

Appendix

This appendix provides information and results that supplement, but are not critical to, the analysis in the main paper.

Figure A1 presents pre-treatment price trends comparing the 0-0.5 mile distance band to the 3-5 mile distance band. The values on the y-axis are the predicted prices from a regression of log price on housing characteristics (including lot size and its square interacted with city fixed effects and year fixed effects) and tract fixed effects. While prices in the 0-0.5 mile band are consistently lower than in the 3-5 mile band, the trends match quite well, especially after 2002. This figure provides suggestive evidence that the price trends would have evolved similarly post-treatment in the absence of treatment, which is the necessary assumption for difference-in-differences research designs. In addition, the main results of Table 4 are robust to excluding observations that occurred prior to 2003.

Table A1 gives post construction transaction counts for the five classifications of viewshed by distance band. Table 7 in the main paper analyzes the impact of viewshed on property values.

Tables A2 and A3 relate to the impact of shadow flicker on property values. Shadow flicker occurs when the turbine is directly between a house and the sun, and the spinning blades create pulsating shadows.¹ Using GIS and tools developed by Rhode Island Renewable Energy Siting Partnership, we were able to determine which properties would be affected by shadow flicker.² Several states and nations (countries other than the US) have created citing regulations or guidelines that set 30 hours of shadow flicker exposure as a maximum for any residential building (Lampeter 2011). In line with these guidelines, we created one binary measure of incidence in which properties are expected to have at least 30 hours of cumulative shadow flicker exposure per year, and also a second measure of incidence marking at least 10 hours of

¹ Several YouTube videos (such as www.youtube.com/watch?v=Zj6BotyeDjc) illustrate this phenomenon.

² See <http://seagrant.gso.uri.edu/resp/> for details.

cumulative exposure. Figure 2 in the main paper illustrates the distribution of exposure for the Portsmouth High School turbine. Table A2 presents transaction counts for properties in the 0-0.5 mile distance band, splitting them into those within the zone of shadow flicker impact and those outside the zone. While there are 74 PC transactions that are within half a mile, only 10 are within the 10 hour shadow flicker impact zone and only 7 are in the 30 hour shadow flicker impact zone. This small proportion is not inconsistent with periods PA and PAPC, but is too small to have confidence in the estimated impacts through regression analysis.

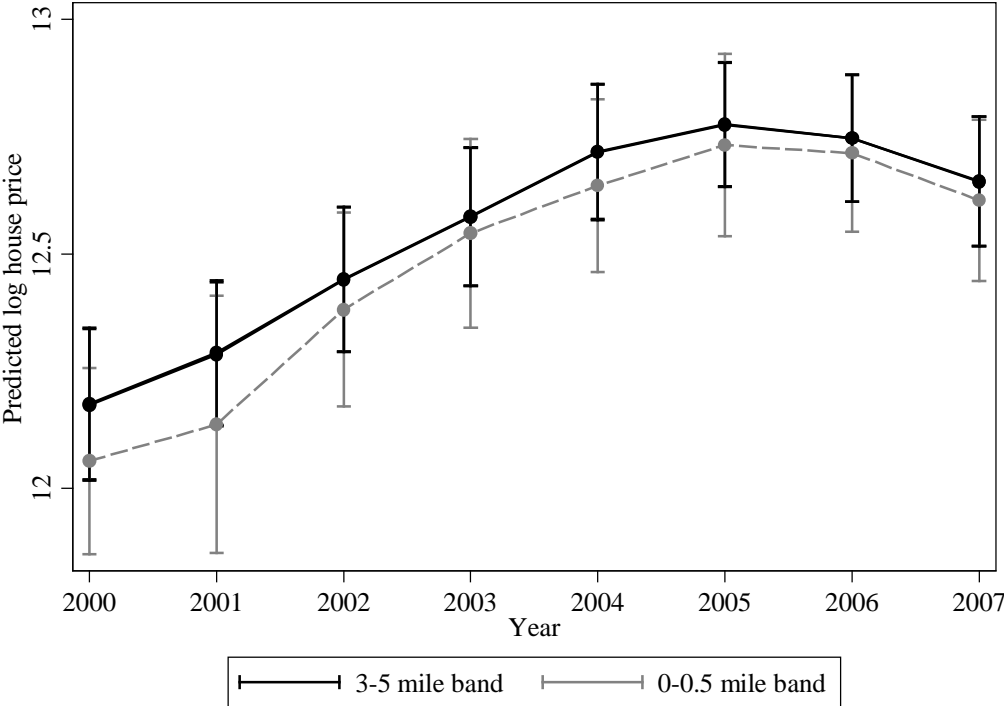
Despite the small sample size, for the sake of completeness, Table A4 presents the analysis of the impact of shadow flicker on housing prices. Three models are presented for both the 10 hour and 30 hour impact zone, each corresponding to Columns 1 through 3 of Table 4 in the main text. Each model incorporates shadow flicker by interacting the zone with each time period. This is in line with idea of difference-in-differences to control for existing pre-treatment differences to identify the true impact. For the 10 hour exposure models, the results suggest statistically significant, large positive impacts of shadow flicker PC. For the 30 hour exposure models, the results suggest significant, large positive impacts PAPC and large but insignificant impacts PC. Given the inconsistency between the models and the fact that a single observation could have a large impact on the coefficient estimates, we place little to no weight on these results.

References

Lampeter, R. (2011). "Shadow flicker regulations and guidance: New England and beyond [Powerpoint slides]." Retrieved from www.windpoweringamerica.gov/

Appendix Figures and Tables

Figure A1: Pre-treatment house price trends



Notes: The values on the y-axis are the predicted prices from a regression of log price on housing characteristics (including lot size and its square interacted with city fixed effects and year fixed effects) and tract fixed effects with standard error clustered at the city level. Only transactions between 2000 and 2007 and in either the 0-0.5 or 3-5 mile distance bands are included in the regression, which total 17,227.

Table A1: Post construction transaction counts by viewshed

View of turbine	Distance band		
	1 - 2 miles	0.5 - 1 miles	0 - 0.5 miles
None (0%)	938	321	46
Minor (1-30%)	2	1	2
Moderate (31-60%)	0	9	1
High (61-90%)	2	1	7
Extreme (91-100%)	0	6	18

Notes: The percentages given in the first column indicates the range of proportion of the turbine that could be seen from the property during the site visits. All transactions greater than two miles have no view of a turbine.

Table A2: Transaction counts within the shadow flicker zone

	10 hours		30 hours	
	No	Yes	No	Yes
PA	376	59	400	35
PAPC	53	22	65	10
PC	64	10	67	7

Notes: Each cell gives the number of transactions for that time period that lie within the shadow flicker zone of impact. Transactions PA and PAPC are not impacted by shadow flicker, but their counts are important for the difference-in-differences model. No transacted properties outside of half a mile are impacted.

Table 8: The impact of shadow flicker on housing prices

Variables		10 hour exposure			30 hour exposure		
		(1)	(2)	(3)	(4)	(5)	(6)
0 - 0.5 miles	PAPC	-0.020 (0.066)	-0.013 (0.057)	-0.016 (0.058)	-0.022 (0.064)	-0.016 (0.056)	-0.018 (0.057)
	PC	-0.015 (0.053)	-0.017 (0.048)	-0.020 (0.047)	-0.013 (0.054)	-0.012 (0.051)	-0.016 (0.050)
Located within exposure zone	PA	-0.025 (0.057)	-0.022 (0.059)	-0.022 (0.059)	-0.023 (0.072)	-0.012 (0.059)	-0.011 (0.060)
	PAPC	0.048 (0.040)	0.051 (0.031)	0.053 (0.031)	0.100 (0.056)*	0.114 (0.047)**	0.113 (0.048)**
	PC	0.078 (0.056)	0.110 (0.033)***	0.114 (0.033)***	0.099 (0.083)	0.110 (0.075)	0.115 (0.073)
City by year-quarter fixed effects		Y	Y	Y	Y	Y	Y
Property-city interactions		N	Y	Y	N	Y	Y
Property-year interactions		N	N	Y	N	N	Y
R-squared		0.751	0.759	0.760	0.751	0.759	0.760
Akaike Information Criterion		12467.5	10932.1	10799.9	12467.1	10931.5	10799.3

Notes: See notes to Table 4. The sample size in all columns is 48554. The model used in Columns (1) and (4) is identical to that of Column (3) in Table 4, the model used in Columns (2) and (5) is identical to that of Column (4) in Table 4, and the model used in Columns (3) and (6) is identical to that of Column (5) in Table 4. All columns include all difference-in-difference variables shown in Table 4, though only the interaction between the nearest distance band and time period are shown.