

WINDLYTICS:

BRINGING AI TO NOVA SCOTIA'S WIND POWER INDUSTRY



11.09.2025
COGNIZANT BRAINSTORM CHALLENGE

PRESENTERS: AIRBENDERS
XANDER BROWN
SHAUN RAMSAY
JAKE WALDNER

Theme #1

Sustainable Development Goal 11

Helping communities use
resources more efficiently



Wind West

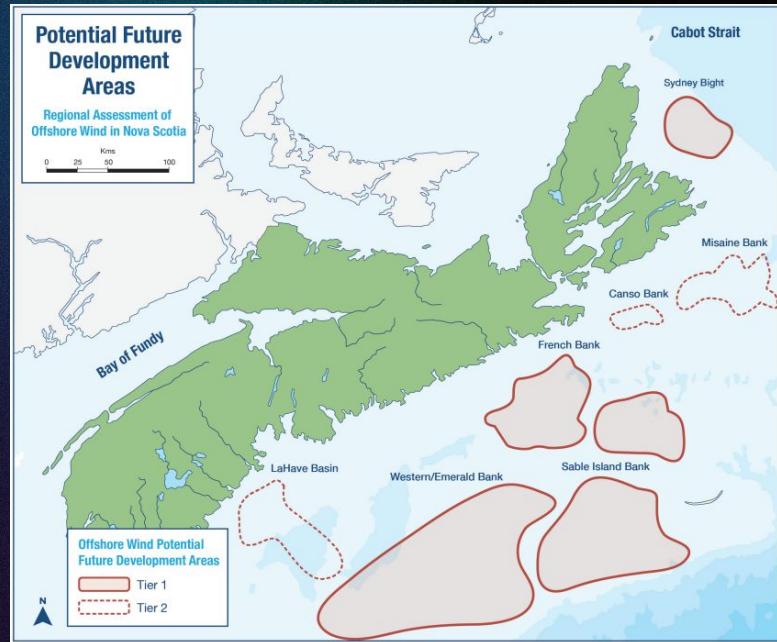
- Wind West is an initiative started in 2023 to help bring offshore turbines to NS
- Potential to power **27% of Canada**
- Backed by private equity and the government
- Public bids to go out in late 2025
- Offshore wind turbines **generate more power** than onshore wind turbines



Tim Houston • 2nd
Father, Husband, MLA, Premier of Nova Scotia
1mo • 

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Wind West is about building a clean energy future for Nova Scotia. It will create good jobs, grow our economy, and help power not just Nova Scotia, but even the rest of Canada. Learn more about this nation building project.



PICTURED: AREAS OF FUTURE DEVELOPMENT
<https://novascotia.ca/offshore-wind/docs/offshore-wind-roadmap-module-3.pdf>

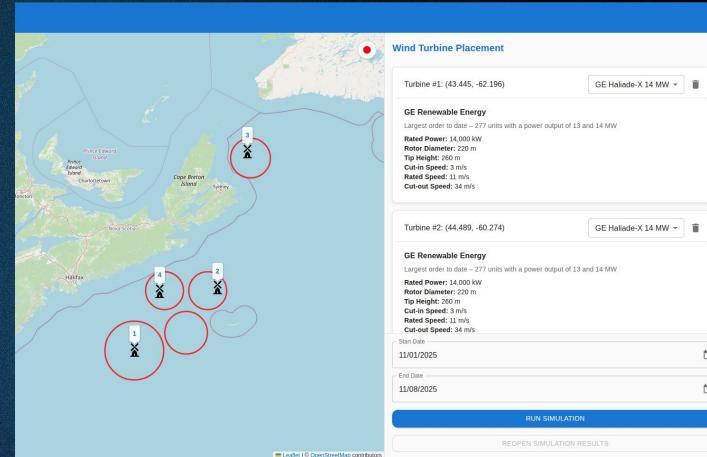
Problem Statement

"Despite having world-class offshore wind speeds, Nova Scotia has zero offshore wind turbines. One of the key barriers developers face is the potential for project costs to reach \$60 billion, yet they **lack local historical data** to demonstrate potential profits."

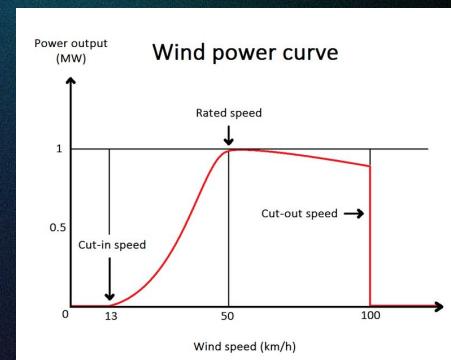


Proposed Solution

- AI-Powered simulator to model wind speed and turbine efficiency for **private developers**
- Projects revenue as a function of turbine type and placement
- Highlights areas of development designated by the Wind West project
- Designed for accessible use in a web browser with WCAG 2 principles



PICTURED: SCREENSHOT FROM WINDLYTICS

PICTURED: EXAMPLE WIND TURBINE POWER CURVE
https://energyeducation.ca/encyclopedia/Wind_power

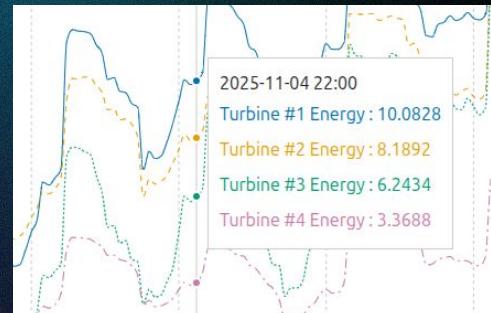
Demonstration Video

Accessibility (WCAG 2)

- Website Accessible via Keyboard
- Use of alternative text for images
- High Contrast and Colorblind-friendly colors in UI/UX
- Compatible with screen readers



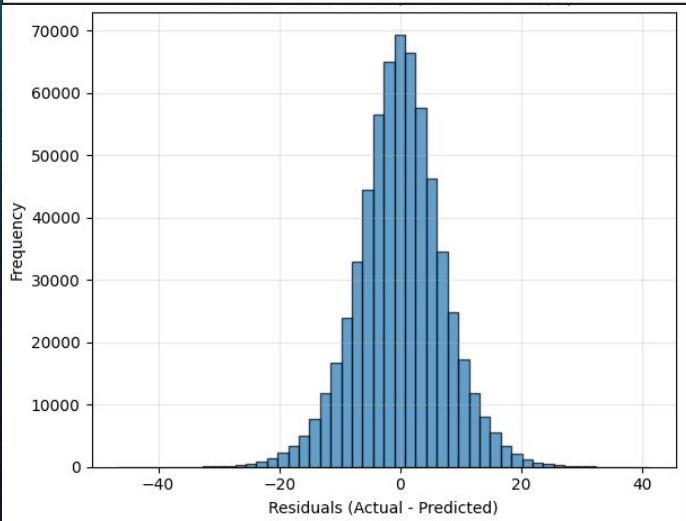
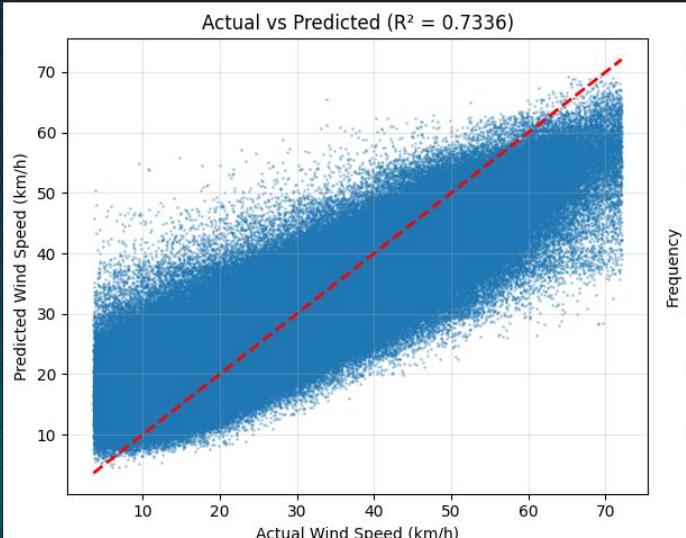
PICTURED: EASY-TO-UNDERSTAND LABELS FOR IMAGES



PICTURED: COLORBLIND FRIENDLY COLOR SCHEME

AI Model and Ethics

- No large scale LLM (Power Hungry)
- Small scale energy efficient model
 - Runs on a **consumer grade laptop**
- Trained on open source data
- 3,000,000 data points (2024-2025)
- R^2 (0.73) MAE (5.84 km/h) RMSE (7.14km/h)



Future Works

- Model retraining based on future weather conditions
- Real time sensors on constructed turbines for modeling and analysis.
- Working with developers to add predictive cost tracking features.
- Expansion outside of Nova Scotia



PICTURED: ABERDEEN OFFSHORE WIND FARM
<https://www.vattenfall.co.uk/our-projects/european-offshore-wind-deployment-centre>

THANK YOU

“GO WHERE THE WIND TAKES YOU”
- WINDLYTICS

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