RECEIVED

JUN 23 2025

PUBLIC SERVICE COMMISSION

June 18, 2025

Kentucky State Board on Electric Generation
211 Sower Boulevard
PO Box 615
Frankfort, KY 40602

Re: Wood Duck Solar in Barren County, Kentucky 2024-00337
Evaluation of the Kirkland Appraisals

Dear Commissioners and Ad Hoc Committee Members of the PSC:

The report submitted by Kirkland Appraisers on behalf of Wood Duck Solar LLC and Geenex Solar LLC is a non-acceptable attempt to reach a favorable result for the developer. It fails to meet acceptable appraisal methodology, fails to provide basic data for comparison and fails to provide any data that is comparable to the size and scattered site design proposed for Barren County.

The data is obsolete. The most recent property evaluated in his research is from 2022 on page 46. Shouldn't there been any sales since then? What a shame that this solar company is trying to get a project approved and quoting "no impact" on a report that has absolutely no bearing on Barren County and the proposed project.

Kirkland submitted a report which was submitted to the Barren County Planning Commission in December 2023, with his cover letter dated May 25, 2023. He then submitted an "updated" study on May 9, 2025. A review of the two reports indicates that everything is exactly the same except the date. In fact, not one comma is different. There is no new research or sales of properties. He doesn't provide ONE, SINGLE before and after comparison of prices.

This is a nice complication of solar projects; yet he fails to include commercial solar projects and specifically fails to include scattered site solar arrays like the one proposed in Barren County. His examples do not compare in size, design or location, location, location. Many of his examples are less than 5 tracts ranging with the smallest comparison being only 17 acres. Of course, there would be less of an impact on 17 acres than living in a community that has been inundated with a scattered site development covering 2,200 acres.

In Barren County, to be an accurate study for comparison, one would need to take each parcel, then prepare co-centric circles with 1-, 3- and 5-mile radiuses for each location and begin the assessment of property values. Many homes will be within several zones as this design is scattered throughout multiple communities. He hasn't provided any data that can be vaguely compared to the design of the Wood Duck project.

Kirkland brags of extensive work evaluating 900 plus projects in the states of Virginia, South Carolina, Tennessee, Texas, Oregon, Mississippi, Maryland, New York, California, Florida, Montana, Georgia, Kentucky, Vermont, and New Jersey. He attempts to compare

properties across state lines, with various designs, non consistent scenic views and allows zero calculations for property value increases. Why is Kentucky property compared to property in Florida?

The LARGEST failure in his methodology is the fact that he **fails** to provide a method to determine the value of homes **AFTER** a solar development has been built. In his own words:

> *"I have previously been asked by the Kentucky Siting Board about how the solar farms and the matched pair sets were chosen. This is the total of all the usable home sales adjoining the 900+ solar farms that I have looked at over the last 12 years. Most of the solar farms that I have looked at are only a few years old and* ***have not been in place*** *long enough for home or land sales* ***to occur next to them for me to analyze."*** *(Page 41)*

Therefore, Kirkland does not provide the impact on property value **AFTER** a solar development has become operational. ***He doesn't have the data, so why is this report given any credibility?***

He does not attempt to compare home sale prices **BEFORE** the solar project is built and sale prices **AFTER** the solar project is built. He just looks at a property one time and says, ghee, sorry, not enough time has passed, so therefore, I'm stating "no impact."

Kirkland states that he has only evaluated properties where solar projects *have been announced, are in construction or construction has been completed.* This is **one** look. He does not come back later to see if the homes have sold and if sold, what was the cost and how does he account for property value increases and/or decreases? His downward adjustments, discussed later, are atrocious.

His entire conclusion is summarized on page 147, "we don't know. " He has provided 147 pages of fluff before the admission on the last page.

Kirkland states clearly that **he has not provided any comps** of properties **BEFORE** the solar panels are constructed and the difference in value when the project is appraised and/or sold **AFTER** construction is complete.

He cannot state with any credibility that the property values will not be affected. There are numerous flaws with the procedures and it fails to support the conclusion that a "solar farm …will have no negative impact on the value of adjoining or abutting property." (Page 147)

Page 15 of the report states: "There are a number of Sale/Resale comparables included in the write ups, but most of the data shown is for sale of homes **after** a solar farm has been **announced** (where noted) or **after a solar farm has been constructed**."

Another way to understand this is that he provides information on homes that are in the "announced zone" or "solar completed zone." One **or** the other. He does not provide **both**. He does not provide a comp during each zone to be compared and reach an equitable and true value of the values before and after.

This is a **HUGE** flaw in methodology and skews the results favorable to the solar developer and is a deliberate attempt to deceive the commissioners and the public with an untruthful conclusion of "no-impact." You cannot compare comps if you do not have before and after sales. He clearly states he doesn't have "after" comps on page 147.

Additionally, Kirkland **failed** to evaluate commercial solar projects identified by the KY Department of Energy as projects which are active or under construction. These include: **Turkey Creek Solar, Glover Creek Solar, Unbridled Solar LLC, Martin County Solar Project, Bluebird Solar Project, Green River Solar, Ashwood Solar, Blue Moon Solar, Pine Grove Solar, Horus Kentucky 1, Russellville Solar, Sebree Solar I, Madison Solar Project and Fleming Solar Project. For whatever reasons, New Frontier Solar in Breckinridge County and owned by EDP is omitted from the state's website.**

Kirkland's report analyzes 35 solar projects and **none of them** are relevant to the design and scope of the Wood Duck Solar project. The report does not include **any scattered site developments** that are shaped similarly to Wood Duck. A review of the maps included from the 15 different states, most are less than 5 separate tracks with many being a single tract development.

Likewise, Kirkland fails to identify properties in close proximity to Kentucky that match the design of the Wood Duck project. His comparisons vary between multiple states, multiple parcels, multiple configurations and do not relate to the design proposed.

This is **HUGELY** significant. The project in Barren County involves **27** separate parcels scattered throughout **four communities** (Bon Ayr, Merry Oaks, Railton and Park City), dragging on for **20-30 miles** with solar panels sandwiched in-between, around and behind homes and farms of **80 plus non participating properties.**

Kirkland states that he is providing data on states that he thinks is relevant to Kentucky. He included: Florida, Illinois, Indiana, Kentucky, Maryland, North Carolina, South Carolina, Ohio, Tennessee and Virginia. I believe this to be an inaccurate statement as many of these states do not border Kentucky. He is reaching for data that simply doesn't support his conclusion.

It would seem that a more accurate assessment would only include **projects in Kentucky** and would focus on the **commercial solar projects** that have been completed and are in progress in Kentucky with comparables provided for home values before and after, allowing for a **more equitable and accurate assessment.** As listed previously, Kentucky has a substantial number of commercial solar projects that he failed to consider.

Instead, Kirkland identified 6 solar projects in Kentucky ranging from 17.36 - 63 acres. This isn't a fraction of the 2,200-acre development proposed for Barren County. I don't believe one can accurately compare the financial impact to a non participating property that has a 17-acre development next door to one that has 2,200 acres scattered all over their neighborhood/community: **27** separate parcels scattered throughout **4 communities** (Bon Ayr, Merry Oaks, Railton and Park City), dragging on for **20-30 miles** with solar panels sandwiched in-between, around and behind homes and touching farms **of 80 plus non participating properties**. It will have **35 invertors** with underground battery storage (according to some documents) and is being developed and managed by a for profit company and not a local power provider.

A Google search of the 6 solar projects in Kentucky that Kirkland attempts to compare are each owned by a **utility company**. This is **different** than the proposed solar project in Barren County which will be owned by Wood Duck Solar LLC which will be responsible for making residual lease payments and paying land taxes to the landowners and providing maintenance for 20, 25, 30, 35 or 40 years. Historic data indicates the Wood Duck generally sells their solar portfolios to other companies, including foreign governments, so it is unknown who will maintenance the properties, ensure payments for the land leases and ensure the tree buffers and road frontage are maintained.

From Kirkland Evaluation: Projects that he evaluated in Kentucky

Project Name	City	State	Acres	Commercial Owner
Bowling Green Solar	Bowling Green	KY	17.36	Scotty's company and TVA
Crittenden Solar	Crittenden	KY	34.1	Duke Energy
Cooperative Shelby Solar	Simpsonville	KY	35	Shelby Energy Cooperative
EW Brown Solar	Harrodsburg	KY	50	LG&E/KU
Walton 2 Solar	Walton	KY	58.03	Duke Energy
Cooperative Solar I	Winchester	KY	63	East Kentucky Power

Thus, this study failed to address properties or assessments from commercial solar projects that are similar in size and design to the proposed development in Barren County. It also failed to address property values around commercial solar developments. Obviously the insertion of a commercial solar utility company with farm land will have a detrimental impact.

Other failures in Kirkland's study include:

1. Kirkland fails to address the value of COMMERICAL SOLAR UTILITIES and the fact these become public utilities and must be taxed, assessed and insured as a commercial facility. The report does not evaluate ANY commercial property or consider the effect of the commercial property on adjoining residential and farm properties.

2. Kirkland fails to address land that was once tax assessed and/or zoned as agriculture as it will become commercial and the farm next door will remain agriculture. The area becomes mixed use and the scenic views and cohesion of land use is forever destroyed. The commercial properties are fenced and gated with high voltage signage warnings. In the Barren County project, solar panels will be within 10 feet of property lines. This too will have a detrimental impact on the value of the property and his study makes no allowances for these facts.

3. Kirkland fails to address resale values and road/scenic appeal. Who wants a house sandwiched between COMMERCIAL SOLAR UTILITIES with fences, signage and gates? No amount of screening will replace the farmland and forestry that will be destroyed in Wood Duck's proposal. He fails to address land development and land use and the goal of every community to be consistent in development to the extent possible. Mixing commercial and residential and farming is not smart.

4. Kirkland fails to address the reduced potential for residential development. The non participating neighbor may want to develop a multi-family residential subdivision, but again, who wants a COMMERICAL SOLAR UTILITIES next door? They will suffer income potential losses because of the commercial solar utility.

5. Kirkland fails to address loss of income to farmers that are currently leasing land that is proposed for the Wood Duck Development nor does he consider the value of land that is undeveloped, yet surrounded by the proposed development. The undeveloped land could be used for multiple other purposes and generate more jobs and income for the community.

6. Kirkland fails to address "Sacrifice Zones" and the fact the solar companies' prey on the elderly and low income in an effort to gain participation. Research shows that solar developments are often in zip codes with lower property values and the impacts from solar farms will be felt only by lower income homeowners.
(Impact of Utility-Scale Solar Farms on Property Values in North Carolina By Megan Wang, April 2022).

7. Kirkland fails to address the increase in taxes to adjoining properties as a result of the COMMERCIAL SOLAR UTILITES being built and what this will mean for non-participating properties.

8. Kirkland fails to address issues relating to property insurance and what it will mean to the nonparticipating property owner who must pay a higher premium with solar

structures abutting their property lines. In the Wood Duck design, solar panels will be placed within 10 feet of property lines. A buyer/seller should be aware of this increase in cost.

9. Kirkland fails to provide accurate "downward adjustments" citing noise, odor and traffic (page 147 and cover letter dated 5/25/2023). This isn't standard categories for downward adjustments.

   Downward adjustments in real estate, often called write-downs, involve reducing the value of a property or real estate investment on a company's balance sheet. This can be due to market fluctuations, changing economic conditions, or specific property issues. Appraisers use comparable sales data and make adjustments, including downward adjustments, to arrive at a property's market value. To have a fair comp, he would need to evaluate similar properties with noise, odor and traffic. He fails to do this.

   A stunning view can significantly increase a house's value, potentially boosting it by 17.8% on average. For example, a home worth $300,000 with a good view could be valued at $353,430. The exact increase depends on the type of view, location and market conditions and unobstructedness: not noise, odor and traffic.

   He failed to address the scenic view that will be destroyed by the commercial solar developments. He failed to address the fenced compounds which will be next door. He failed to address the economic impact if the "solar development was an upscale residential development instead." He failed to address the effect of adding commercial facilities in residential neighborhoods and this most definitely would qualify as a downward adjustment.

   The scenic view provided in rural Barren County is priceless. The wildlife, the trees, our endangered species all lead to the Barren River Lake and Mammoth Cave National Park which provides over 53,000 acres of natural preserved land. A large majority of our tourist attractions focus on the outdoors. A local boutique in Park City estimates 40-45% of their business comes from tourists. (Private conversation with author)

10. Kirkland failed to make any notations of potential contamination from the batteries and toxins from the panels and the metal rust that could affect the land. Michigan state Representative Cam Cavitt has several videos about the shards and leaching of the land from solar panels in his district. Local potato growers have been notified by companies, including Frito Lay, that they can never grow potatoes on land that has had solar panels. The glass shards can be carried in ground water, affecting other farmers and land owners and endangering animals and people. This changes the value of the land and the surrounding land.

    In the Market Analysis, Kirkland states the "solar panels **do not generate very little traffic and do not generate noise, dust or other harmful effects**." I do not believe he is capable of making this statement as an appraiser. He is not a chemist and

cannot provide accurate information on the chemicals and therefore, cannot comment on his beliefs about the impacts on the environment.

Noise? Yes, the construction will generate noise, as will the inverters, 35 to be scattered throughout Wood Duck's project. There are various sizes of invertors and without having the specifics and the material data sheets, he has rendered an opinion without facts.

As to dust, this is Kentucky and the solar panels will be covered with dust, mold and pollen. When a glass table sets outside, it gets covered with dust, mold and pollen. In a farming community, there is dust from planting and harvesting. If this isn't removed from the solar panels, the layers of dust will increase until the rains can reduce and/or remove the layers. Then again, it may just splatter and allow more dust, mold and pollen to collect.

It is not known how much dirt, dust and pollen will accumulate on the panels or if they will be chemically washed/sprayed by Wood Duck for future maintenance. The harmful effect this can have on health is a complete unknown and to comment on this is outside of Kirkland's expertise. As to odor? Is he implying this area has a stench? Is he making a stereotype comment about farm? Preposterous.

Kirkland's cover letter alludes to almost the same language, only this time he refers to "**noise, odor and traffic**" for his downward adjustments. Is he implying that he adjusted adjoining property values down because of noise, odor and traffic? How could he evaluate noise, odor and traffic on surrounding properties? He can't and again, he is throwing his opinions out there with no evidence to support his statements.

11. Kirkland fails to address issues such as fire protection as homebuyers are concerned with issues such as fire safety and they realize this is a threat to the adjoining properties. In this case, the local fire jurisdiction will have @50% of their service area under solar panels with no way to reach the majority of the panels to extinguish fires. Homebuyers want fire hydrants for lower insurance premiums.

In this case, the property lines will be within 10 feet of adjoining properties. The possibility for fire transference is great and the water lines are insufficient per county zoning regulations. (Copy attached) County code requires that ALL commercial buildings have a 6-inch water line. The majority of water lines in the project area are only 4-inch. The fire hydrants will not support the fire hoses which are essential because the water trucks will not fit between the rows of panels. The addition of over 204,525 solar panels puts EVERY surrounding home and structure at risk for fire. I believe that might be a downward adjustment.

The Barren County Planning Commission **failed** to make this observation and rule accordingly. How dare they consider a variance on an issue which affects my home and the homes of my neighbors? Wood Duck should not be given a variance on this

issue. It is too important. Fire protection is paramount to the viability of a community and this project will impede our safety.

Let's find the poorest community in Barren County. Oops, he pulled Edmonson County

In an ill-fated attempt to discredit the research by the University of Rhode Island from September 2020, Kirkland pulled the lowest income area in Edmonson County to use as the "measuring rod" for comparison. He pulled **Rocky Hill.** Not Glasgow. Not Smiths Grove. Not Merry Oaks. Not Park City. Rocky Hill which isn't even in Barren County.

Rocky Hill is a tiny, tiny area with no industry, no development, no growth and would be considered an economically depressed area. It used to have a post office and that was the booming business, but even it is now closed. Even the volunteer fire department has disbanded. Analyzing the lowest income "area" in Edmonson County does nothing to even the playing field or compare to Barren County.

Throughout his collection of solar projects, Kirkland listed 8 of the solar projects more than once, in different regions for comparisons. These include Walton 2, Mulbery, Altavista, Walker, Whitehorn, Sappony Solar, Clark County Solar, and Spotsylvania. Surely with all of the other states, he could find additional projects without repeating. This is indictive of a consultant "cutting and pasting" and nothing has been updated since the first report was issued. In fact, of the projects he listed, they only cover the period as far back as 2012-2022. Only 9 are since 2021 and that seems ridiculous concerning the proliferation of solar development.

Demographics: Kirkland chose the location of Oak Grove Church Road as the center and he pulled data on a 1-, 3- and 5-mile radius. (Page 9) This is the most underdeveloped area in the entire solar project and the majority of this land is owned by one family who has been recipients of farming subsidies for years. Again, this is a design flaw because there is no center in Wood Duck's design. It is 27 parcels of land and homes are directly next to the Commercial solar utilities. So, the centerpoint and radius will move with the multiple sites.

This project stretches from Rick Road (on the south) which has large homes and farms valued extremely high.

Millstown Road is on the north and it has a variety of homes and farms with 20-30 homes. Some are large tracks of land with beautiful homes.

R. Crump Road is on the west and it has little development, but is across the road from the Amish community which will not be reflected in Kirkland's demographics.

Mayhew is the east side and it is a variety of pasture and crop land with a variety of homes.

A more accurate point of reference would be the intersection of Payne Road and Millstown Road and would increase the income levels and home values within each zone. It would definitely be a more accurate assessment of demographics than Rocky Hill in Edmonson County.

This project will touch 80 plus non participating adjoining properties.

However, since this project involves 27 separate tracks, the center point should move to more accurate reflect the design. The project involves 20-30 miles from end to end, so to pick one 5-mile radius is simply not applicable.

Photo | Geenex Solar

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This chart shows the acres of the projects that Kirkland includes in his study. This is embarrassing to think that a 17-acre solar development would have the same impact on property values as a commercial solar development of 2,200 acres.

Kirkland's Assessment of Solar Projects by Acreage			
Project Name	**City**	**State**	**Acres**
Bowling Green Solar	Bowling Green	KY	17.36
Crittenden Solar	Crittenden	KY	34.1
Cooperative Shelby Solar	Simpsonville	KY	35
Gastonia SC Solar	Gastonia	NC	35
Mariposa Solar	Stanley	NC	35.8
AM Best Solar Farm	Goldsboro	NC	38
Leonard Road Solar Farm	Hughesville	MD	47
Sunfish Farm	Willow Spring	NC	49.6
Camden Dam	Shiloh	NC	49.83
EW Brown Solar	Harrodsburg	KY	50
Tracy Solar	Baily	NC	50
Candace Solar	Princeton	NC	54
Portage Solar	Portage	IN	56
Walton 2 Solar	Walton	KY	58.03
Cooperative Solar I	Winchester	KY	63
Barefoot Bay Solar Farm	Barefoot Bay	FL	74.5
DG Amp Piqua	Piqua	OH	86
Grandy Solar	Grandy	NC	121
Dominion Indy	Indianapolis	IN	134
Grand Ridge Solar	Streator	IL	160
Mulberry	Selmer	TN	209
Clark County Solar	White Post	VA	234
Sappony Solar	Stony Creek	VA	322.68
Miami Dade Solar Farm	Miami	FL	346.8
Champion Solar	Pelion	SC	366.04
Innovative Solar 42	Fayetteville	NC	413
Walker **Correctional** Solar	Barhamsville	VA	485
Innovative Solar 46	Hope Mills	NC	532
Altavista Solar	Altavista	VA	720
McBride Place Solar Farm	Midland	NC	974.59
Manatee	Parrish	FL	1180
Summitt/Ranchlands Solar	Moyock	NC	2034
Whitehorn Solar	Gretna	VA	50 MW
Spotsylvania Solar	Paytes	VA	multiple phases

These solar projects do not compare to the Wood Duck project in size, scale, cost and scope and therefore, cannot support his unproven conclusion.

External Obsolescence (page 13). Kirkland states that he considers the following factors: traffic, odor, noise, environmental, appearance/viewshed and other factors (stating solar farms do not impede neighbors from using their homes) when considering value.

Google AI gives a much different explanation and in fact, the items he considers, are things which do affect the economic obsolescence: things that result in a loss of value that the owner cannot control. The *owner cannot control* that the newly added COMMERCIAL SOLAR UTILITY company has just changed the use and zoning of the land next door. The *owner cannot control* the increased heat, the increased noise, and the increase runoff in water from the disturbance of the delicate ecosystem. The *owner cannot control* that the scenic views, valued at substantial amounts, are destroyed with the installation of solar panels. The owner cannot fix these things that are forced upon them. This is a residential neighborhood and farmland that is now comingled with COMMERCIAL SOLAR UTILITIES.

Comingling residential homes and farm land with commercial solar utilities is not the best use of the land. It deprives the homeowner of equity and de-values their properties and adversely affects their lives. They can no longer enjoy the peaceful setting they had prior to solar installation.

External obsolescence, in the context of property value, refers to a loss in value due to factors outside of the property itself, according to Clear Capital. These external factors can include things like neighborhood decline, new zoning regulations, or environmental issues that negatively impact the area. Unlike functional obsolescence (deficiencies within the property itself) or physical deterioration (wear and tear)**, external obsolescence is generally considered uncurable, meaning the property owner cannot fix the situation by spending money on repairs.**

Here's a more detailed breakdown:

- Definition:

  External obsolescence is a type of depreciation that occurs when a property's value is reduced by external factors beyond the control of the property owner.

- Examples:
  - A residential neighborhood experiencing a decline due to a nearby industrial complex or increased crime rates.
  - New zoning regulations that restrict the highest and best use of the property.
  - Environmental issues like pollution or flooding that negatively impact the property's value.
- Incurable:

  External obsolescence is often considered incurable because the property owner has little or no control over the external factors causing the depreciation.

- Impact on Valuation:

  Appraisers must consider external obsolescence when determining a property's fair market value, as it can significantly reduce the property's worth.

- Difference from Functional Obsolescence:

  Functional obsolescence refers to deficiencies within the property itself, such as an outdated kitchen or plumbing, while external obsolescence is caused by factors outside the property.

- Economic Obsolescence:
  The term "economic obsolescence" is often used interchangeably with "external obsolescence," both referring to a loss in value due to external factors. Our farms and land will lose value due to the external factors that have been forced upon our community by this development.

Section IV: Research on Solar Farms: Kirkland has used the same research in multiple studies and they simply do not apply to the design and specifications of the Wood Duck project and contain many flaws.

CohnReznick Study – ADJACENT PROPERTY VALUE IMPACT STUDY A STUDY OF SIX EXISTING SOLAR FACILITIES. This study evaluated 6 solar projects, but as you can see, they are small developments: Marion County (134 acres) Indiana; Porter County (56 acres), Indiana; Madison County (13 acres), Indiana; La Salle County (160 acres), Illinois; Chisago County (1,000 acres on 1 parcel), Minnesota; and Lapeer County (170 acres) , Michigan.

These 6 properties do not resemble the Wood Duck project in any way. Wood Duck is 27 scattered sites and 2,200 acres. The results are not applicable.

Christian P. Kaila and Associates - 886 acres. This project was not approved by locals to proceed, so it appears the public had a different opinion.

Fred Beck – Mr. Beck is now deceased and the project he researched was not approved and did not go forward. The planning commission failed to approve the project.

NorthStar Appraisal Company – 800 acres with only 2 landowners. Project is in development, so no appraisals are available. There is nothing to compare here.

Mary McClinton Clay – This is a professional opinion that Kirkland disagrees with, so he devoted one page to criticizing her work. There is nothing to compare here.

Kevin T. Meeks - He assessed ONE property in Chisago County, Minnesota that was on ONE parcel of land. Again, nothing to compare with the design of the Wood Duck project.

Perhaps Mr. Kirkland would be better served to find new research. These are out dated, going as far back as 2013 and do not relate to the Wood Duck project.

It should be noted that there are various studies available with tremendous distinctions between urban and rural solar developments and the density of population in rural areas. There will always be fewer homes in rural areas as the land is generally undeveloped, thus, there will be fewer houses that will sell as these are generational homesteads. This certainly creates a challenge to find solid and applicable research. But jumping between states and

comparing "farms" of all different sizes and not having before and after comparisons does not provide evidence to render a conclusion. His research does not support his conclusion.

Section B: Articles - Kirkland provides summaries of 4 short articles which date back to 2016.

1. Farm Journal Guest Editor: simply an article of opinions that expresses nothing but love for solar.
2. National Renewable Energy Laboratory: a whitepaper written by a person who worked to develop solar projects. No credibility here.
3. North Carolina Clean Energy Technology Center: This is simply a hand-out and promotional material for potential participants and offers no research relating to property values.
4. North Carolina Clean Energy Technology Center: This is simply a hand-out and promotional materials for potential participants and offers no research relating to property values.

Section V. University Studies

A. Mr. Kirkland referenced a report from the University of Texas. He failed to include the decreases in property values.

Appendix D.7 - Estimating Property Value Impacts in Dollar Terms ($) To estimate property value impacts in dollar terms, we pulled county-level median home value from the U.S. Census Bureau's 2016 American Community Survey. The below table converts the estimates of property value impacts provided by survey respondents into dollars, based on the median home value in each respondent's county. If this impact were the true impact and the home values were the same for the whole county, then the results suggest that being located 100 feet from a 20MW solar installation would be associated with a $26,252 decline in home value, on average.

Estimates of Property Values Impacts($) by Size and Distance

	Median	Mean	Min	Max	St. Dev.	n
1.5 Megawatts						
100 feet	$0	-$18,874	-$98,760	$1,613	$31,621	17
500 feet	$0	-$9,926	-$74,070	$3,226	$19,841	18
1000 feet	$0	-$5,787	-$49,380	$4,839	$13,427	18
1/2 mile	$0	$411	$0	$6,452	$1,524	18
1 mile	$0	$877	$0	$9,989	$2,547	18
3 miles	$0	$1,098	$0	$11,416	$3,008	18
20 Megawatts						
100 feet	$0	-$26,252	-$119,400	$6,330	$40,673	18
500 feet	$0	-$17,230	-$76,600	$6,330	$27,051	18
1000 feet	$0	-$9,842	-$59,700	$951	$18,367	18
1/2 mile	$0	-$3,475	-$39,800	$4,281	$10,398	18
1 mile	$0	-$398	-$19,900	$8,562	$5,301	18
3 miles	$0	$866	$0	$11,416	$2,745	18
102 Megawatts						
100 feet	$0	-$24,136	-$119,400	$12,660	$38,859	17
500 feet	$0	-$20,998	-$79,600	$12,660	$31,354	18
1000 feet	$0	-$14,961	-$61,950	$0	$23,540	18
1/2 mile	$0	-$6,971	-$49,560	$951	$14,704	18
1 mile	$0	-$4,065	-$39,800	$2,854	$12,549	18
3 miles	$0	-$637	-$24,780	$11,416	$6,601	18

B. University of Rhode Island – The report has different numbers than what Kirkland has reported. Research in Massachusetts and Rhode Island in September 2020, estimated a net loss of $1.66 billion in aggregate housing value due to proximate solar installations.

Kirkland uses this study to justify pulling data from Rocky Hill (described above). Data which has absolutely no bearing on this project.

C. **Georgia Institute of Technology, October 2020.** It is interesting the quote that Kirkland picked out of this article. What the research actually states is that the agricultural land may increase by signaling the land's suitability for FUTURE solar development which occurs because of the electric transmission lines and infrastructure that is added for solar. This research does not support an increase in the value of the land because of farming or residential development. So, it may increase if sold to be a solar development, but as for a working farm with the scenic value that is paramount to farmers, it would not be an increase.

D. **Master's Thesis:** A solar farm in my backyard? Resident perspectives of Utility scale solar in Eastern North Carolina.

Again, Kirkland picks and chooses statements to support his claim of no impact, but failed to acknowledge the study design. This involves 4 solar projects ranging from 30-51 acres and in this study, the writer spoke with 70 people. He noted these are rural and undeveloped areas, densely populated.

Table 1. Selected solar farms in eastern North Carolina

Name	Location	Type	Size (Acre)	Capacity (MW)
Rams Horn Solar Center	Greenville	Distanced	46.21	8.00
Chocowinity Solar	Chocowinity	Adjacent	51.95	4.15
Andrew Solar	New Bern	Adjacent	30.32	5.00
Albemarle Solar Center	Kinston	Distanced	33.34	15.00

Rams Horn Solar Center (Greenville)

Chocowinity Solar Center(Chocowinity)

Albemarle Solar Center (Kinston)

Andrew Solar (New Bern)

Therefore, questioning someone about a contiguous piece of land behind their homes is considerably different than what is proposed in Barren County. We ask that this research not be considered as significant and applicable.

E. Lawrence Berkeley National Lab – the research indicates there is a reduction in the value of homes. Their samples are smaller solar projects and not the scattered site design proposed in Barren County.

Kirkland failed to include NEW research, published May 31, 2025 and on the world wide web June 3, 2025.

"The Local Cost of Clean Energy: Evidence from Solar Farm Siting and Home" 37 Pages Posted: 3 Jun 2025 Nino Abashidze, University of Wyoming

Abstract

"Local opposition to utility-scale solar farms often stems from concerns about declining nearby home values. This paper quantifies the impact of solar farm construction on residential property prices in North Carolina, one of the leading U.S. states for utility-scale solar capacity. Using detailed housing transaction data and a hedonic difference-in-differences framework, we estimate the causal effect of new solar farm operations on neighboring home sale prices. We employ a refined measure of spatial exposure—using street-network (road) distance rather than straight-line distance to define proximity—to better capture actual visual exposure in treatment assignment. **Our results indicate that the arrival of a solar farm leads to an approximately 8.7% reduction for homes within one mile relative to similar homes farther away. We also find evidence that local housing market activity declines after a solar farm becomes operational: the number of homes sold in the nearby area falls by roughly 6%, suggesting reduced housing liquidity in the vicinity of the new solar facility.**"

The bibliography is impressive:

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   Journal of Environmental Economics and Management. Forthcoming Posted: 2023
2. S Adomatis , B Hoen
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   The Appraisal Journal , volume 84 , issue 1 , p. 27 - 42 Posted: 2016
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5. J Currie , L Davis , M Greenstone , R Walker
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   American Economic Review , volume 105 , issue 2 , p. 678 - 709 Posted: 2015
6. S R Dastrup , J G Zivin , D L Costa , M E Kahn
   Understanding the solar home price premium: Electricity generation and 'green' social status
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7. V Gaur , C Lang
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8. D Guignet , D Hellerstein
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9. K Haninger , L Ma , C Timmins
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Renewable and Sustainable Energy Reviews. Forthcoming Posted: 2024
11. B Hoen , S Adomatis , T Jackson , J Graff-Zivin , M Thayer , G T Klise , R Wiser
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16. L B Laboratory
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Energy Economics , volume 66 , p. 328 - 336 Posted: 2017
22. B W Silverman
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    Disentangling property value impacts of environmental contamination from locally undesirable land uses: Implications for measuring post-cleanup stigma
    Journal of Urban Economics , volume 93 , p. 85 - 98 Posted: 2016
25. S Wee
    The effect of residential solar photovoltaic systems on home value: A case study of hawai 'i. Renewable energy , volume 91 , p. 282 - 292 Posted: 2016

A second article of significance:

Too close to the sun: solar farms' impact on housing prices at subtropical latitudes by Will Georgic, Goran Skosples, David Wolf and Robert J. Gitter, published online January 31, 2024.

Abstract

"While the transition from fossil fuels to renewable energy will benefit many constituencies, recent work suggests that newly activated solar panels may negatively impact nearby housing prices. Although a single mechanism driving these effects has not been causally identified, alternative explanations posit that homes near solar farms lose value either due to glare or the loss of open space amenities and associated rural character. We supplement this literature with an analysis distinguished by a unique sample with the most equatorial location to date and the largest average solar farm (26 MW), allowing for a careful investigation of the role of size and glare in the capitalization of solar farm proximity. Using hedonic analysis, manually traced solar farm footprints, and difference-in-differences identification, **we find a 6.86% negative capitalization of solar farm proximity that does not appear to be attributable to glare and is driven by the impacts of very large solar farms.** The results are robust to concerns of negative weights associated with bad controls. **To limit economic losses associated with the renewable energy transition, solar farms should be strategically located to minimize the number of nearby homes regardless of whether glare is likely to be a concern."**

In essence, the size of the solar farm has a 6.86% negative capitalization.

A third article of significance

House of the rising sun: The effect of utility-scale solar arrays on housing prices by Vasundhara Gaur and Corey Lang

Abstract

While utility-scale solar energy is important for reducing dependence on fossil fuels, solar arrays use significant amounts of land (about 5 acres per MW of capacity) and may create local land use dis-amenities. This paper seeks to quantify the externalities from nearby solar arrays using the hedonic method. We study the states of Massachusetts and Rhode Island, which have high population densities and ambitious renewable energy goals. Using difference-in-differences, repeat sales identification strategies, results suggest that houses

within 0.6 miles depreciate 1.5 – 3.6% following construction of a solar array. However, additional analysis reveals that this average effect is primarily driven by solar developments on farm and forest lands and in rural areas, which is intuitive given the composite impact of solar, loss of open space, and loss of rural character.

The hedonic housing price model (HPM) measures the implicit price of each attribute of a bundled good. Applied to the housing market, the idea is that the price of a property can be broken down into the price of its various attributes. These attributes can be structural (e.g., lot size, living area, number of bedrooms and bathrooms, presence of air conditioning or pool, etc.), neighborhood (e.g., school quality, proximity to shopping, etc.), and environmental (e.g., air and groundwater quality, tree cover, proximity to brownfield, etc.). It is unknown how the researchers considered the fields of solar panels. I would vote brownfield.

Scattered Sites versus Contiguous Designs

Kirkland pulled data from small solar arrays and NONE are comparable in shape to the scattered site designed proposed in Barren County. All of these are basically contiguous plots to some degree. None of his selected examples are 27 parcels of land on 10 different roads reaching approximately 20-30 miles through four communities.

In conclusion: Kirkland has failed to provide data on non-participating or participating properties **BEFORE** and **AFTER** from ANY state he has studied. NOT one home has sold that was next to a solar project that he can provide a before and after assessment. The mis-match between states comparisons are lacking in project integrity. He cannot and does not provide any substantial discussion as to factual findings.

We therefore, request that this report be given zero credibility. He failed to provide BEFORE and AFTER comparisons. He failed to consider commercial solar projects that are equal in size and shape. He failed to consider commercial solar properties in Kentucky and he pulled the poorest area in Edmonson County for demographic information to influence the data. Most of his data is old.

We need an accurate assessment of the impact of this development and believe this consultant to be unduly biased. Perhaps the Harvey Economics of Denver, Colorado could assist, but we need an agency that is non bias and willing to search for truth.

I have spoken with my real estate agent about selling my home and acres. She said she would lower it $100,000 and that would be **IF** she could sell it. Everything I have worked for my entire life will be de-valued due to a development that does not fit with the use of the land and does not contribute to the well-being of society. There is not a window in my house that I will be able to look out, that I will not see solar panels. My view will be completely obstructed and coming within 300 feet of my home and 10-feet of my property lines. I don't deserve this.

Allowing solar panels in this area is a disruption to the land use and creates a conflict between commercial and agricultural. It is an ecological disruption and it is a social equity issue. Why should we convert agricultural land and increase our food insecurity?

It is anticipated that all property value should increase each year. Everything goes up. Kirkland doesn't account for inflation and standard property value increases. There is no way that surrounding non participating properties will receive the "top dollar" they would have received had a solar development not infringed on their neighborhood.

My neighbors have beautiful homes, some are large, some are small. We are all thankful for our piece of the American Dream and no greedy land owner has the right to stick a commercial power plant in the middle of farmland based on a bogus study with no factual data saying it will have "no impact" on the rest of us.

We ask that you disregard this bogus study and cancel this project.

Sincerely,

Nancy West

Nancy West
1307 Millstown Road
Park City, KY 42061

Attachment: Barren County Fire Ordinance

BARREN COUNTY, KENTUCKY

AMENDED ORDINANCE NO. 148

AN ORDINANCE ESTABLISHING MINIMUM STANDARDS FOR FIRE PROTECTION IN BARREN COUNTY, KENTUCKY

BE IT HEREBY ORDAINED AS FOLLOWS:

WHEREAS, the cost of residential and commercial fire insurance have greatly increased in recent years; and,

WHEREAS, the residential and commercial development of Barren County has been considerable during the past ten years and is expected to continue into the year 2000 and that those residences and businesses continue to demand quality public safety services; and,

WHEREAS, the requirement to place fire hydrants will facilitate public safety services and fire protection particularly to the residents and businesses of Barren County, and the Barren Fiscal Court deems it to be in the best interest of Barren County to establish minimum standards for fire protection;

NOW THEREFORE, BE IT ORDAINED BY THE COUNTY OF BARREN, KENTUCKY, as follows:

These Regulations shall apply to all new major residential subdivisions, any series of minor residential subdivisions totaling five (5) or more lots, mobile home parks, and commercial buildings within Barren County.

1. Major Residential Subdivisions, any series of minor residential subdivisions totaling five (5) or more lots, and mobile home parks.

   FIRE HYDRANTS

   The following fire hydrant requirements shall apply to all major residential subdivisions, any series of minor residential subdivision totaling five (5) or more lots, and mobile home parks, fronting on public or private roads in the County of Barren:

   A. Fire Hydrant - Installation

      Fire hydrants shall be spaced not farther than 1000 feet apart as measured over public and private roads. Fire hydrants shall be connected to a new six inch or larger main or an existing four inch or larger main.

   B. Fire Hydrant - Type

      1. Fire hydrants shall meet with minimum specifications and be installed in conformity with the requirements of the serving utility and ISO standard.

      2. Fire hydrants shall be equipped with not less than two 2-1/2 inch outlets and a 4-1/2 inch pumper outlet with National Standard threads.

3. A gate valve shall be installed in the hydrant connection to the road main.

4. All water mains shall include fire hydrant branch connections.

2. Commercial Buildings and Development, Industrial Buildings and Development, and Multi-Family Residential Development.

A. Water Supply

1. Water mains shall be no less than six (6) inches in diameter, including fire hydrant branch connections, installed in conformity with the minimum requirements of the local water authorities.

2. Written approval of the Fire Chief of the responsible community fire department shall be obtained prior to the approval of a plat or prior to the issuance of a building permit.

3. Water mains shall be so arranged that the distance between intersecting mains does not exceed 1500 feet. If intersecting mains are at a distance in excess of 1500 feet, eight-inch or larger mains must be used.

4. Eight-inch mains shall be used where dead end and poor circulating gridironing is likely to exist for a considerable period of time, or where the layout of the streets and topographical characteristics are not well adapted to a circulating system.

5. The distribution system shall be equipped with a sufficient number of valves so located that breakage or other interruption will not cause the shut down of any portion of a main greater than 1500 feet. Wherever meters are installed in conjunction with fire hydrants, said meters shall be of the fire protection type and at least six inches in size.

B. Fire Hydrant Installation

1. Fire hydrant spacing shall not be less than that required for residential areas referred to above, and in addition, each building shall have hydrants within the following distances:

a. 500 feet distance – 1 hydrant

b. 1000 feet distance – 2 hydrants

c. 1500 feet distance – 3 hydrant

2. No part of the exterior of the buildings, other than dwellings, shall be further than 500 feet from a hydrant. Distances are to be measured along

the shortest feasible exterior route (never measured through buildings) for laying hose.

3. Fire hydrants must be located at least 25 feet from the exterior wall of any masonry building, and at least 50 feet from any exterior wall of frame or equivalent construction, including brick and stone veneer.

C. Fire Hydrant Type

1. Fire hydrants shall meet the minimum specifications and be installed in conformity with the requirements of the local water authorities.

2. Fire hydrants shall be equipped with not less than two 2-1/2 inch outlets and a 4-1/2 inch pumper outlet.

3. A gate valve must be installed in the hydrant connection to the road main.

4. The color of the hydrant shall be consistent with National Code.

3. City-County Planning Commission Responsibilities

The City-County Planning Commission shall require new major subdivisions, any series of minor residential subdivisions totaling five (5) or more lots, mobile home parks, and commercial subdivisions and developments in the County of Barren to comply with the fire hydrant and water supply requirements set out above.

4. Enforcement and Penalty

a. Before final approval of a plat or issuance of an occupancy permit, the developer/builder must post a cash bond of $2,000.00 per fire hydrant to be installed as specified in the above Ordinance. If hydrants are not installed within sixty (60) days of final approval of plats, forfeiture of bonds will take place or occupancy permit shall be denied in addition to forfeiture of bond.

b. Fire hydrants shall not be blocked by vegetation. Fire hydrants shall not be blocked at any time by vehicles, fences, buildings, or other enhancements to property. In no case shall any of the aforementioned items be closer than ten feet (10) to a hydrant, excepting livestock holding fences which may exist no closer than two feet (2) to a hydrant. However, no fence shall be built between a hydrant and the highway serving that hydrant.

c. Enforcement of 4b above shall be the responsibility of the Fire Chief of the responsible community fire department. The fine for non-compliance shall be set at $100.00 for first occurrence; then $500.00 for each subsequent occurrence, payable to the general fund of Barren County.