

# Where the Wind Goes Motivating Low Ecological Risk Wind Development

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## The Problem with Wind Siting

Onshore wind energy can provide 35% of U.S. energy demand by 2050,<sup>1</sup> but its **large spatial footprint** threatens sensitive habitat and species. As of 2012, 70% of proposed wind development was in areas that **threaten wildlife and habitat**.<sup>2</sup>



Greater Prairie-Chicken  
*Tympanuchus cupido*



Pronghorn Antelope  
*Antilocapra americana*

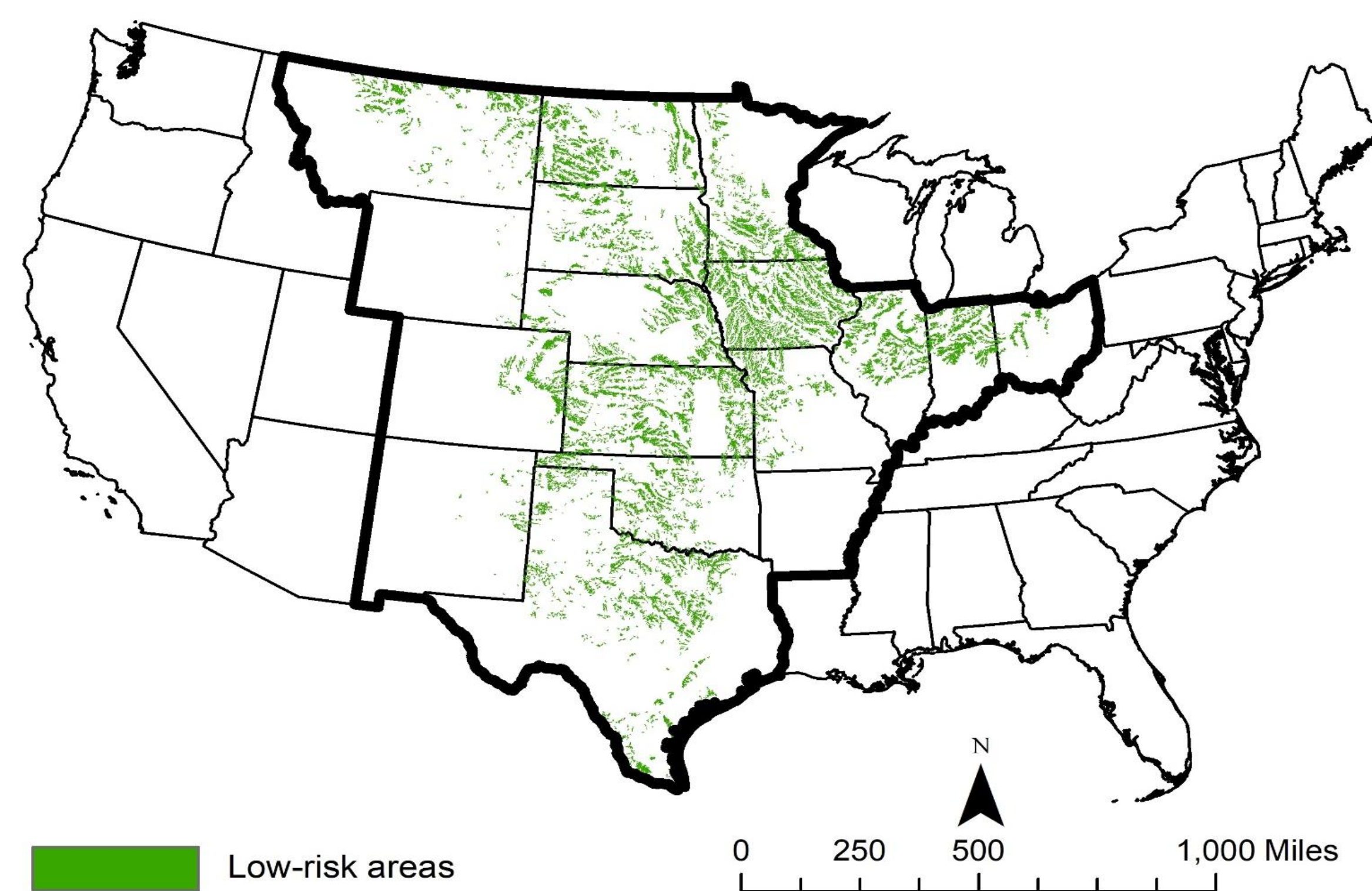


Little Brown Bat  
*Myotis lucifugus*

Our team assessed whether locating wind power projects in areas that minimize impacts to wildlife reduces costly cancellation risk.

## What Is Low-Risk Wind?

Low-risk areas avoid habitat fragmentation, endangered and threatened species, and migratory paths. They also account for wind speeds, slope, elevation, land availability, and restricted areas such as military bases and flight paths.



Low-risk areas (green) that are suitable for development in the Wind Belt (black outline) as identified by TNC's *Site Wind Right* map. Other areas are called high-risk.<sup>3</sup>

### References

<sup>1</sup> Wind Vision: A New Era for Wind Power in the United States. 2015.  
<sup>2</sup> Fargione, J., Kiesecker, J., Slaats, M.J., and Olimb, S. 2012. "Wind and Wildlife in the Northern Great Plains: Identifying Low-Impact Areas for Wind Development."  
<sup>3</sup> The Nature Conservancy. 2017. "Low-Risk Wind Energy Development Areas in the Central Great Plains".  
<sup>4</sup> ABB New Entrants Report, accessed November 2018.  
<sup>5</sup> AFINN lexicon: Nielson, F. 2011. "A new ANEW: Evaluation of a word list for sentiment analysis in microblogs."

## Predicting Cancellation Risk

Project cancellation is costly to developers. We used a *logistic model* to evaluate which factors influence the likelihood of project cancellation for 868 projects<sup>4</sup> within the Wind Belt region. Key variables included:



**Project location:** low-risk / high-risk



**Publicity score:** automated *sentiment analysis* of words in news articles on a scale of -5 (very negative) to +5 (very positive)

Our model also controlled for project size (MW), turbine visibility, state, project duration, and county characteristics such as income.

## Siting & Publicity Influence Cancellation

Project location and publicity significantly predict cancellation risk. For an otherwise average project in our sample:

### Probability of cancellation

|                 |      |                  |      |
|-----------------|------|------------------|------|
| Publicity Score | 0.1  | 30%              | 45%  |
|                 | -0.1 | 40%              | 55%  |
|                 |      | Low              | High |
|                 |      | Project location |      |

In our sample, publicity scores for projects ranged from -1.2 to 2.67.

### Examples of word scores aggregated to form publicity score:<sup>5</sup>

| Positive publicity |    | Negative publicity |    |
|--------------------|----|--------------------|----|
| protect            | +1 | postpone           | -1 |
| solution           | +1 | ignore             | -1 |
| fair               | +2 | lawsuit            | -2 |
| outstanding        | +5 | kill               | -5 |

## Low-Risk Siting Benefits Developers

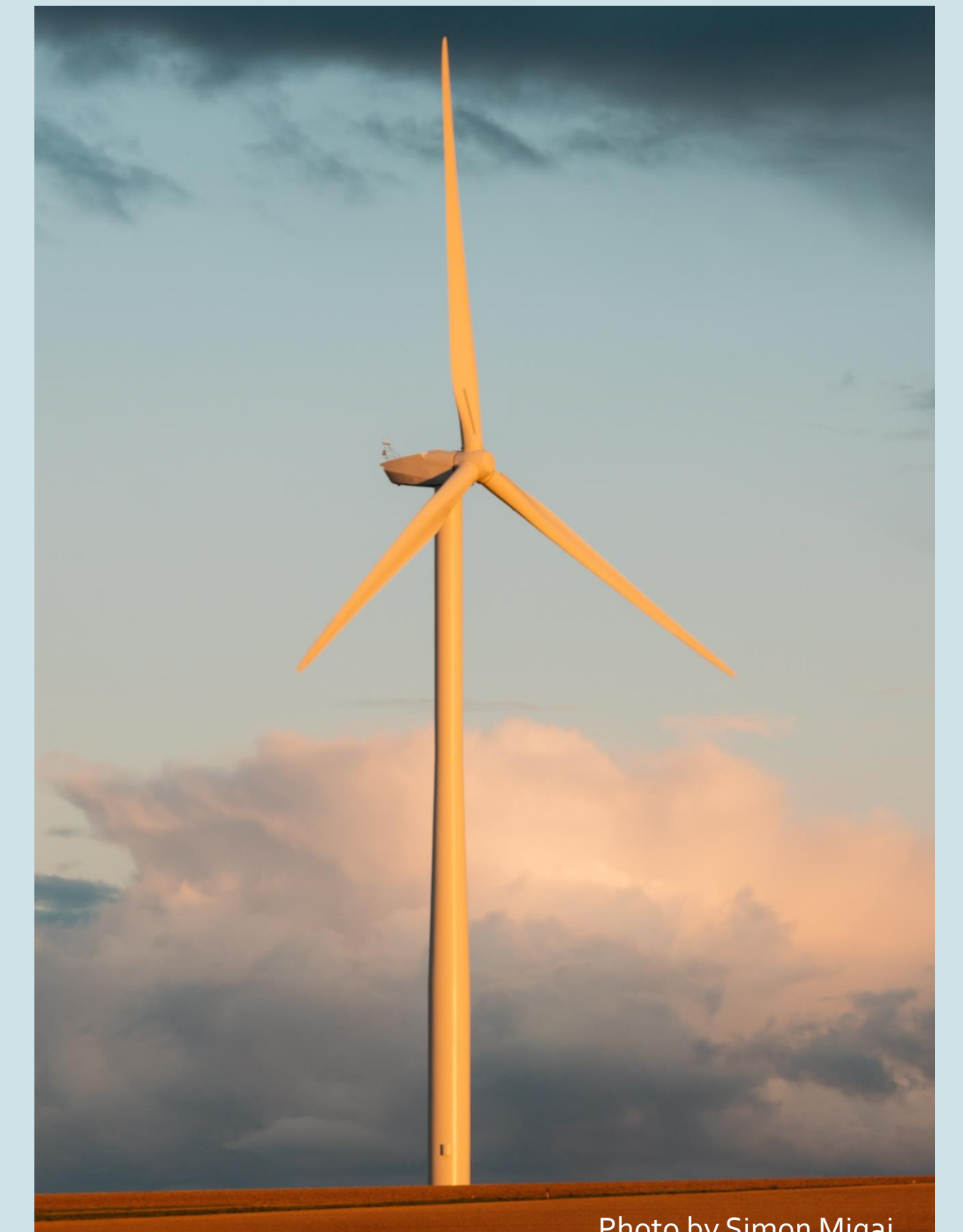
Any wind project is...

50%

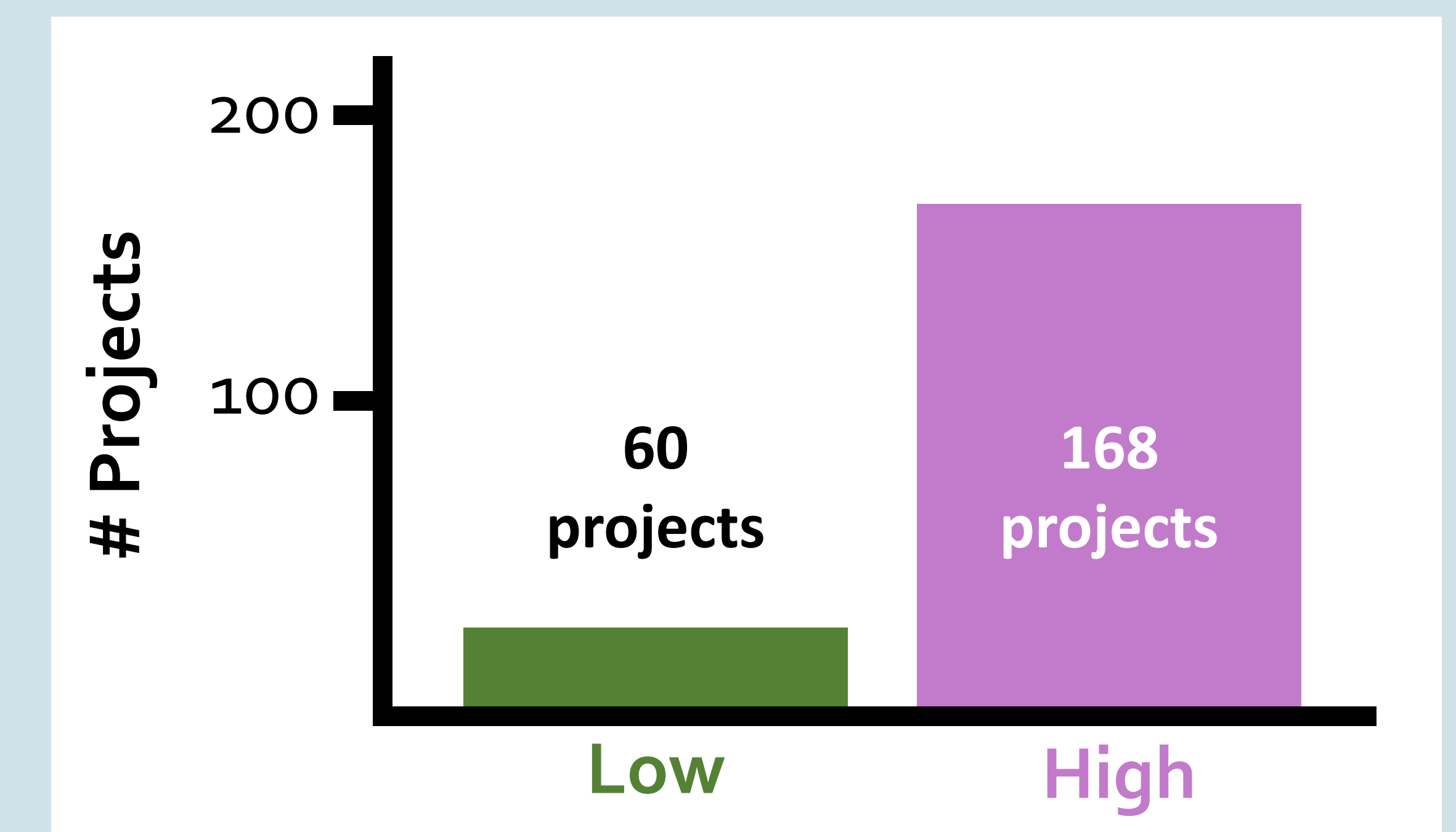
Less likely to be canceled when located in a **low-risk area**

25%

Less likely to be canceled with every 0.1 increase in **positive publicity**



Despite these benefits, most projects in development<sup>4</sup> are in **high-risk areas**.



## Good for Business & Good for Wildlife

- ✈ Developers should locate projects in low-risk areas to reduce the likelihood of cancellation.
- ✈ Communities and conservation organizations can influence siting through publicity.
- ✈ The Nature Conservancy should market *Site Wind Right* to help developers avoid project cancellation.

For more information: <https://gp-windbelt.wixsite.com/windbelt>

### Acknowledgements

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