Updated Impact of Proximity to Solar Farms on Property Values

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Context

In response to stakeholder questions, this report summarizes the academic and non-academic literature about the impact of Wisconsin solar farms on nearby property values (both farmland and homes). We found several studies that examined impacts on home values and three that analyzed the impacts of solar farms on agricultural land values. Published results were generally mixed – studies found positive, negative or no statistical effect of solar farms on nearby property values or sales prices. However, a new comprehensive study (Hu et al. 2025) likely settles the academic debate for the time being, so we have updated our April report to reflect these new findings. We summarize the results from these studies and then discuss implications for Wisconsin and the importance of public perception for these effects.

Highlights

- Based on a new comprehensive study, agricultural land values jump 19.4% for properties within 2 miles of large-scale solar farms, but this effect is temporary, peaking 3 years after installation and dissipating within 6 years.
- Based on this same study, residential properties within 3 miles of a large-scale solar farm experience price declines of 4.8%, but this effect fades within 9 years of installation.
- We found no comprehensive study that specifically covered Wisconsin.
- Larger effects seem possible for agricultural land in Wisconsin because more areas have specialized agricultural needs with more limited availability of land to replace losses.
- Public perception of large-scale solar farms and proximity play a key role in these effects, while perceptions of community-scale solar farms remain unclear.

Primary Findings

Early peer-reviewed research produced mixed findings – some found positive effects, while others found negative effects or no statistically significant effects. The new comprehensive analysis of Hu et al. (2025) reveals a consistent pattern: farmland prices jump near large-scale solar installations while nearby home prices dip, and both effects diminish with distance and time. This is the average effect – home and farmland values are highly variable because the specific context for each property matters.

Hu et al.'s (2025) study covers 40 states with a comprehensive database for both agricultural and residential parcels and a thorough analysis that supersedes previous studies for the time being. For agricultural land, Hu et al. (2025) finds an average price increase of 19.4% for parcels within 2 miles of large-scale solar installations, but this effect disappears beyond 2 miles. This price effect is also temporary, peaking 3 years after installation and dissipating within 6 years. They interpret these price patterns as the option value – agricultural and non-vacant lands can be added to the existing solar farm, but as one moves further away and as the installation matures, this option value declines.

If a similar study were conducted for Wisconsin, we expect effects similar to the Hu et al. (2025) pattern, but to vary in magnitude and by location. Wisconsin has many areas devoted to specialized agricultural uses. Intensive dairy regions need land for manure, and crops like potatoes, vegetables, cranberries, and ginseng require special types of land. Loss of land to solar farms in these areas would likely have a larger impact on surrounding farmland values because alternative land to replace these losses is limited. However, the effect would likely be smaller in areas with more traditional agricultural land use for which substitute land is available nearby. Hu et al. (2025) also show that price increases are most evident for smaller parcels, because they can host incremental expansions of large-scale solar installations. By contrast, almost no price effect is observed for larger parcels.

For residential land, Hu et al. (2025) find drops of 7.2% in value for parcels within half a mile of a large-scale solar farm and 4.8% for those within 3 miles, and no statistically significant effect beyond that distance. Prices for residential properties return to their baseline about 9 years after solar construction. We anticipate similar effects in Wisconsin, a 4%-7% decline in residential property values within half a mile of large-scale solar farms that disappears after about 9 years.

Public perception plays an important role. Whether real or perceived, farmers and homeowners near solar farms are concerned about actual or potential effects on the value of their land and perceptions of potential buyers. In rural areas, opposition to solar farms is often explained by the perception that solar farms use rural resources for the benefit of urban areas – a phenomenon known as the "rural burden". However, not all solar farms are the same. Smaller community-scale solar farms are built to serve a community or a set subscriber base, while larger utility-scale solar farms are designed to provide electricity for cities or regions often further away. Since most research focuses on large-scale solar farms, it is unclear how results and perceptions would differ for community-scale solar farms. In the context of the "rural burden", community-scale solar farms could plausibly be seen favorably in rural and agricultural areas, as a source of pride for energy independence. Hu et al. (2025) finds some evidence supporting this effect, but the topic remains largely unexplored empirically. Understanding these effects on property values in Wisconsin would require survey or focus group work that is outside the scope of this assessment.

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Context

Renewable energy technologies, such as solar panels, wind turbines, and biofuel technologies have gained increased attention in recent years, but not all renewable energy technologies are the same. Solar is more controversial because installing a solar farm requires a fundamental land-use change compared to producing wind energy or biofuels (Geiger 2025; Maguire et al. 2024). Attention commonly focuses on potential impacts on nearby home and agricultural land values. For this brief report, we searched both the academic and non-academic research to summarize what others have found. We found several studies that examined impacts on home values and a few that analyzed the impacts of solar farms on agricultural land values. The comprehensive study of Hu et al. (2025) was just published and likely settles much of the academic debate for the time being, and so we have updated our April report to reflect this new research. This report summarizes the research and briefly discusses possible implications for Wisconsin. Finally, we discuss the importance of public perception for these effects on property values.

Impacts on agricultural land prices

Abashidze and Taylor (2023) examined agricultural land sales in North Carolina and found no direct effect of the distance from a solar farm on the sale price of agricultural land. They find some weak statistical evidence that agricultural land parcels nearer to transmission power lines may increase in value after a solar farm is built nearby. They propose that solar farm installation potentially creates a signal to solar farm developers of the suitability of adjacent agricultural land for future development as a solar farm.

An unpublished master's thesis (Kunwar 2024) analyzed the effect that the distance to a solar farm had on prices for farmland sales in Indiana. The study found that being one mile nearer to a solar farm increased the price of farmland by 1.4%. For higher value farmland (in the top 20%), the effect was larger, a 1.6% increase, and only 0.9% for lower value land (in the bottom 20%). The thesis did not discuss how far this effect extended before it dissipated. Also, the regression analysis explained only about 18% of the variation in land prices, indicating that farmland values are highly variable and many other factors besides those included in their analysis affect prices.

Hu et al. (2025) find that the price of land within 2 miles of a solar farm increases 19.4% on average, with the effect becoming statistically insignificant beyond 2 miles. The increase appears three years after installation and fades roughly six years later, consistent with the hypothesis that these land value changes are driven by option value for possible future solar leases rather than a permanent change. Analysis shows that the price increases are concentrated on smaller parcels as they cost less to add to existing solar arrays. Large land parcels show no price response as they are more costly to add to an array, while parcels near mega-arrays also show no price response because the already large array is less likely to expand.

Discussion of impacts on agricultural land prices

Surprisingly little research exists on the effects of solar farms on farmland values. Abashidze and Taylor (2023) found no solid evidence of an impact in North Carolina. Kunwar's (2024) preliminary results are consistent with expectations (solar farms increase nearby farmland values), but the impact seems small: an average change of 1.4% per mile, with a range of 0.9% to 1.6%. The newly published Hu et al. (2025) study used an extensive multi-state database and comprehensive analytical methods, and so the research results summarized above supersede the other analyses, which is why this report needed updating. In short, the value of farmland within 2 miles of a large-scale solar farm increases 19.4% on average – but the effect disappears beyond 2 miles, peaks about 3 years after solar farm installation, and fades roughly after 6 years. This pattern is consistent with an option value – land prices increase because the solar array may expand onto these nearby lands in the near future. This option value has a limited reach from the solar farm and eventually it fades as it becomes clear the solar farm will not expand further. Nonetheless, large scale installations have a sizable effect on farmland prices within a certain distance. The option value is highest for small parcels near smaller solar farms, because these parcels are lower cost to add to the array and smaller solar farms still have room to expand.

To give some idea of what this effect could mean in the state, we apply Hu et al.' (2025) estimates to 2024 land values in Wisconsin. The average value for agricultural land in Wisconsin in 2024 was $6,600/ac (USDA NASS 2025). Schlesser (2025) summarizes actual farmland sales data in Wisconsin in 2024. Her discussion and Figure 2 suggest that the lowest 20% had prices below about $3,000/ac and the top 20% had prices above about $9,500. Applying the 19.4% average effect to these land values gives $6,600 x 0.194 = $1280/acre price increase for average farmland, with a range of $3,000 x 0.194 = $582/acre to $9,500 x 0.194 = $1,843/acre. These gains are substantial compared to historical estimates but are spatially limited and temporary.

These are average effects based on this new national evidence. We expect larger effects in parts of Wisconsin with high-value and unique agricultural land uses, particularly in areas with lots of dairy or specialty crop production. Areas with intensive dairy production need farmland for manure application, the Central Sands and Lower Wisconsin River Valley are used for intensive potato and vegetable production, and several areas of the state are used for important specialty crops like seed potatoes, cranberry and ginseng. Loss of land in these areas to solar farms would likely have a larger impact on surrounding farmland values than in the Hu et al. (2025) study because they are high-value uses and have limited availability of alternative land for replacement if lost. However, we note that this hypothesis has not been examined empirically.

Impacts on home prices

Hu et al. (2025) analyzed prices for 8.3 million individual home sales in forty US states and found that, on average, homes within a half-mile of a large-scale solar farm experienced a 7.2% reduction in value, homes within 3 miles experienced a 4.8% reduction in value, and homes beyond that distance had no statistically significant reduction in value. Elmallah et al. (2023) used data from six states (not including Wisconsin) and found smaller home price decreases (2.3% within a quarter-mile, 1.5% within a half-mile), but the pattern was the same. In Hu et al. (2025), home price decreases were larger in the Northeastern U.S., in politically conservative counties (based on 2016 party voting shares), and for residential parcels on land that was previously agricultural, but negligible for solar farms that are brownfield redevelopments or located in left-leaning counties (based on 2016 party voting shares).

Smaller, single-state studies show mixed or null effects. Specific to the Midwest, a real estate impact study in Illinois by McGarr and Lines (2018) compared sales of single-family homes adjacent to solar farms to sales of comparable homes not adjacent to solar farms. They found no consistent negative impact on home sales prices or other influential market indicators attributable to adjacency to solar farms. Hao and Michaud (2024) used aggregate data to examine the impact of 70 Midwest solar farms on average home values in the same zip code, finding a 0.5% to 2.0% increase in average home values in zip codes with a solar farm. They propose that solar farms increase tax revenues that are used to build amenities such as better schools and public services, which then increase nearby home values. Specific to Wisconsin, the market analysis of MaRous and Company (2021) examined the potential impacts of a proposed solar farm in Dane County and found that the market data indicated that there would be no negative impact on rural residential property values. This study also found that data did not substantiate local landowners' concerns about noise and visual impacts from an existing solar farm on land values.

Taken together, the Hu et al. (2025) study confirms the expected disamenity effect on values for homes close to large-scale solar farms, while the findings of Elmallah et al. (2023) and single-state studies show how local contexts might abate the penalty. The results are highly variable, suggesting that the specific context for each home matters. The fact that the smaller studies did not find an effect is not surprising. Home values are highly variable and identifying effects with highly variable data is statistically difficult with small samples. Hao and Michard (2024) admit their results are counter to what most research finds; we have developed an academic critique beyond the scope of this report that would explain their unusual results as a statistical issue.

The role of public perception

The evidence put forth in these studies is often mixed, with the high variability in land values and home prices indicating that the specific context of each sale matters. The implication is that public perception plays an important role in how the proximity to solar farms impacts residential home prices and farmland values. Whether real or perceived, land and homeowners adjacent to solar farms are concerned about potential buyers passing on their home and land because of its proximity to a solar farm (Breese, 2025a; Breese, 2025b). In rural areas specifically, there is opposition to solar farm development that is best explained by the perception of the development being extractive of rural natural resources (i.e., land) for the benefit of urban areas – a phenomenon known as the "rural burden" (Nilson and Stedman, 2023). Hu et al. (2025) show that visibility itself adds no extra penalty once distance is controlled, lending credibility to the notion that the price discount might not be driven by glare, noise, or other physical health concerns, but perception. Public perception can and will influence the acceptability of solar projects so that citing ordinances may want to take it into consideration.

Not all solar farm projects are the same – notable differences exist between utility-scale and community-scale solar. Community-scale solar projects are usually smaller and established for a particular community or subscriber base, while utility-scale solar projects are larger and designed to provide a significant amount of electricity for cities or regions (Geiger, 2025). Most of the studies reviewed in this report were for utility-scale solar farms and it is not entirely clear how their results would differ for a community-scale solar farm. However, considering the root of the rural burden and the main concerns associated with solar farms such as change in land-use and visible disamenities, community-scale solar projects could plausibly be perceived more favorably in rural and agricultural areas. As a result, we believe that the distinction between community-scale and utility-scale solar projects is likely quite important in many contexts.

Caveats

We emphasize that extrapolation of some of these findings to Wisconsin is predicting out of sample, which can lead to serious errors. We found very few studies specific to Wisconsin and suggest that additional research to examine these effects in the unique Wisconsin context may be warranted to address this issue. Such work could include econometric analysis of home and land sales data, as well as surveys or focus groups to better understand public perceptions.

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