Wind energy projects in North America are more likely to be opposed by White, wealthy communities

In the US and Canada, wind farm opposition is led by small groups, localized in certain regions, and more likely in White, wealthy communities.

Based on Stokes et al. Prevalence and predictors of wind energy opposition in North America. *PNAS* 120 (40) e2302313120 (2023).

The Policy Problem

Local opposition can pose a significant barrier to the rapid deployment of wind energy, a critical piece of the clean energy transition. But which projects are opposed and why? Current research around wind energy opposition has focused on specific case studies or small geographic areas. Our study took a uniquely comprehensive look at wind farm opposition across the US and Canada to better determine how common opposition is and what factors predict it.

Key findings and proposed solutions

- In the US, opposition is concentrated in the Northeast. Wind projects in areas with high proportions of White residents and low proportions of Hispanic residents are more likely to face opposition.
- In Canada, opposition is concentrated in Ontario. Wind projects in wealthy communities are more likely to face opposition.
- Preventing clean energy projects in White, wealthy communities is an "energy privilege" as it leads to continued pollution from fossil fuel plants in poorer communities and communities of color.

What We Found

In total, 17% of wind projects in the United States and 18% of wind projects in Canada faced significant opposition, with opposition rates increasing in both countries over time. Opposition was concentrated in the Northeastern United States and in Ontario, Canada. The most common tactics used to oppose wind projects were lawsuits and legislation.

In the US, race was a significant factor, with opposition being more likely and more intense in Whiter areas with low proportions of Hispanic residents. Additionally, we found that the names of people in articles associated with opposition in the US were overwhelmingly likely (92.4%) to be White. Community-owned projects in the US were less likely to be opposed. In Canada, opposition was more likely and more intense in wealthy communities. Unlike in the US, race did not predict opposition, though this was likely because places where wind projects were developed were on average 97% White, leaving little room for variation. Partisanship was a predictor of opposition in Canada, with places experiencing opposition having lower support for the Liberal Party. Notably, opposition was not associated with partisanship in the US. In both countries, opposition was more likely for large projects than small projects. Furthermore, the number of people engaging in opposition activities is likely small. The median number of protestors at a given project was 23 in the US and 34 in Canada.

Our findings highlight an environmental justice challenge we term "energy privilege," wherein the delay and cancellation of clean energy in wealthier, Whiter communities leads to continued fossil fuel pollution in poorer communities and communities of color.

What We Did

Our dataset included 1,415 wind energy projects in the US and Canada that either became operational or were canceled between 2000 and 2016. We looked at nearly 36,000 news articles to identify which wind projects faced opposition, as well as the type of opposition they faced. Opposition is defined as physical protests, legal actions, legislation, and/or letters to the editor. After collecting the opposition data, we used a statistical model to determine which factors (i.e. demographics, wind farm size, community ownership, region, and partisan alignment) could be used to predict opposition. Additionally, we ran the names of protestors mentioned in news articles through an Application Programming Interface (API) for race and ethnicity to provide an estimate of these demographic characteristics for wind farm opponents.

	No Opposition	Opposition
	United States	
Population Density (per mi^2)	194	121
Household Median Income	$49,500	$50,300
Percent White	81%	89%
Percent Hispanic	13%	6%
Percent Black	2%	2%
Percent Community Ownership	28%	19%
Percent GOP Votes	67%	68%
Capacity (MW)	70	110
Number of Turbines	39	60
Turbine Height (in ft)	221	239
N	987	197
	Canada	
Population Density (per mi^2)	21	8
Household Median Income	$68,000	$73,000
Percent White	97%	98%
Percent Liberal	42%	35%
Capacity (MW)	44	80
Number of Turbines	23	38
N	190	41

Table 1. Demographic and Project Characteristics for Wind Projects with and without Opposition in the USA and Canada