OFFSHORE WIND

Community Information Sessions

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What could offshore wind energy mean for Unama'ki – Cape Breton?

WELCOME!

Please help yourself to refreshments.

The presentation will begin in 15 minutes, followed by a Q&A and open house.

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GREEN ENERGY ENGAGEMENT Program

- Private-sector-led economic development organization (all sectors, communities, and geographies)
- Support four First Nations and all five Municipalities through Regional Enterprise Network (REN)

- Two-way knowledge sharing
- Relationship development with all rightsholders and stakeholders
- Delivering information about potential future energy development to communities and fostering dialogue

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Capacity Building for the Sustainable and Inclusive Development of Nova Scotia's Offshore Wind Resource

- Not-for-profit, leading applied research supporting the transition of Atlantic Canada's energy system to a carbon neutral future (net zero emissions).

- Addressing knowledge gaps that communities in Atlantic Canada are facing in this energy transition.

- Funded by Natural Resource Canada's Smart Renewables and Electrification Pathway Program

- Project Goals:
  - Local capacity development in Indigenous and rural Nova Scotian communities through engagement on offshore wind

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What we will discuss today:

- Why we need more renewable energy
- An introduction to offshore wind
- Regulations in development
- Opportunities to get involved

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Why do we need more renewable energy?

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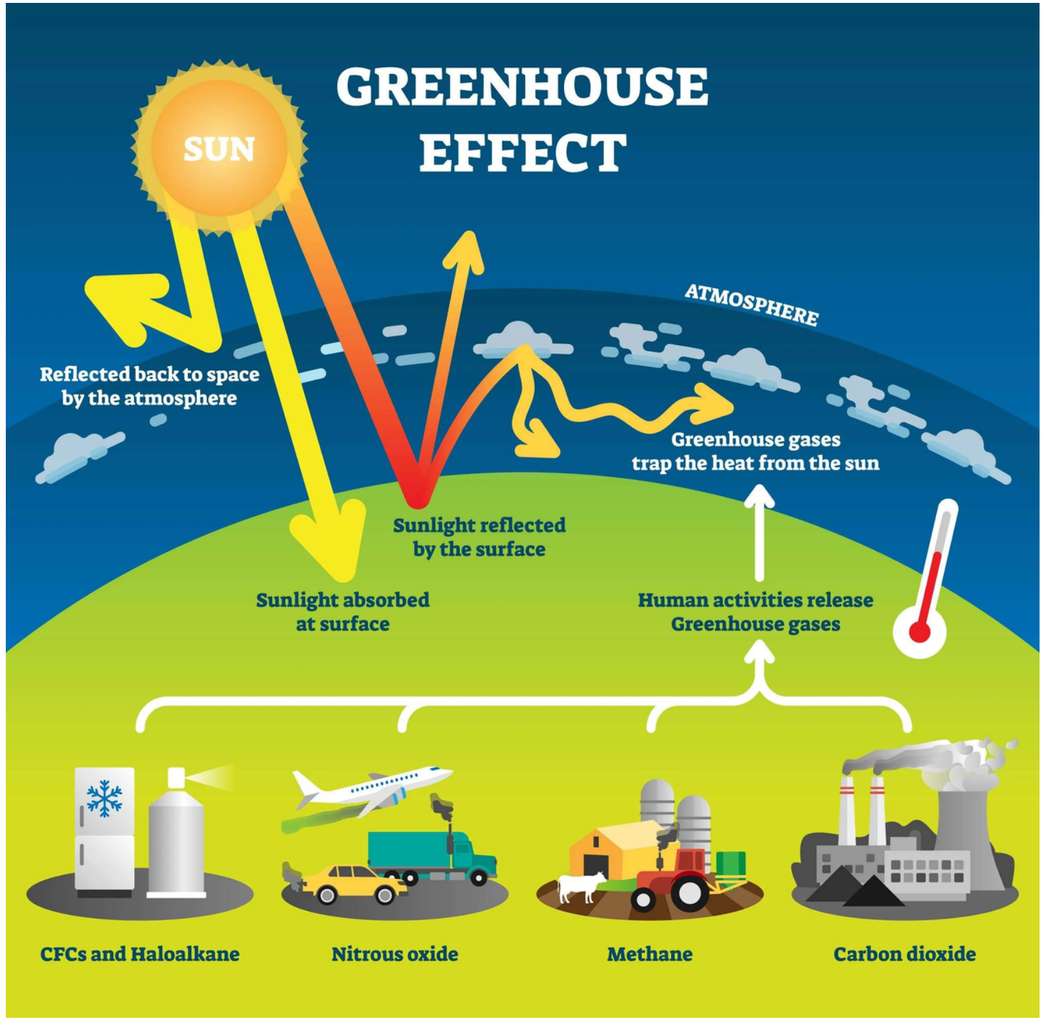
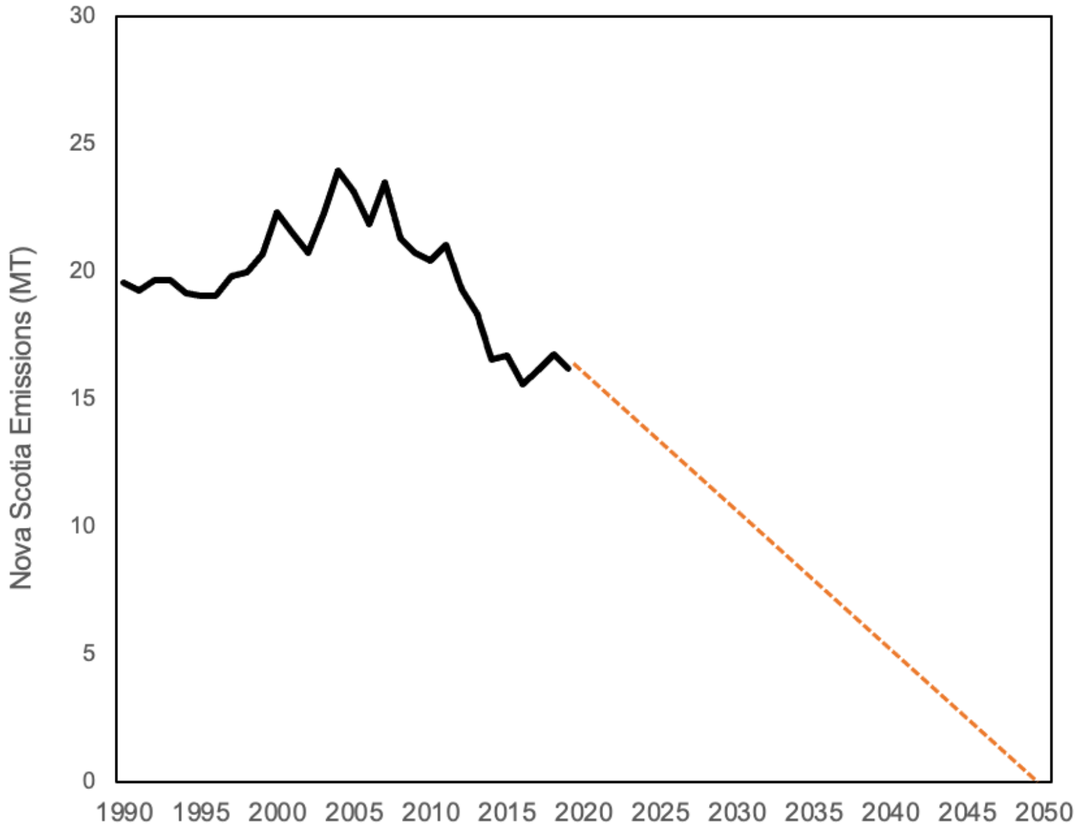


Nova Scotia's GHG Emissions



Data retrived from Environment and Climate Change Canada's GHG Database (2021)

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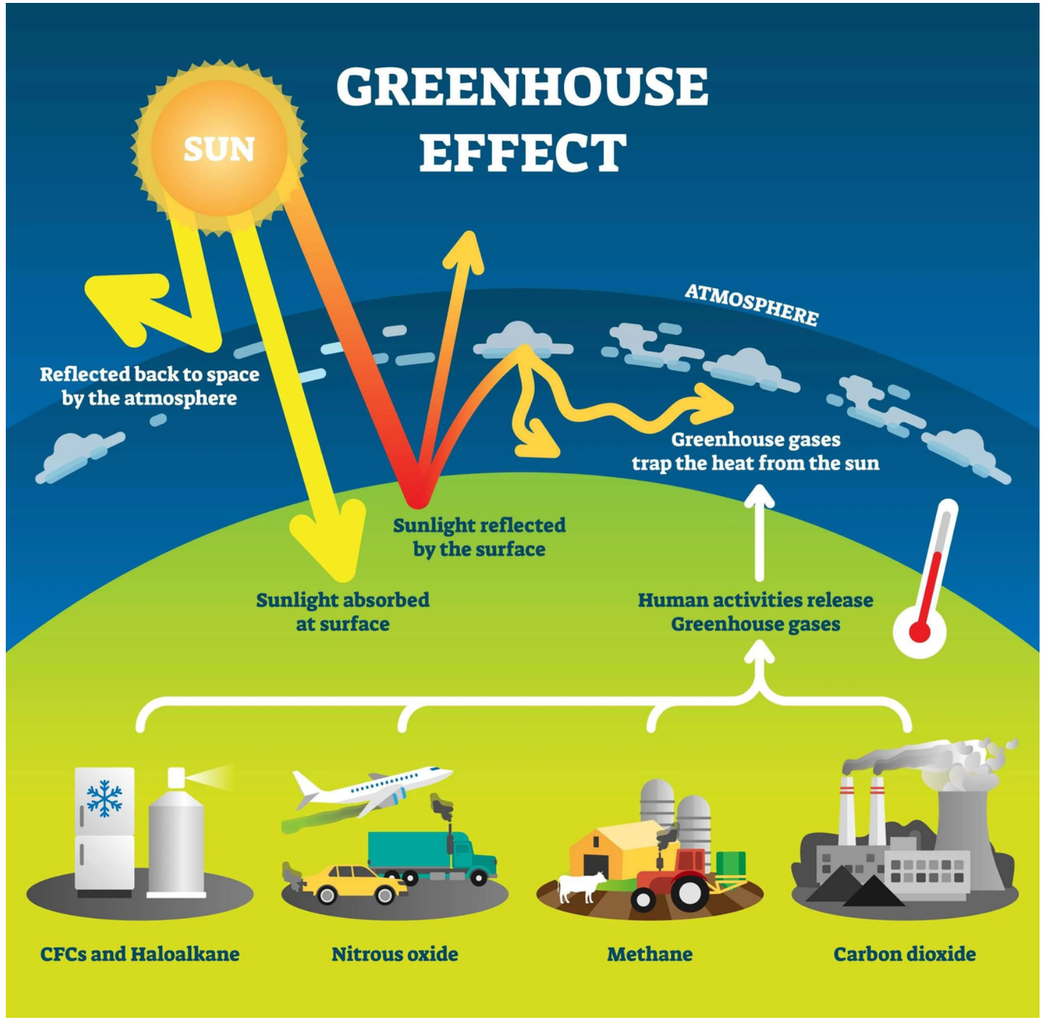
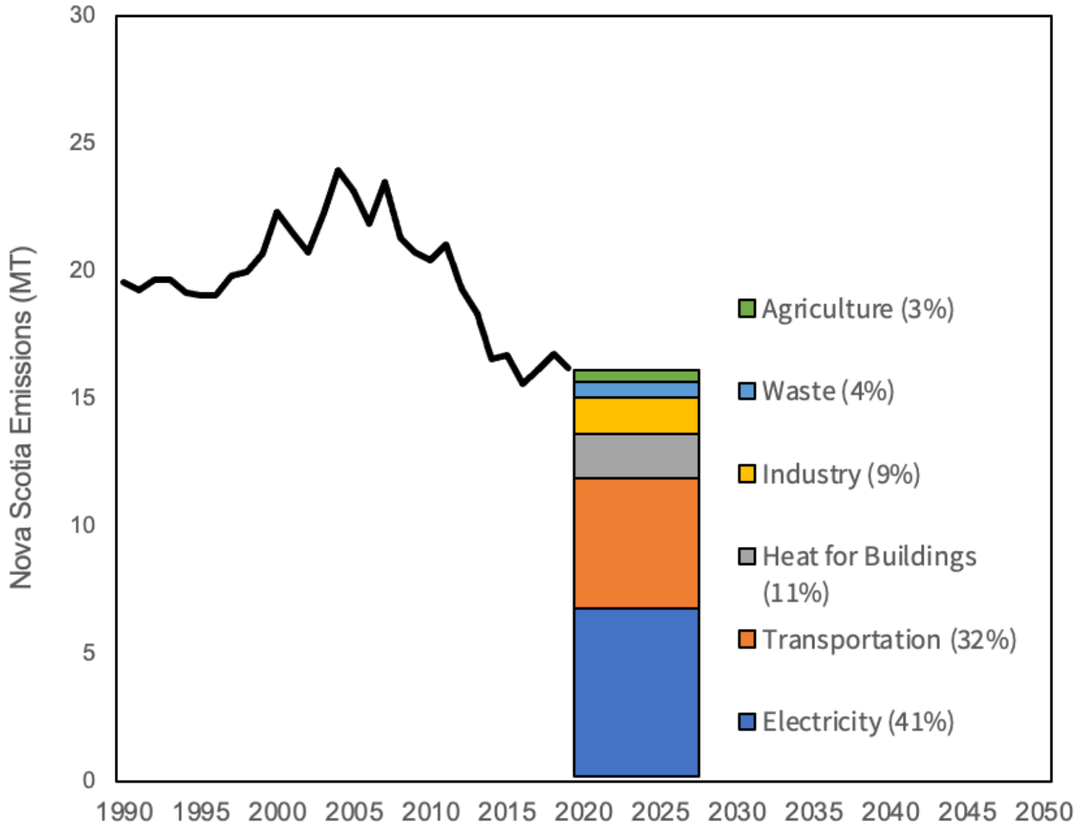


Nova Scotia's GHG Emissions



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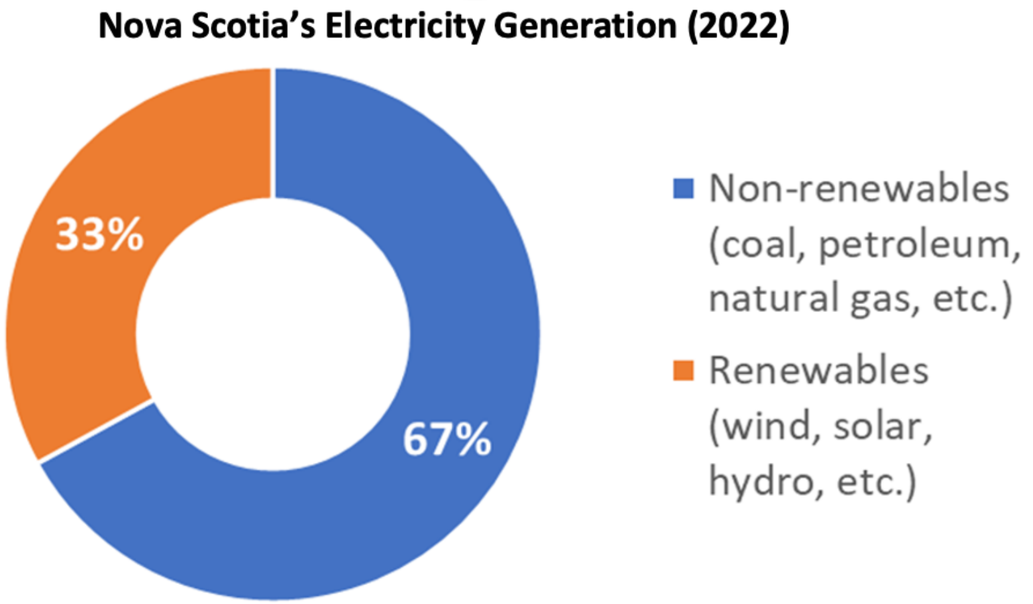
Nova Scotia's Electricity Mix



- **In 2022, 67% of electricity generated by fossil fuels (e.g., coal, natural gas)**
  - High Greenhouse Gas (GHG) emissions
  - Finite resource
- **33% of electricity generated by renewable energy (e.g., solar, wind, hydro)**
  - Lower GHG emissions
  - Continuously replenished resource

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Offshore Wind Technology

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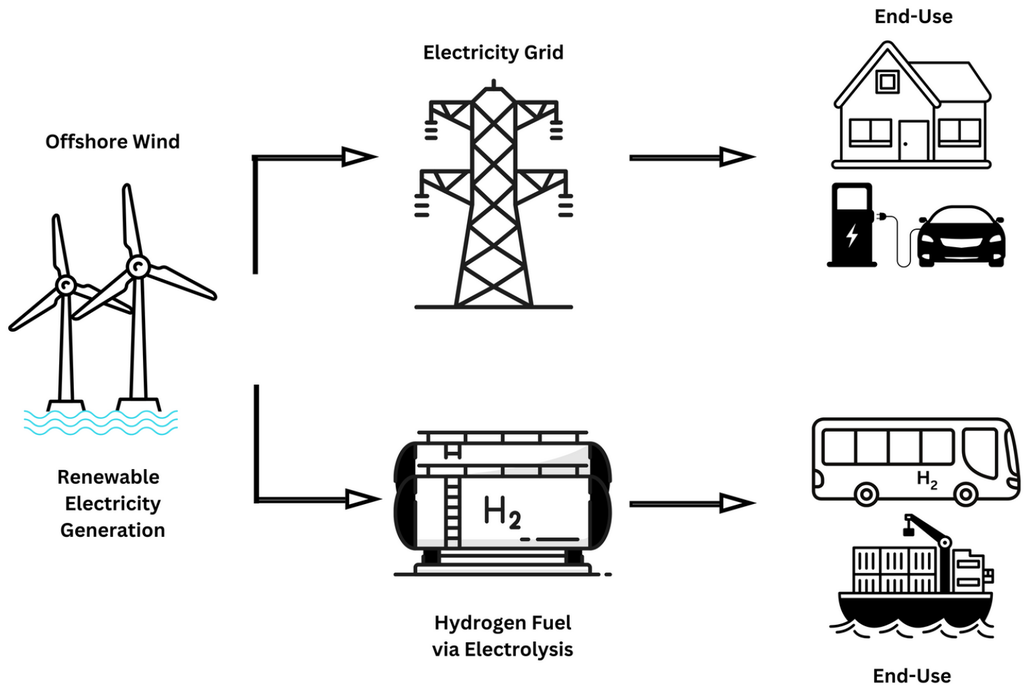
Energy End Use

- **Grid Connection:**
  - OSW energy could be connected to our current transmission system for domestic use
- **Green Fuels Production:**
  - Hydrogen, Ammonia, Ethanol
  - Requires significant amount of energy to create
  - To export as “green”, must be produced with renewable energy



Offshore Wind Turbine Components

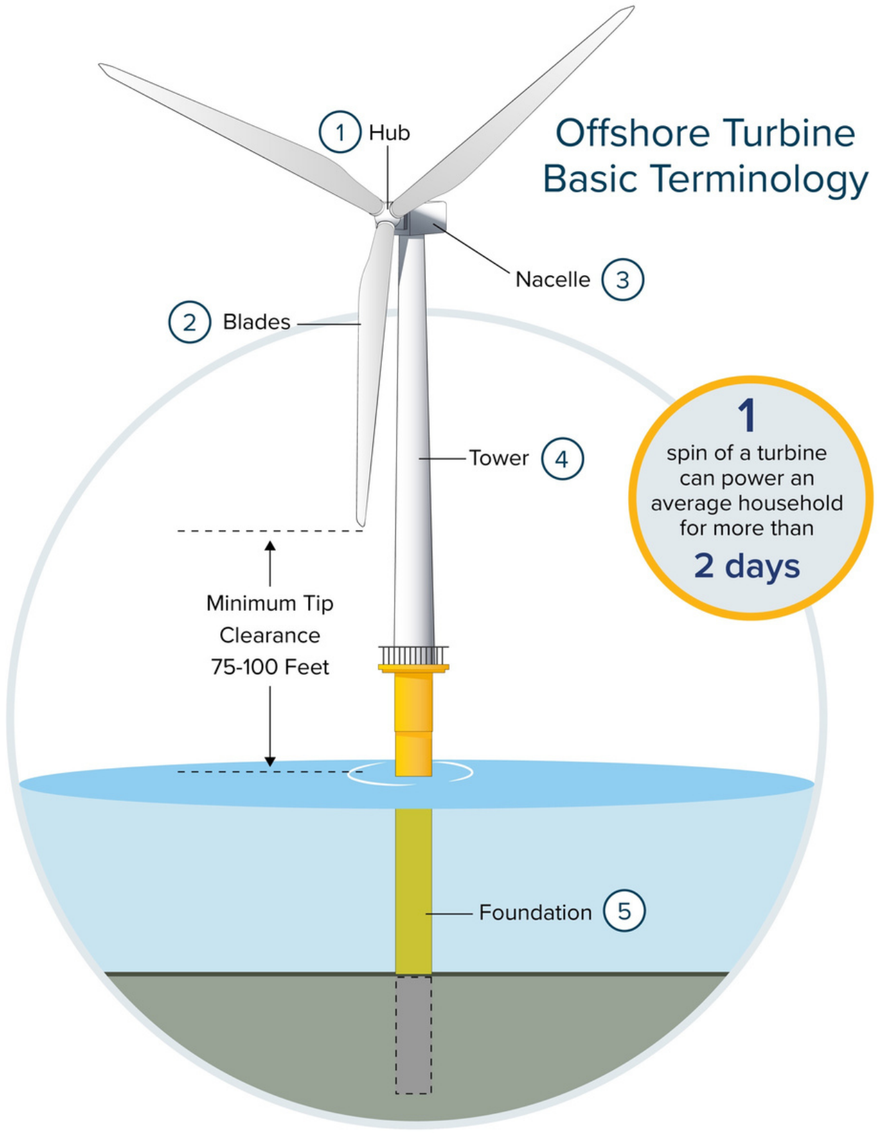


Figure Not to Scale

New York State Energy Research Development Authority, 2023

1. Hub – supports blades and pitch system
2. Blades – capture energy convert to mechanical energy
3. Nacelle – houses components that convert energy
4. Tower – supports other components

***Energy output dependent on size of turbine and measured is megawatt hours.**

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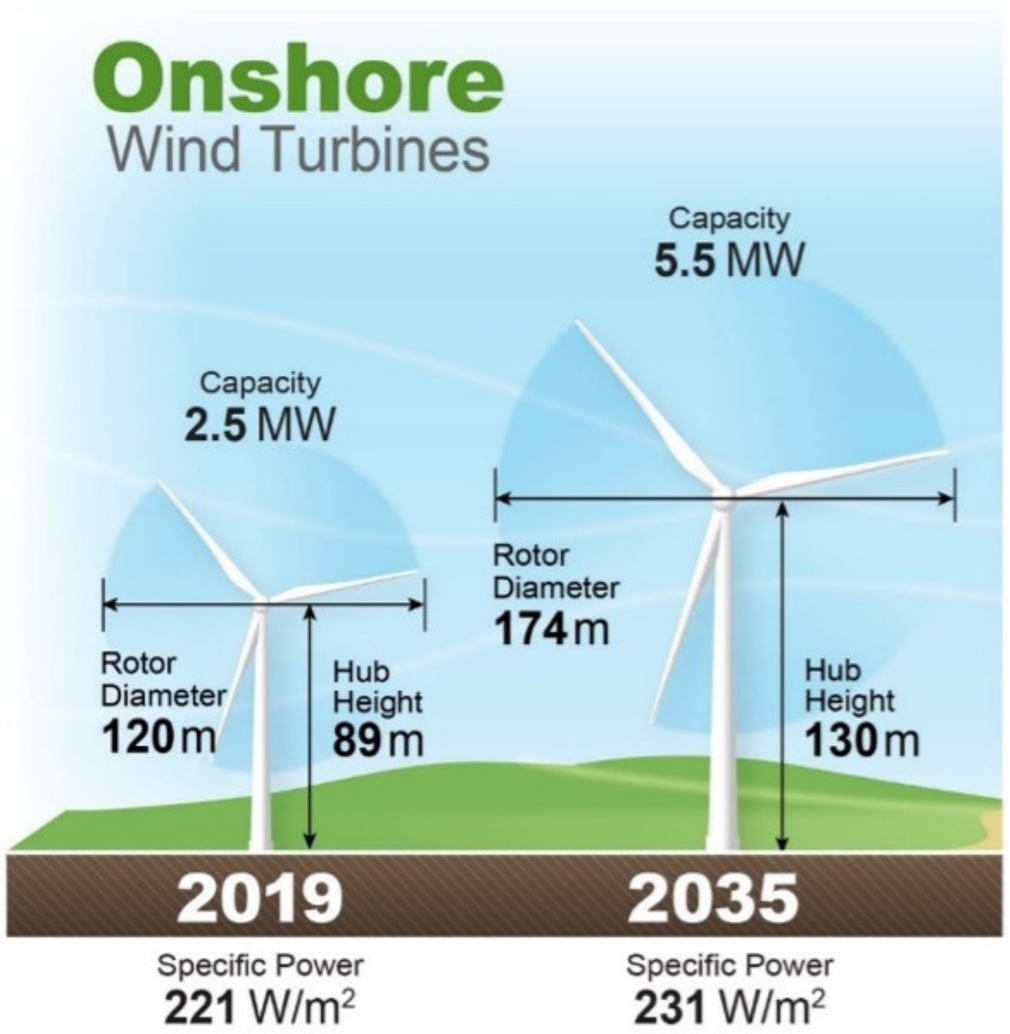

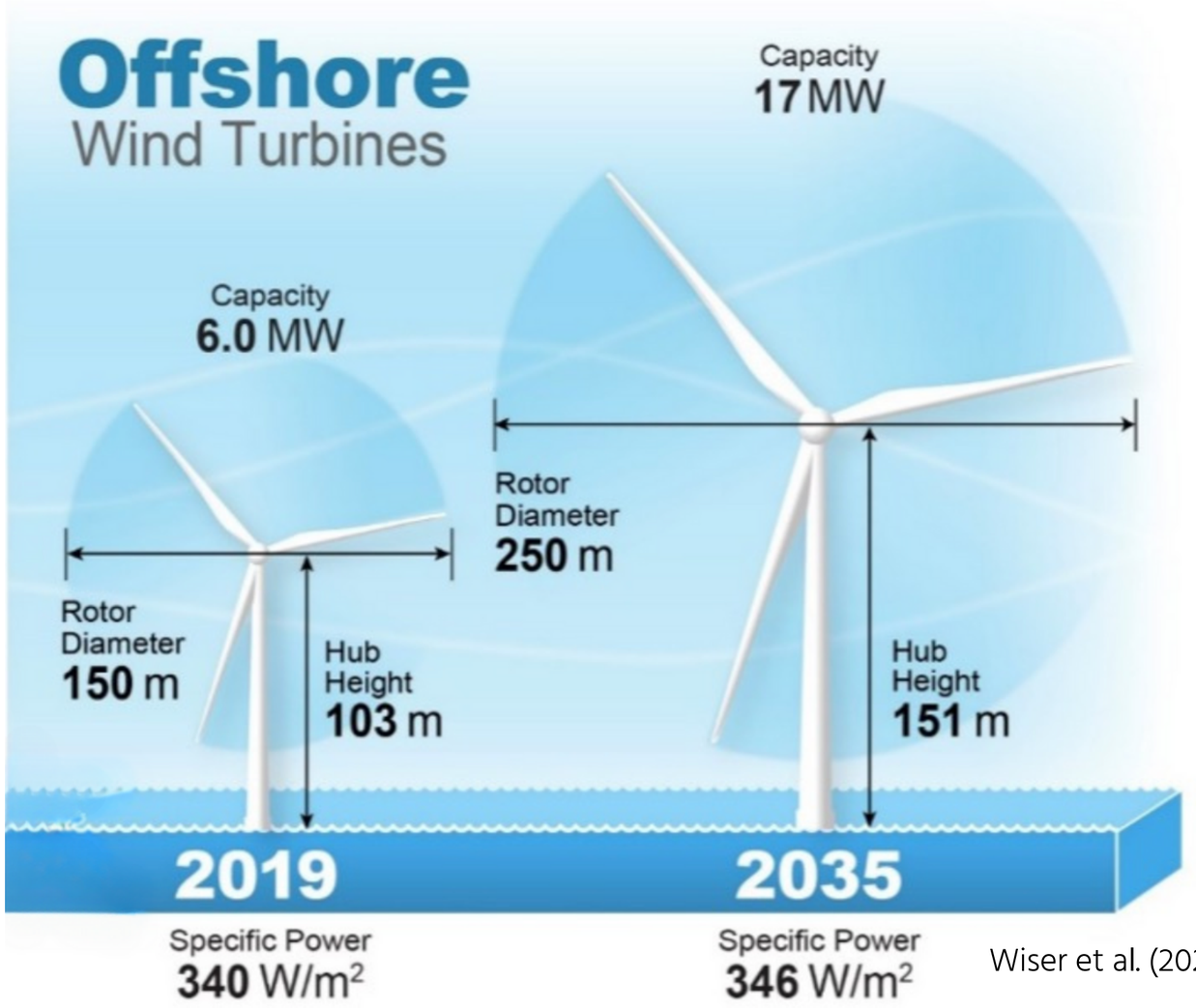

Wiser et al. (2021)

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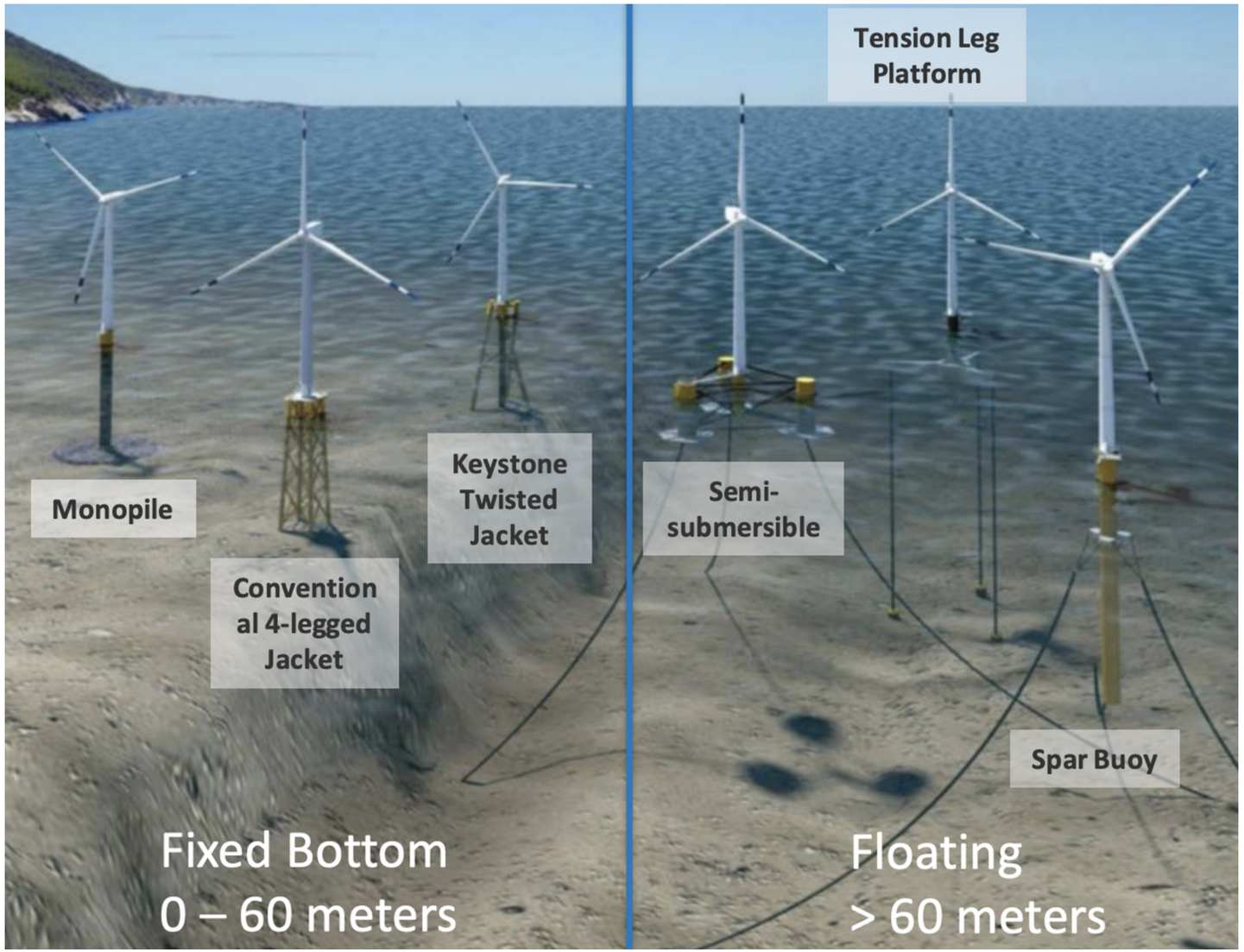
Turbine Foundation Types



National Renewable Energy Lab (2022)

- **Two types of OSW turbine foundations:**
  - Fixed bottom
  - Floating
- **Foundation types dependent on water depth and seabed geology**

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Scale of Offshore Wind

- Hornsea 2 offshore wind park (2022)
- Located in North Sea, can generate enough green electricity to power over 1.4 million homes
- 1.32 GW combined capacity
- 165 turbines (8 MW)
- 189 km off coast
- 462 square km

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Why Nova Scotia?

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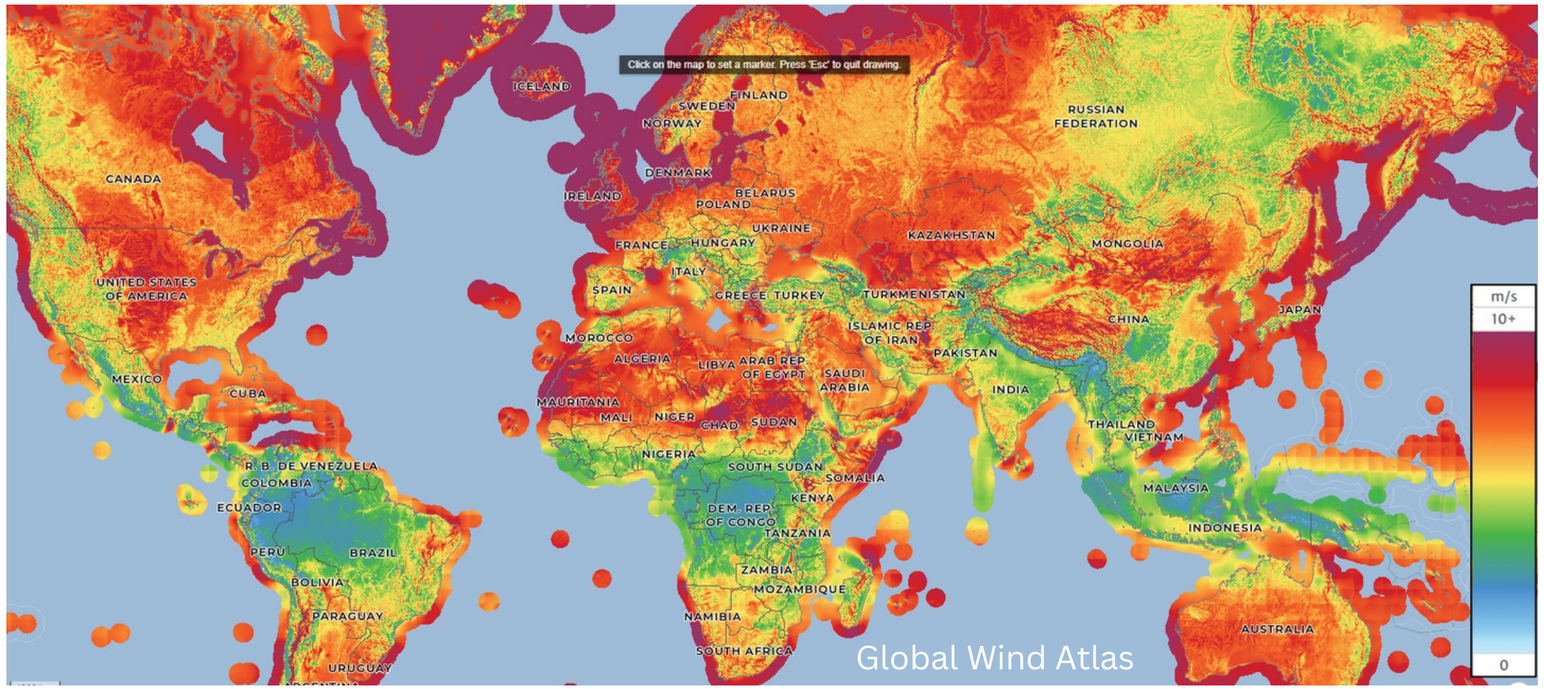
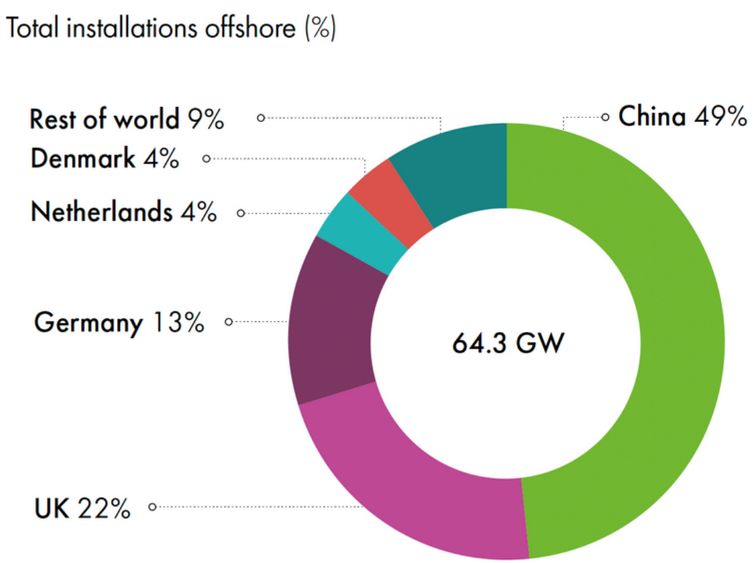
A Global Resource



Like other natural resources, offshore wind is not distributed evenly across the globe.



Global Wind Energy Council data as of 2023

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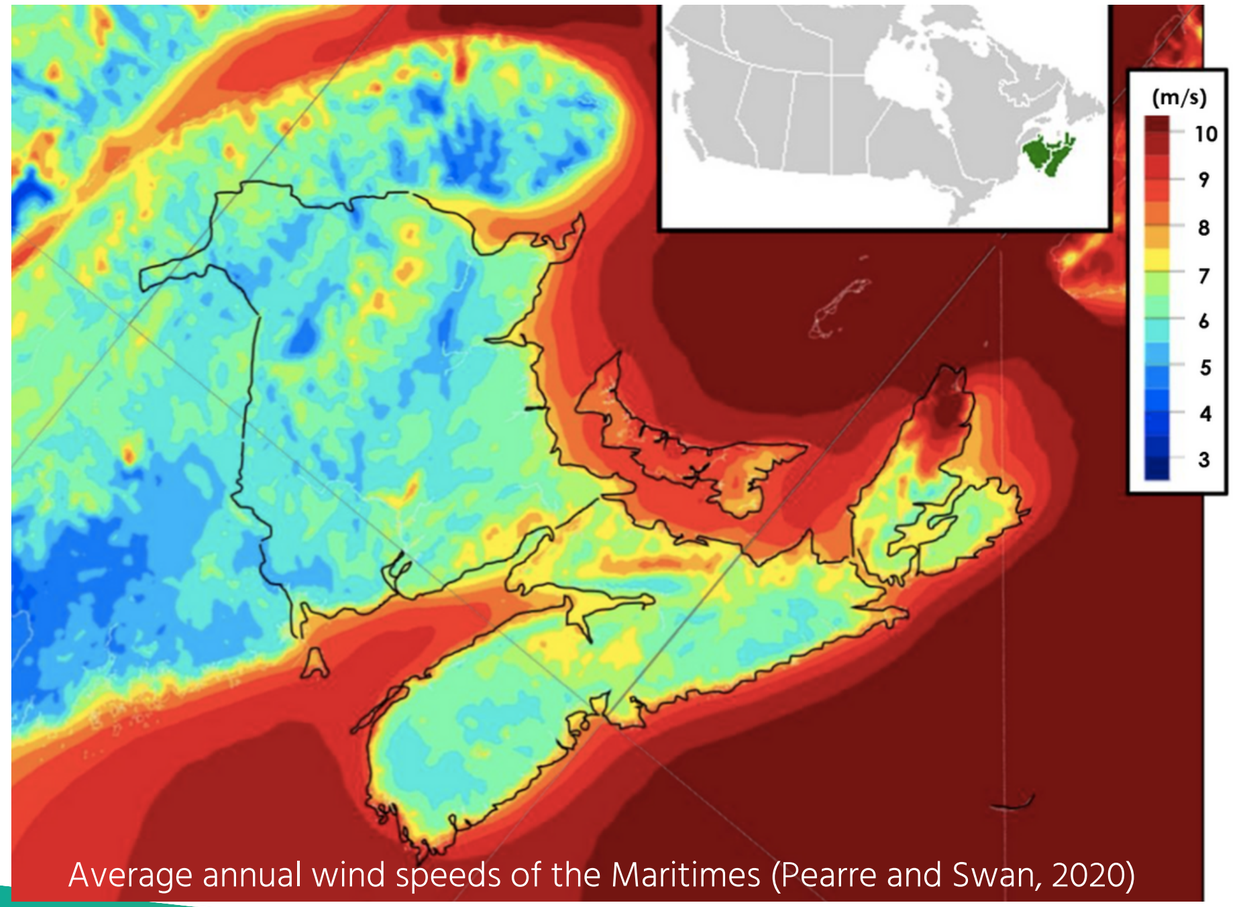
Offshore Wind in Nova Scotia



Average annual wind speeds of the Maritimes (Pearre and Swan, 2020)

- Nova Scotia's offshore wind resource is exceptional
- Higher and more consistent speeds offshore

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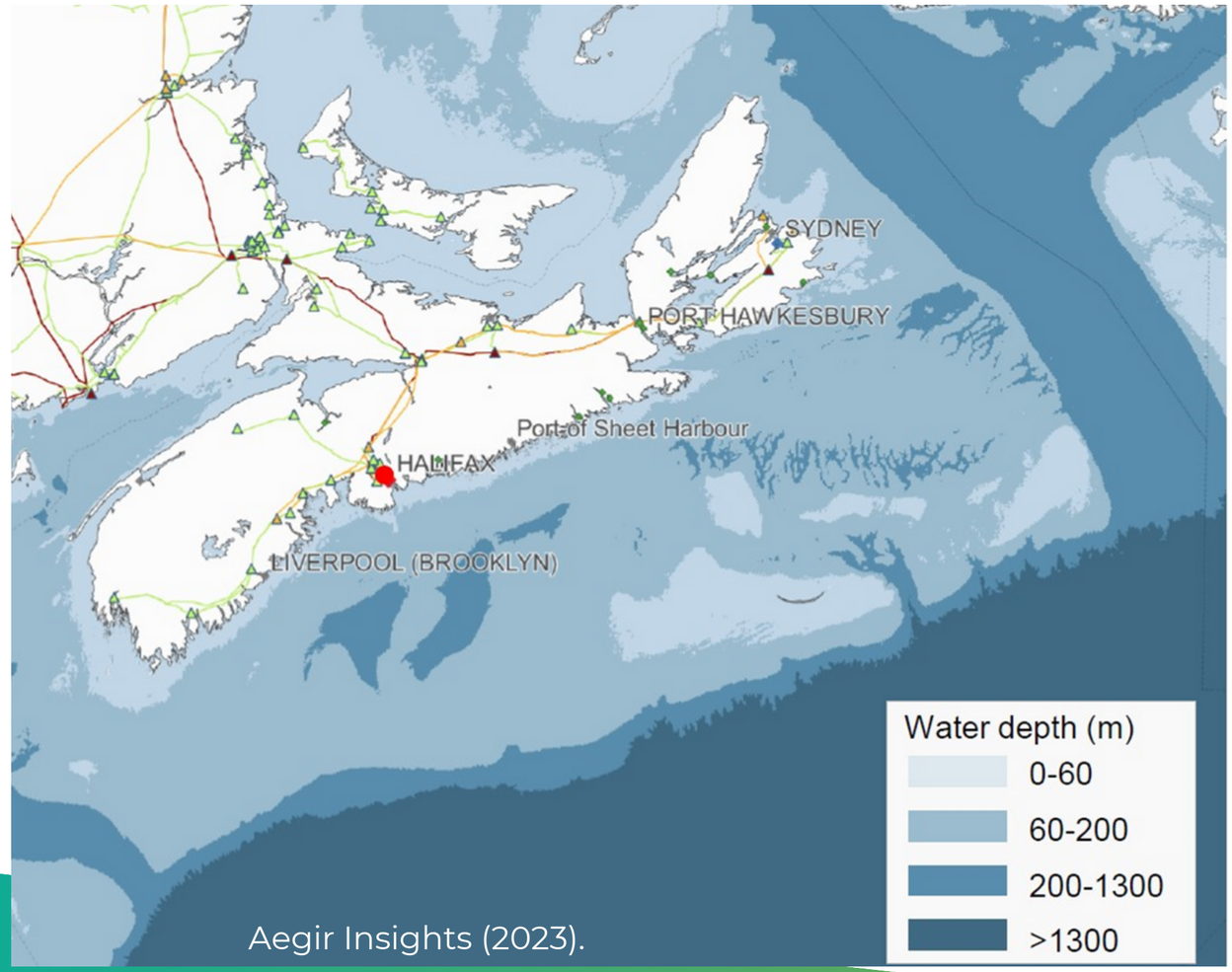
Water Depth in Nova Scotia's Offshore



Aegir Insights (2023).

- Nova Scotia's offshore includes areas with shallow water depth
- Some of these areas are suitable for fixed bottom turbines

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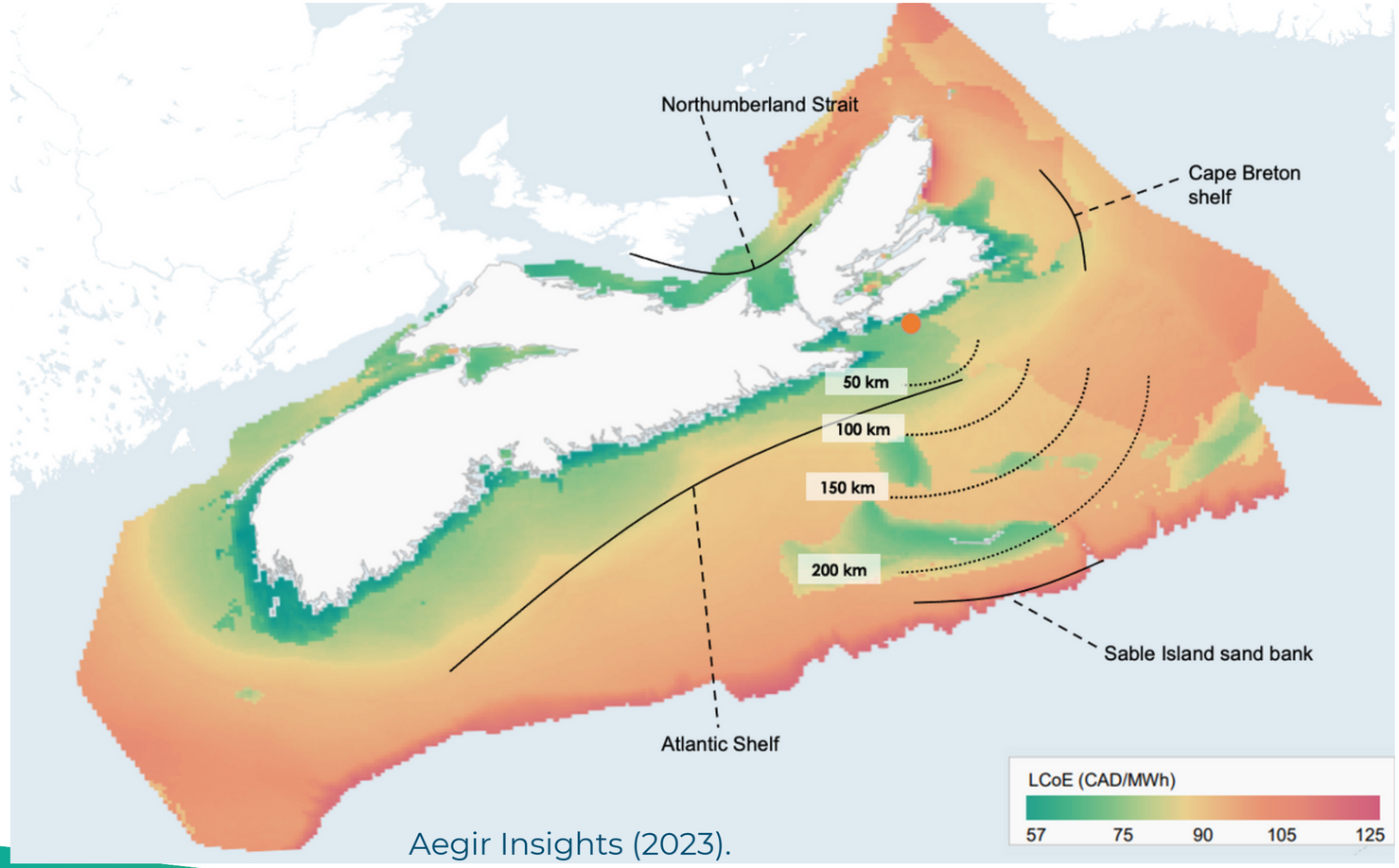
Mapping the Offshore



Aegir Insights (2023).

Green areas are likely to be most cost competitive based on:

- Average annual wind speed
- Water depth
- Distance to construction ports and grid connection

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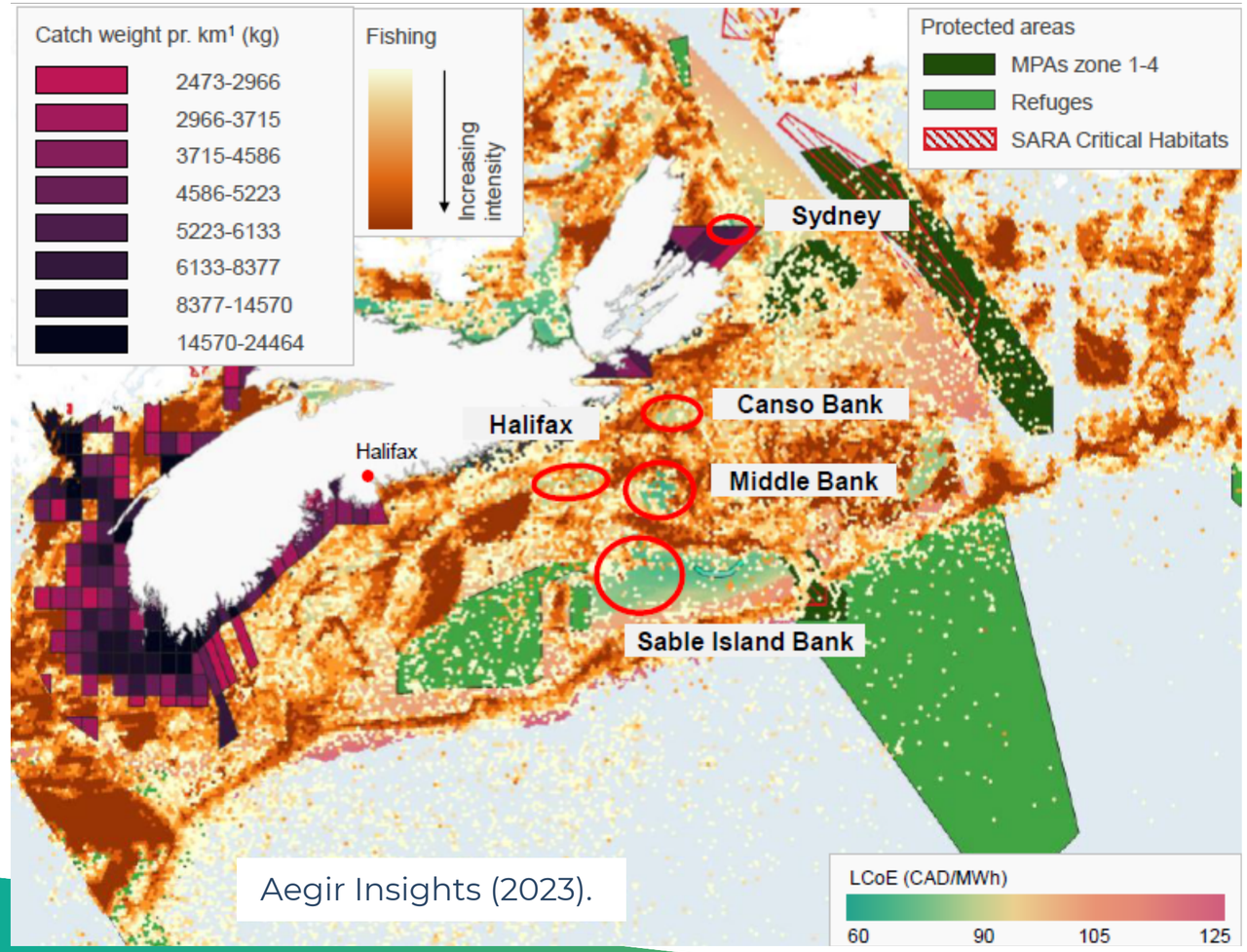
Mapping the Offshore



Aegir Insights (2023).

There are several other key considerations such as:

- Fishing grounds
- Marine Protected Areas
- Seabirds
- Marine wildlife habitats
- Shipping routes

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Governing a New Industry

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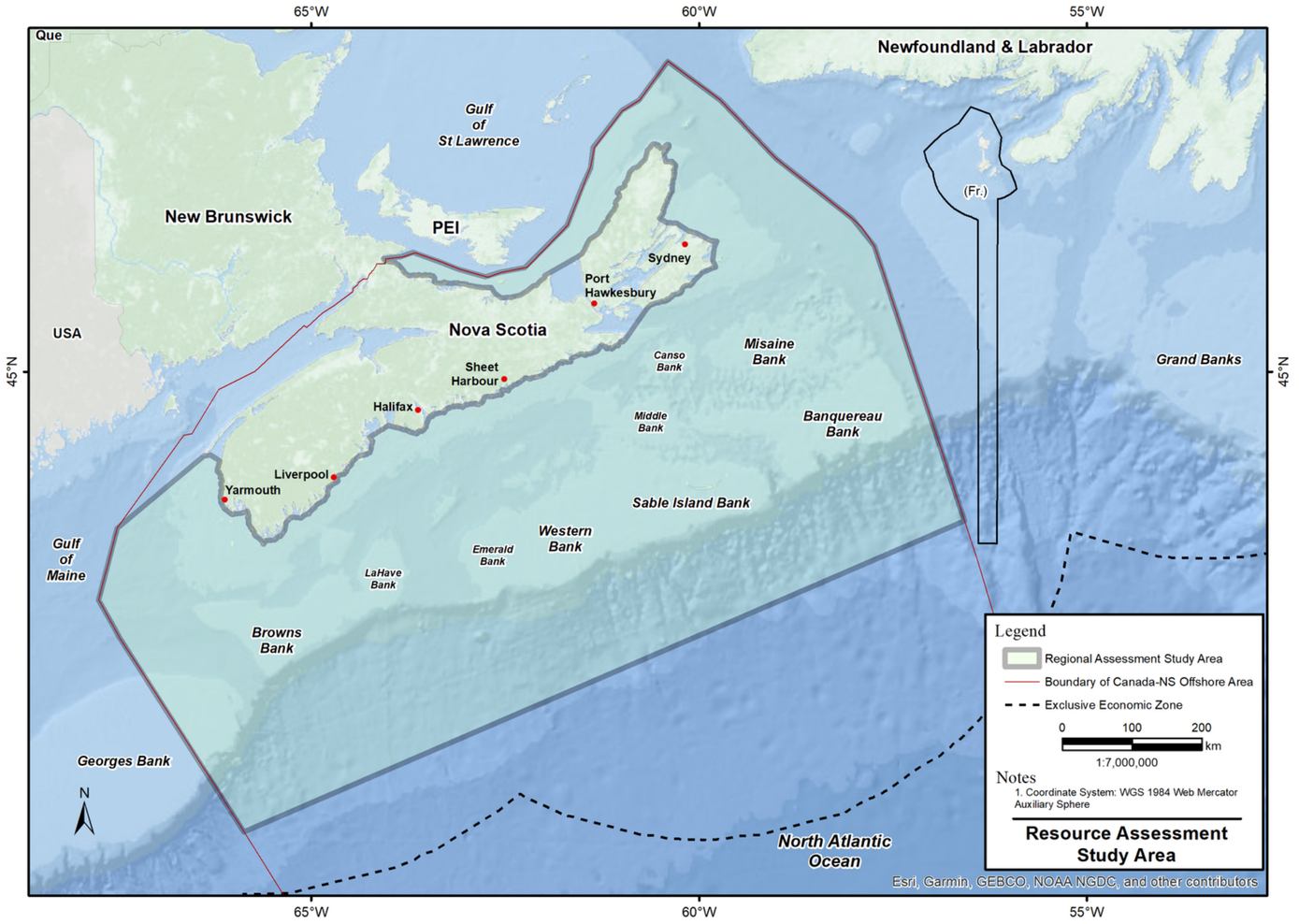
Federal and Provincial Roles



- The first focus for the study and regulation of offshore wind development in Nova Scotia will be in waters jointly managed by federal and provincial governments under the *Accord Act*
- Nova Scotia has paused exploring development in provincial waters until the Regional Assessment is complete.

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Regional Assessment of Offshore Wind in Nova Scotia

Regional Assessment (RA) led by an independent Committee appointed by the Minister of Environment and Climate Change Canada.

- Purpose to inform and improve future planning, licensing, and impact assessment processes to protect the environment, health, social, and economic conditions while creating opportunities for sustainable development.

- Committee will recommend geographic areas to be considered for future development and provide recommendations to government for mitigation and monitoring of future potential projects using baseline data collected.

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Regional Assessment Must Consider Impacts On:

Economic	Environmental	Social
Fisheries and Other Ocean Uses	Air Quality and Greenhouse Gases	Indigenous Communities, Activities, Interests, and Rights
Economy	Marine Fish and Fish Habitats	Visual Aesthetics
	Marine and Migratory Birds	Communities
	Marine Mammals and Sea Turtles	Physical and cultural heritage
	Acoustic environment	Protected and Special Areas

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Regulatory Frameworks

Regulations	Implementation	Roadmap
• Offshore Renewable Energy Regulations (ORER) being developed by Natural Resources Canada.	• Canada-Nova Scotia Offshore Petroleum Board will become Canada-Nova Scotia Offshore Energy Regulator.	• Government of Nova Scotia Offshore Wind Roadmap.
• ORER will apply to offshore renewable energy projects outside joint-managed areas. It will cover: ▪ Safety and environmental protection related to site assessment, construction, operation, decommissioning and abandonment activities.	• Amendments to the Accord Act to include new offshore renewable energy projects.	• Evergreen document; focus on establishing lines of sight for industry, infrastructure and supply chain, and lessons from engagement.

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How to Stay Involved

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Staying Involved

- **Regional Assessment**
  - Future open-house sessions being planned.
  - Written submissions can be made via the RA email or the public comment tool on the Registry.
  - Email: OffshoreWind-EolienneExtracotiere@iaac-aeic.gc.ca
  - Registry: https://www.iaac-aeic.gc.ca/050/evaluations/proj/83514

- **Cape Breton Partnership Green Energy Engagement Program**
  - Webinars - presenting multiple topics
  - Future workshops
  - Up-to-date information on our webpage

- **Net Zero Atlantic's Offshore Wind Capacity Building Project**
  - Ongoing engagement
  - Up-to-date information on our webpage: netzeroatlantic.ca/offshorewind

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Thank You

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Net Zero Atlantic

Jennifer MacNeil
Green Energy Engagement Coordinator,
Cape Breton Partnership

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