



Wind Energy and Rural Community Sustainability

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Wind Energy = Sustainable Energy



Images:

- <http://www.newsobserver.com/news/business/article27125410.html>
- <http://auroralights.org/>
- <https://www.greentechmedia.com/articles/read/a-new-wind-energy-opportunity-for-corporate-buyers-spp>

Rural Sustainability in the American Midwest

- Farm consolidation, fewer & older farmers
 - Depopulation, disinvestment
- Wind energy as solution?
 - Tax revenues (Kahn 2013; Slattery et al 2012)
 - Diversified income stream (Swofford & Slattery 2010; Sutherland & Holstead 2014)

But what about the social fabric?



<http://www.irishexaminer.com/ireland/councillors-under-pressure-as-opposition-to-wind-farm-grows-309513.html>

Research Questions

1. Does wind energy increase farm succession planning?
2. Does wind energy increase farm investment?
3. Are there wind business models that minimize social impact?

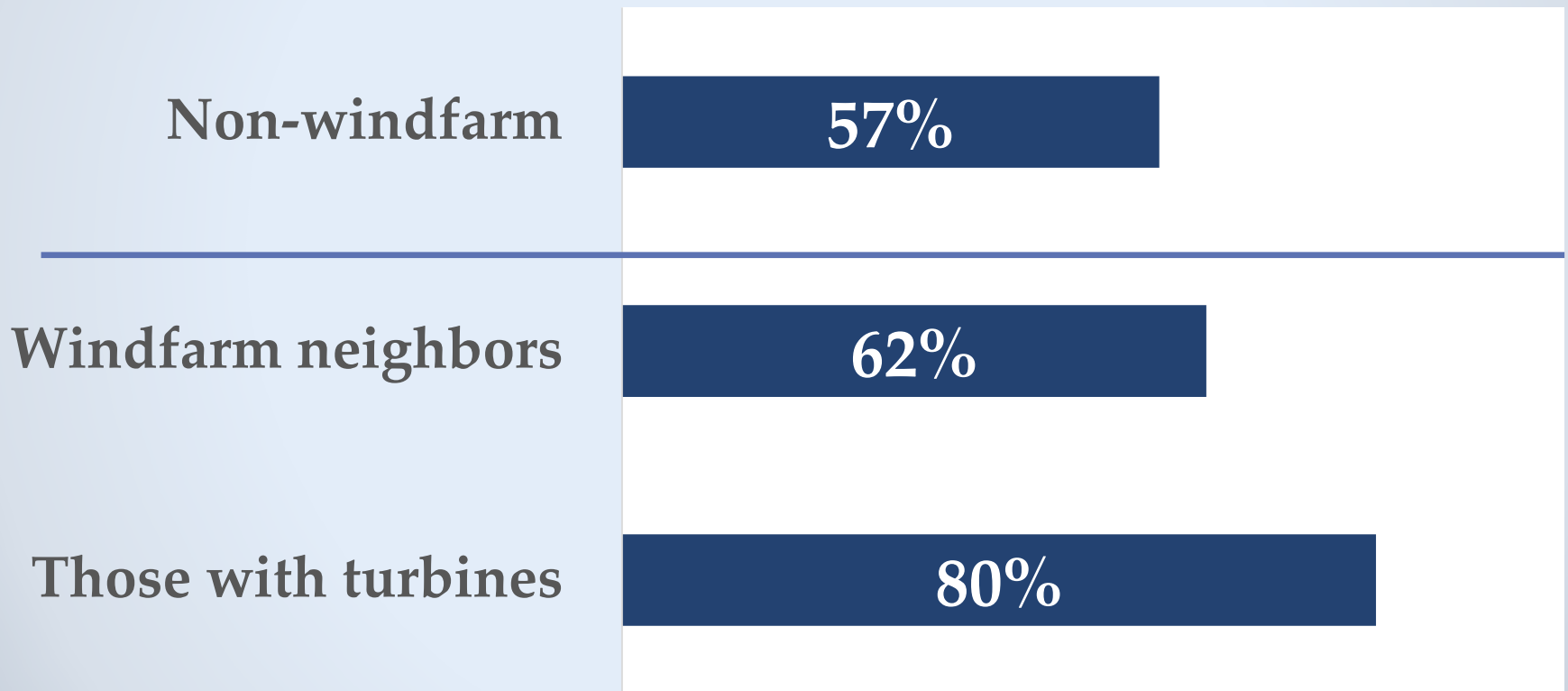


Survey Research Design

- All owners of land assessed ag
- 14 townships
 - 9 with windfarms
 - 5 without
- 1,210 responses (72% response rate)
- Funded by Dow Fellowship

Farm Succession

% that have farm succession plan

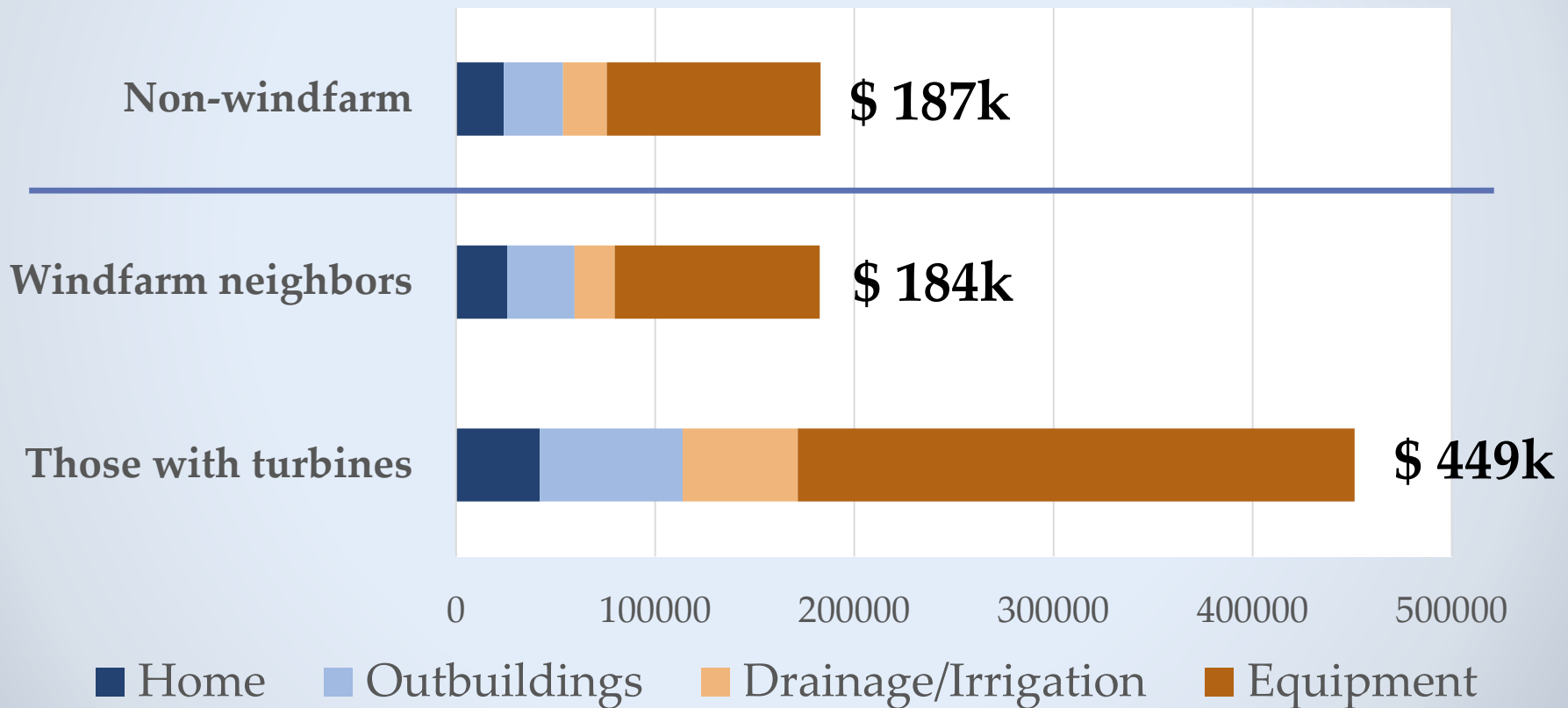


Farm Succession

- Holds even after accounting for size of farm
 - Turbines 2.5x more likely to have plan than non-windfarm (p < 0.001)
 - Windfarm neighbors 1.34x more likely (p = 0.02)
- Alternate explanations
 - Those with plans seek turbines
 - Poor matching

Farm Investment

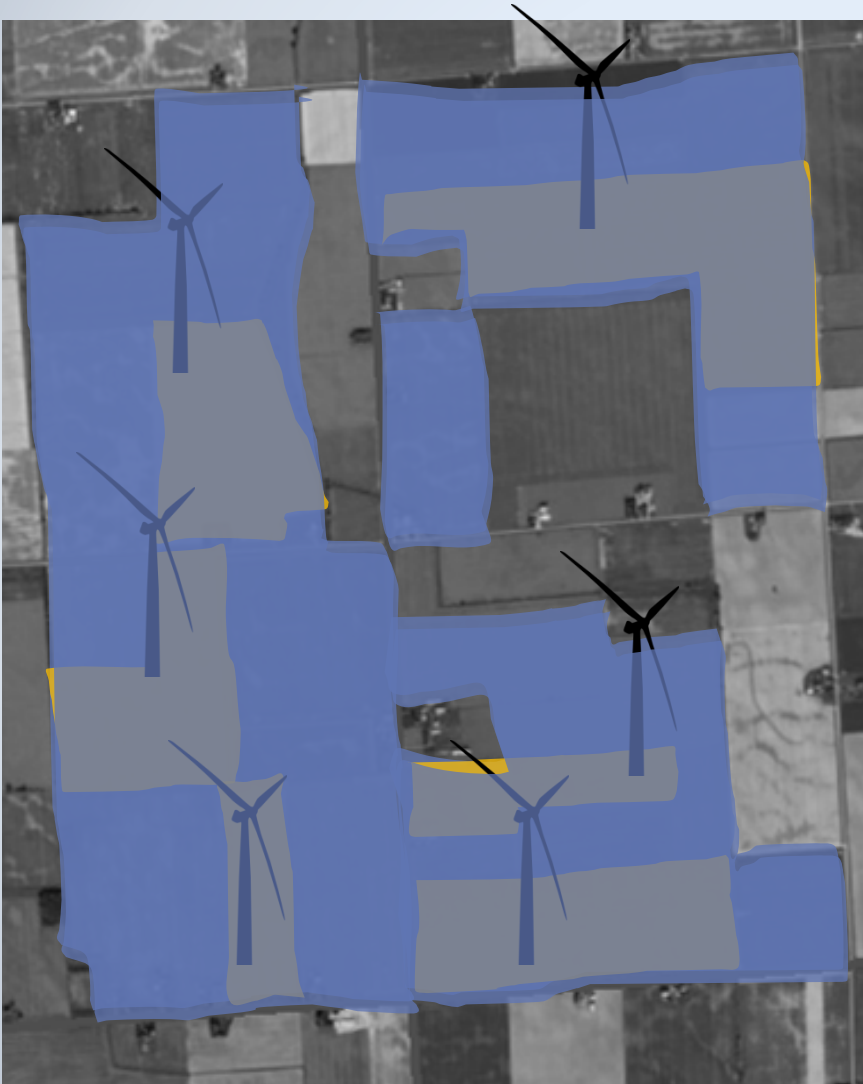
Investments over 5 years



Farm Investment

- Holds even after accounting for size of farm
- Additional investment exceeds wind payment
 - \$260,000 excess investment over 5 years
 - Turbines ~\$8,000-15,000 per year

Wind Business Models



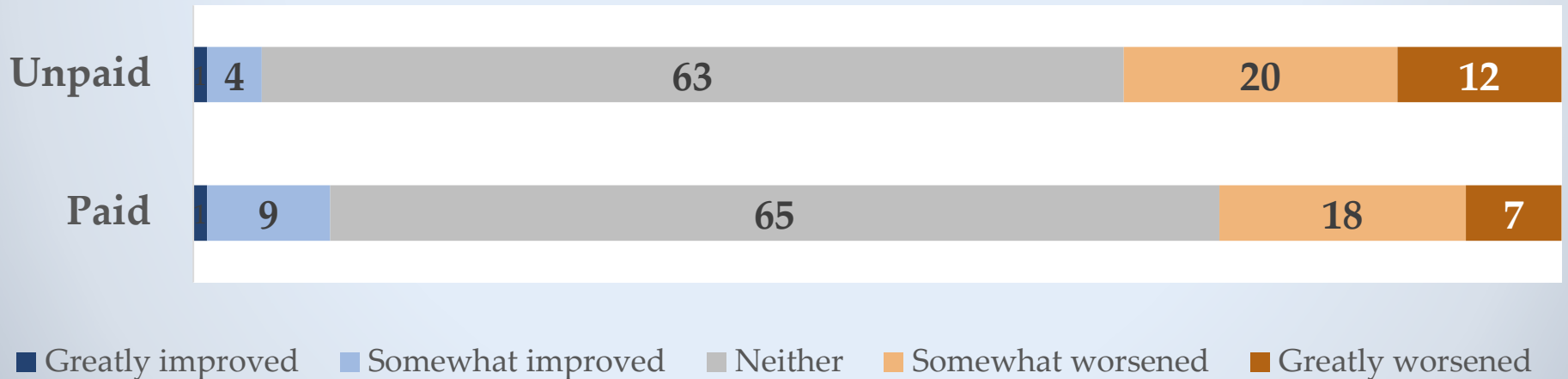
- Traditional business model
 - Those with turbines are paid
 - Disturbance
 - +
 - Full Royalty
- Pooled Royalties
 - All initial landowners paid, per-acre
 - Those with turbines
 - Disturbance
 - +
 - Per-acre Royalty

Wind Business Model on Social Fabric

- Open-ended comments
 - Traditional model
 - More comments about tension
 - “Greed” of few getting paid
 - Pooled model
 - “Jealousy” of few not getting paid

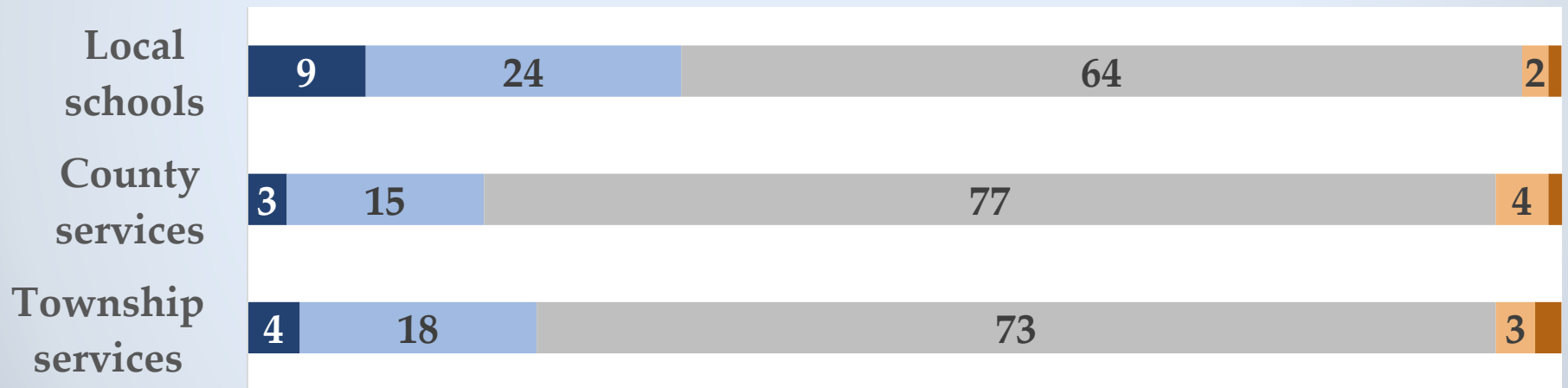
Wind Business Model on Social Fabric

- Subsequent work
 - Impacts on relationships with neighbors
 - No community-level correlation
 - At individual level, direct payment matters



Wind Business Model on Social Fabric

- Subsequent work
 - Indirect payment (tax revenues) not registering ...Though millions of dollars



■ Greatly improved ■ Somewhat improved ■ Neither ■ Somewhat worsened ■ Greatly worsened

Conclusions

- Direct payments leading to...
 - on-farm investment, likely succession planning
 - But some jealousy, greed
- Need more work
 - Outside of Michigan
 - Longer-term outcomes
 - Impacts of tax structure, interaction with business model
 - Thinking about sustainability at scale