



Land Use and Ad Valorem Tax Abatement Analysis as it Pertains to Lee County's Solar Energy Systems Ordinance

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CENTER FOR SOUTH GEORGIA REGIONAL IMPACT

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Fiscal Impact of Large-Scale Solar Energy Systems (SES)

1. Executive Summary

Lee County is in the heart of Southwest Georgia and is a rapidly growing community attracting young families to the excellent school system, while providing a moderate climate and beautiful landscape interspersed with creeks, lakes, plantations, and traditional rural character. The southern portion of the county supports most of the residential, commercial, and industrial development. The City of Leesburg is home to the school system and governmental buildings and serves as the county seat. Lee County is dedicated to encouraging a healthy mix of land uses while protecting and preserving prime agricultural areas for continued agricultural and agriculturally oriented uses. The intent is to preserve the open character of the area and protect the business of agriculture. The northern portion of the county is predominantly zoned AG-1 (Active Agriculture District) and applies to lands in productive farm operations. Natural resources and abundant wildlife offer recreational opportunities and scenic corridors to this important area. Quality, well-planned growth and the provision of community services is important, and the county strives to ensure a balance of revenue and expenditures.

In January 2020, a Solar Energy Systems (SES) Ordinance ([Chapter 70, Article XXI](#)) was adopted by the county, and provides for the siting, construction, installation and decommissioning, general and specific requirements of any new SES facility, to be constructed and operated in the AG-1 zone, within the unincorporated area of Lee County. Numerous formal and informal inquiries regarding intermediate and large-scale solar energy system facilities have been received within the recent past.

The Board of Commissioners is concerned about the potential of substantial loss of existing agricultural land and farming operations within the county due to large scale solar energy system construction and operation. Certain proposals include requests for ad valorem tax abatements to finance construction of such solar facilities. It is not clear to the Board of Commissioners whether such proposed ad valorem tax abatements for the personal property of the solar array installed for the large-scale SES facilities have a positive or negative long-term effect on the county's ad valorem tax revenue.

On January 26, 2021, a Moratorium was declared upon the issuance of a conditional use permit for any large-scale SES facility through August 1, 2021. During this time, Lee County commissioned Valdosta State University to complete a careful and deliberate study of the short-term and long-term effects of the financing of the construction of SES facilities in Lee County through the use of revenue bonds and the use of long-term personal property ad valorem tax abatements to convince such large scale SES facilities to locate in Lee County, as well as the effect of such personal property tax abatements upon the ad valorem tax revenues of Lee County.

This report contains the results of this study. The impact of SES facilities was assessed in terms of two categories, fiscal impacts to county revenue sources and environmental impacts to land and property. The former category includes effects of using revenue bonds to incentivize SES development in Lee County, which produce positive fiscal impacts for the county. The latter category, however, includes impacts on agricultural land, viewshed and aesthetics, which can be negative when SES uses are inappropriately sited.

The final authority to zone land to permit SES uses and to allow or disallow the use of public financing incentives falls to the Lee County Board of Commissioners. The Board of Commissioners should adopt policies that encourage an appropriate mix of land uses, which preserve the aesthetics and character of Lee County, avoid adjacent developments that are incompatible with one another, preserve prime farmland and agricultural capacity, and promote sound fiscal policies for the county. To that end, the study's recommendations are as follows:

- Abatements and Incentives:
 - Large scale solar has fiscal benefits that offset environmental costs, when properly sited. Fiscal return to taxpayers of Lee County must be offset by concerns over loss of prime farmland, agricultural conversion, and incompatibility with adjacent land uses
 - By Board policy, subject to review and revision as circumstances surrounding bond costs change, limit abatements and incentives to large scale facilities that involve investments greater than \$25 million (approx. 25 MW capacity and larger under present conditions). Projects smaller than about \$3 million (3 MW) will not support bonding costs. Projects between \$3M and \$25M have a land area of about 100 acres or smaller, and incentives for these will encourage their placement near developed property.
 - 25 MW and larger projects should be eligible for a 25-year ad valorem tax abatement of 50% for each year for a 25-year term for personal property and equipment only. Real property and other improvements not related to SES should be taxed at current assessment and rate.
- Land Use and Zoning:
 - The current practice of permitting SES uses as conditional uses is appropriate and should continue, with strict enforcement of special provisions for stormwater management, screening, lighting, tree removal, decommissioning, setbacks, visual buffer, and signage.
 - Revise language of SES Ordinance provisions found at [Chapter 70, Article I, Section 70-6](#) to eliminate overlapping acreage requirements for small, intermediate, and large-scale SES; categories should be exhaustive and exclusive, e.g. less than 5 acres; 5 to 50 acres; over 50 acres, to prevent confusion.

Fiscal Analysis

Most SES projects will be located on property in current agricultural use and subject to Georgia's Conservation Land Use Valuation (CUVA) program, which sets values for agricultural and timberland at fixed rates, by region, based on soil quality. There are nine soil classes for the CUVA program, divided between agricultural (A1-A9) and timberland (T1-T9), with different

values based on soil productivity and location within regions across the State of Georgia¹. Lee County is in Region 7², with land valuation for each soil productivity class shown in Table 1.

Table 1: 2021 CUVA land values by land type and soil productivity class

Soil Productivity Class	Land Values	
	Timberland	Agricultural Land
1	\$819	\$1,128
2	\$745	\$1,022
3	\$679	\$908
4	\$609	\$790
5	\$537	\$677
6	\$469	\$567
7	\$400	\$438
8	\$328	\$332
9	\$259	\$224

The value of the CUVA is important because SES projects convert property from agricultural or timberland eligible for reduced land valuation for taxation purposes to commercial use that is ineligible for reduced valuation. Against an average land value of \$2,000 per acre, for example, 1000 acres of A5 land pays approximately \$19,369 less in property taxes.

Table 2: CUVA Tax Comparison for A5 Land (example)

Millage Rate	Assessed Value per Acre	Number of Acres	Assessment Rate	Property Tax
33.098	\$2,000	1000	40%	\$26,478.40
33.098	\$537	1000	40%	\$7,109.45

When property is removed from the CUVA before the expiration of 10 years, there is a penalty assessed that can equal up to twice the cumulative tax savings, plus interest³. In SES conversions, the project’s sponsor is responsible for penalties.

Landowners receive rental payments for property leased for SES use. Agreements may specify a lease payment to the owner, which can provide passive income for agricultural land converted to

¹ https://www.warnell.uga.edu/sites/default/files/publications/WSFNR-21-37C_Li.pdf

² Rules of Department of Revenue Local Government Services Division, Chapter 560-11-6 Conservation Use Property, available <https://dor.georgia.gov/local-government-services/digest-compliance-section/conservation-use-land-values>

³ <https://www.gfb.org/media-and-publications/georgia-neighbors.cms/post/27/8%20Things%20To%20Know%20About%20CUVA>

SES use. Lease payments of \$600 per acre per year are not uncommon⁴; therefore, owners have quite an incentive to pursue SES where conditions are accommodating.

Bond Financing

Bond financing is a way for development authorities in Georgia to provide tax exemption to economic development projects. By issuing a bond, the proceeds of which are transferred to the project owner in exchange for equity in the project, the project receives the tax-exempt status of the public entity purchasing these rights. The purchase is accompanied by a memorandum of agreement setting out other terms and conditions of the tax exemption and purchase, typically including a payment in lieu of taxes (PILOT) from the project owner that is sufficient to cover the costs of debt service and recover a portion of the property tax that would have been paid otherwise under sole, private ownership. The PILOT amount, which is less than usual property taxes, acts as an abatement of a portion of usual property taxes. The project Memorandum of Agreement (MOA) will also include provisions regarding the return of the public stake in ownership to the project owner at the end of the project agreement's term, which can be 10 years or longer. Project MOAs can be structured to provide incentives to economic development projects, enticing these to locate in one location instead of another. Development authorities have tremendous flexibility when negotiating MOAs and can structure them to provide benefits in addition to PILOT payments, such as education funding and frontloaded payments that act as a quick cash advance.

Bond financing has become a common tool for SES projects located in rural parts of Georgia. Generally, rural areas lack workforce and infrastructure to support traditional economic development efforts targeted toward business attraction, thus the use of incentives to attract SES projects can add substantially to the tax digest of a county. Georgia Power's power purchase agreements, for example, are typically in the 40-50 MW range, with terms of 20-25 years, but projects can range upward to 250 MW facilities. Current project costs of \$1 million per megawatt of solar power production. The addition of \$40-\$250 million in additional taxable personal property can be attractive, fiscally, to local governments.

As part of this study and analysis, analysis was conducted to estimate county revenues at different incentive levels and across different project sizes from \$5 million to \$250 million. The results, partially summarized in the tables below, indicate significant fiscal advantages to SES projects even at relatively low levels of subsidy. Additionally, the level of services required for SES projects is lower than service requirements for agriculture and forestry since water consumption and transportation requirements are less. Naturally, fiscal advantages must be balanced against other cost considerations as well as environmental impacts.

⁴ SES developer/landowner interviewed.

Table 3: Approximate Tax Revenue for a 25 MW SES Project

Total Taxable Base ⁵		\$114,300,000.00	
Abatement Level	20%	Total Collected	\$3,026,481.12
		Average Annual Payment	\$121,059.24
	30%	Total Collected	\$2,648,170.98
		Average Annual Payment	\$105,926.84
	50%	Total Collected	\$1,891,550.70
		Average Annual Payment	\$75,662.03
	65%	Total Collected	\$1,324,085.49
		Average Annual Payment	\$52,963.42
	80%	Total Collected	\$756,620.28
		Average Annual Payment	\$30,264.81

Table 4: Approximate Tax Revenue for a 75 MW SES Project

Total Taxable Base		\$342,900,000.00	
Abatement Level	20%	Total Collected	\$9,079,443.36
		Average Annual Payment	\$363,177.73
	30%	Total Collected	\$7,944,512.94
		Average Annual Payment	\$317,780.52
	50%	Total Collected	\$5,674,652.10
		Average Annual Payment	\$226,986.08
	65%	Total Collected	\$3,972,256.47
		Average Annual Payment	\$158,890.26
	80%	Total Collected	\$2,269,860.84
		Average Annual Payment	\$90,794.43

Table 5: Approximate Tax Revenue for a 150 MW SES Project

Total Taxable Base		\$685,800,000.00	
Abatement Level	20%	Total Collected	\$18,158,886.72
		Average Annual Payment	\$726,355.47
	30%	Total Collected	\$15,889,025.88
		Average Annual Payment	\$635,561.04
	50%	Total Collected	\$11,349,304.20
		Average Annual Payment	\$453,972.17
	65%	Total Collected	\$7,944,512.94
		Average Annual Payment	\$317,780.52
	80%	Total Collected	\$4,539,721.68
		Average Annual Payment	\$181,588.87

⁵ Values calculated with 25-year depreciation figures.

Table 6: Approximate Tax Revenue for a 250 MW SES Project

Total Taxable Base		\$1,143,000,000.00	
Abatement Level	20%	Total Collected	\$30,264,811.20
		Average Annual Payment	\$1,210,592.45
	30%	Total Collected	\$26,481,709.80
		Average Annual Payment	\$1,059,268.28
	50%	Total Collected	\$13,240,854.90
		Average Annual Payment	\$756,620.28
	65%	Total Collected	\$13,240,854.90
		Average Annual Payment	\$529,634.20
	80%	Total Collected	\$7,566,202.80
		Average Annual Payment	\$302,648.11

Environmental Analysis:

Siting decisions drive environmental impacts. SES development tends to be found on relatively flat and open land with maximum direct sunlight exposure. Clearing and grubbing, grading, and other land disturbance activities increase the cost of site preparation, therefore, existing open lands are preferable to forested lands for SES development. Property near transmission infrastructure is also preferred due to the cost of new grid access points and high voltage transmission lines. As a result of these siting factors, farmland is often the most attractive for SES development. SES are likely to produce less contaminated runoff, use less water, and generate less carbon emissions than agricultural uses, while reducing carbon emissions from other power alternatives. SES facilities have less impact on local transportation infrastructure since they require less heavy equipment or transportation after the initial period of construction.

However, SES uses may impact the availability of farmland for agricultural production, wildland and wildlife habitat, including pollinator plant species, and may create light and glare that disturbs neighboring use and enjoyment of property. As such, balanced mix of land uses requires guidance for determining the suitability of a site for locating SES and deciding whether and how to permit SES development. The Lee County Zoning Ordinance contains provisions to assist with this decision. In addition to these provisions, however, the following section provides recommendations for additional considerations that may be incorporated into SES permitting decisions. Noise is largely contained on site. SES that are improperly sited may require expensive transmission infrastructure to support, which can add additional impacts.

Environmental impacts are mitigated chiefly through location decisions that are governed by local land use regulations. Site suitability is driven by the needs of the developer and balanced against the public interest in preserving rural agricultural lands. Proximity to transmission infrastructure is key to location decisions, and restrictions on the right to construct high voltage transmission lines or transfer stations will limit the expansion of SES facilities into unsuitable territory. Where SES are permitted, site specific impacts are mitigated by requiring development practices that reduce or eliminate impact on soils, plants, wildlife, and adjacent land uses.

Land Use Regulations

The intent of the Lee County Zoning Ordinances' Agricultural District is to protect agricultural uses from threat or encroachment by other uses. Farmland, including especially those areas of prime farmland or farmland of statewide significance, is impossible to restore once destroyed. Lee County has abundant prime farmland or potential prime farmland in areas that can be protected from flooding. Within this district, the county permits SES development as a conditional use. There are no other zones in which SES development is allowed.

In general, conditional uses can be difficult to decide without clear guidance. Use of dissimilar standards can open decisionmakers to charges of arbitrariness. As a baseline, comparison to other uses by means of triangulation can help to determine initial suitability. Triangulation helps eliminate some of the potential for arbitrariness in land use decisions. SES have less impact than some agricultural uses, most light and heavy manufacturing, and most commercial uses. If the answer to any of the following is affirmative, then SES is likely an appropriate use in this location:

- All things being equal, if utilities were in place, would it be appropriate for heavy industrial uses to establish in this location?
- All things being equal, if utilities were in place, would it be appropriate for light industrial use to establish in this location?
- All things being equal, if utilities were in place, would it be appropriate for commercial use to establish in this location?
- Would Commercial Agricultural Feed Operation (CAFO) be permitted in this location to establish in this location?

Likewise, some uses are likely to be less compatible with locations that are appropriate for SES, so if the answer to the question below is affirmative then SES like likely NOT an appropriate use in this location:

- All things being equal, if utilities were in place, would it be appropriate for residential uses to establish in this location?
- Are there unique features that should be preserved against development at this location?

Once preliminary suitability has been established, questions regarding specific site conditions are necessary to determine whether the location is in fact suitable for SES development. The primary condition of concern in the AG-1 district is the presence of prime farmland, which covers a significant portion of the county's land area. While difficult, it is not impossible to establish disturbance standards that prevent excessive loss of prime farmland. The State of Minnesota, for example, has prohibited electric power generation in areas of prime farmland, unless the area disturbs less than 0.5 acres per MW of production is permissible without a variance demonstrating that the requested SES would be impossible to build elsewhere.⁶ Considerations for this determination, which is similar to that required in the AG-1 district in Lee County, include whether other nonprime farmland is available within a reasonable distance of

⁶ <https://casetext.com/regulation/minnesota-administrative-rules/agency-138-public-utilities-commission/chapter-7850-site-or-route-permit-power-plant-or-line/part-78504400-prohibited-sites>

transmission connections, the good faith effort described by applicants to find alternatives closer to transmission connections, descriptions of efforts to avoid other sensitive areas that may contribute to siting decisions. In some cases, siting an SES may be preferable to other agricultural uses; for example, where wellhead protection or watershed management plans call for protective buffers to prevent runoff or nitrate infiltration. Other mitigating decision factors include efforts to protect land from disturbance through minimal grading plans and low impact development, efforts to preserve pollinator habitat, co-location with other agricultural uses such as grazing or foraging areas, and plantings that would stabilize soils left in place so as to protect them from erosion for the duration of SES usage.⁷ Construction design can also impact soils. For example, ballast footers, which are broad platforms attached to the panels with ballast material (rocks) placed on holding trays to keep them in place. Understanding wind loads, slopes, and stability features of panels is critical for all footing types.⁸

⁷ <https://mn.gov/eera/web/doc/13929/>

⁸ <https://dokument.pub/keeping-solar-panels-secure-on-unstable-ground-flipbook-pdf.html>