, methane accounted for 13% of total 2019 GHG emissions. >90% of these emissions were from agriculture and waste, and oil & gas.

Opportunities for methane reduction driven by:

- Federal and provincial regulations for methane emission reductions
- Strong carbon pricing system (TIER Regulation)
- Funding for methane reduction projects



# OPPORTUNITY: CARBON REMOVALS

Net-zero emissions mean that “anthropogenic emissions of GHGs into the atmosphere are balanced by anthropogenic removals of GHG from the atmosphere over a specified period”

- *Canadian Net-Zero Emissions Accountability Act*

Removals can include:

- Natural Carbon Sinks – Nature-Based Solutions
- Stationary Point Source Capture Systems
- Direct Air Capture (DAC) Technology

Opportunities:

- Federal funding – Nature Smart Climate Solutions Fund
- Funding for DAC – e.g. ERA



Right Image: Carbon Engineering

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# OPPORTUNITY: CCUS

Carbon capture, utilization and storage includes several important phases – the capture of emissions, treatment and transportation of CO<sub>2</sub> to a well site, and injection underground for permanent storage.

Drivers for CCUS opportunities:

- Enhanced Oil Recovery
- Funding for large-scale CCS projects in Alberta
- Alberta Carbon Sequestration Hubs
- Federal Investment Tax Credits for CCUS announced in Budget 2022



# OPPORTUNITY: HYDROGEN



An evolving opportunity:

- Hydrogen Strategy for Canada
- Clean Fuel Standard
- Alberta's Hydrogen Roadmap
  - Transportation, heat, power, energy storage, industrial uses
  - Hydrogen production – grey, blue, green
- Roadmaps, upcoming policies and mechanisms to ensure a successful deployment of hydrogen are still under development
- Opportunities to leverage funding and redeploy expertise and infrastructure

# LOOKING FORWARD

Alberta has an opportunity to manage the energy transition in a practical and meaningful way that provides a continued source of economic prosperity.

What it will take:

- Collaborative efforts
- Effective utilization of existing and developing technologies
- Leverage the energy sector's cross-disciplinary creativity and ambition
- Capitalize on existing knowledge



THANK YOU

QUESTIONS:

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