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About Us

**SOLAR ARRAY
WORKGROUP**



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AGENDA

- ♦ Definitions
- ♦ Importance
- ♦ Benefits
- ♦ Concerns
- ♦ Questions
- ♦ Process
- ♦ Next Steps



DEFINITIONS: Solar “Farm★” vs. “Array”



Figure 1. Utility-scale solar facilities are large-scale uses that can have significant land-use impacts on communities. Photo by Flickr user U.S. Department of Energy/Michael Farla.

★ **USDA Definition of “FARM.”** Any place from which \$1000 of agricultural products* were produced and sold during a given year.” Products defined as “crops or head of various livestock species.”

Marketing Promotion Definition

- ♦ “Solar Farm★”

Actual Definition/Description

- ♦ “Large-Scale Solar Array”
- ♦ “Utility-Scale Solar Photovoltaic”
- ♦ “Solar Power Station”

“Location of utility-scale solar facilities is the single most important factor in evaluating an application because of the large amount of land required and the extended period that land is dedicated to this singular use.”

(American Planning Association, Oct. 2019)

Solar Arrays: By SIZE

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~< 1
kilowatt (kW)



1 Solar Panel
= 250 to 400 Watts

~ 1 to 10
kilowatt (kW)



~20 solar panels
= 5000 to 8000 Watts
= 5 to 8 kilowatts

~10 kilowatt (kW) to
~2 Megawatt (MW)



~3000-5000 solar panels
= 1 Megawatt
= ~5-10 acres
= power ~150 homes

~> 2 Megawatt (MW)
to Gigawatt (GW)



~500,000 solar panels
= 100MW = ~1000 acres
= power ~30,000 homes
= 1 data center (daytime)

Loudoun County:
~1000MW (1Gigawatt) =
5000 to 10,000 acres

Photo: Solar-powered Water Pumping for
Livestock, leafhousetea.com



Photo: Walsh Family Wine, Hillsboro

Photo: 100KW Grid Interactive Solar PV, Perry
Street Parking Garage VA Tech Blacksburg, VA

Photo: Dominion Energy 200,000 panel Solar
array on 125 acres, Remington, VA,
FauquierNow.com

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Solar Arrays: By USE

6

~< 1
kilowatt (kW)



~ 1 to 10
kilo Watt (kW)



Accessory Uses & Structures:
Allowed Use: Section 5-101(A)(16)
"A. Residential. 16. Solar power panels"

~10 kilo Watt (kW) to
~2 Mega Watt (MW)



~> 2
Mega Watt (MW)



**Commercial/Utility-Scale Solar Photovoltaic
Not Allowed Use in Loudoun**
Allowed: Code of VA § 15.2-2288.8
Included in Zoning Ordinance Rewrite

Photo: Solar-powered Water Pumping for
Livestock, leafhousetea.com



Photo: Walsh Family Wine, Hillsboro

Photo: 100KW Grid Interactive Solar PV, Perry
Street Parking Garage VA Tech Blacksburg, VA

Photo: Dominion Energy 200,000 panel Solar
array on 125 acres, Remington, VA,
FauquierNow.com

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LARGE SCALE SOLAR ARRAYS Are An Important Issue in Loudoun County



Spotsylvania County, Virginia

- **PROPOSALS:**
 - Loudoun landowners now getting offers
 - 20 acres and larger
- **POWER:**
 - Array provides 2 to over 20 Megawatts to electrical grid.
 - [Average home uses about 10,000 watts.]
- **PRICING:**
 - Offers pay RENT to landowners well over \$1000/acre per year, plus applicable taxes.
 - Example:
 - 1 megawatt = 5 to 6 acres
 - \$5,000 rent/megawatt = \$25K for 20 acres

Solar Offers to Loudoun Landowners




PARKING LOT CANOPIES



COMMERCIAL ROOFTOPS



GROUND-MOUNT ARRAYS



April 1, 2021

Dear [REDACTED],

We are a solar development company interested in long-term leasing part of your land to build a solar array. We have looked at your property, located at [REDACTED]. Your parcel has [REDACTED] acres.

We would like to lease at least 20 acres of your land to build a solar array. According to the Virginia solar incentive program, there is no limit on the size of the project per legal parcel. We are paying \$5,000 a MW, each MW takes up between 5-6 acres of land. For example, a 5 MW project would yield \$25,000 annually for 20 years.

Enclosed is a document listing the highlights of our program, and a third page showing an aerial view of your property and the tax ID written in red.

This is an opportunity to enjoy 20+ years of stable income. Time is of the essence given the limited capacity in the power grid.


Please contact me directly if this is of interest to you. If you do leave a voicemail or send an e-mail, please reference your tax ID (3rd page line 4).

Thank you for your time.

Sincerely,

Derek Papagianopoulos
Director of Acquisitions
(844) 965-7652
derek@omni-navitas.com

OMNI NAVITAS HOLDINGS, LLC
73 CENTRAL ST., 3RD FLOOR, BOSTON, MA 02109
WWW.OMNI-NAVITAS.COM



Highlights of Solar Ground-Mount Proposal for Owner (Virginia)

- Omni Navitas will long-term lease Owner's property (20 years plus four 5-year options).
- Annual rent is based on \$5,000 per megawatt AC, a megawatt usually takes up 5 or 6 acres.
- Land must be cleared by Owner.
- Omni Navitas will pay all of the approval costs and is responsible for all costs to construct the solar project, which will include a fence around project.
- Omni Navitas will be responsible for the ongoing maintenance of the solar project over the life of the lease. This will include property and liability insurance, and all real estate taxes related to the solar project.
- Omni Navitas will take all tax credits, benefits, and electricity generated by the solar project.
- Upon expiration of the lease, Omni Navitas will either sign a new lease with the Owner or remove the solar project.

OMNI NAVITAS HOLDINGS, LLC
73 CENTRAL ST., 3RD FLOOR, BOSTON, MA 02109
WWW.OMNI-NAVITAS.COM

- Long-term 20-year lease plus four 5-year options
- Land cleared by owner
- Company pays all approval & construction costs (including fencing)
- Pays maintenance, liability and real estate taxes
- Company takes all tax credits, benefits and electricity
- \$5,000/megawatt = 5 or 6 acres = \$25K/yr. for 20 acres
- At Expiration: new lease or remove solar project

Web Capital Consulting, LLC

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Solar Offers to Loudoun Landowners



February 15, 2021

Dear Landowner,

I am reaching out about leasing your property in Loudoun County, VA. We are a solar energy development company with relevant experience in developing over 50 solar farms in neighboring North Carolina. We specialize in the development, permitting, engineering, financing, and construction of solar farms across the U.S.

I am interested in leasing your land because of its proximity to a Dominion Energy substation and power distribution lines. I would like to speak with you about a long-term lease on your property. **Our lease rate starts at \$1,350.00 per acre per year with an annual escalator.** We build the solar farms with our own capital at no cost to you, we insure the property, we maintain the solar farm, and we pay any increase in the property taxes.

Solar farms create a long-term income for landowners. In this envelope, I have included two informational documents related to leasing your land:

- A Frequently Asked Questions (FAQ)
- Our Letter of Intent (LOI) to lease your land

I would be pleased to meet you at your property, adhere to social distancing, and wear a face mask if you would like, so that we can discuss how you can farm the sun! Feel free to give me a call on my cell at 412-874-4667 or you can email me at: ncouch@esa-solar.com

Best Regards,

Neil Couch

Neil Couch
Project Developer
email: ncouch@esa-solar.com
phone: 412-874-4667



We Want Your Land!

- Ameresco, Inc. (NYSE: AMRC), a leading energy services company, is seeking real estate in Virginia to buy or lease for the development of solar power.
- You may be able to earn income by selling or leasing your land for a solar development project.
- In exchange for leasing your property and your permission to build a solar project, Ameresco is prepared to offer you attractive lease payments for 20 years or more.
- In exchange for selling your property, Ameresco is prepared to offer you a competitive market price.
- Contact us for more information!

Contact Info:
Call: (508) 598-3088
Email: thealy@ameresco.com
Visit: <https://info.ameresco.com/solar-land-lease>

Web Capital Consulting, LLC

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Solar Array Benefits to Landowners & Community

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They can provide economic and clean electricity.



Provide new and useful income to farmers and other property owners.



Allow some limited agricultural use while they are installed.



And can be removed at the end of the lease period with little or no long-term impact.

Photo: Sean Nealon, Oregon State University

Photo: Sunset Hills Vineyard, Purcellville, VA



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But – Solar Arrays Can Raise Concerns

- **Uses** Impacts on agriculture, equestrian, grazing
- **Environment** Effect on birds, wildlife, water, biodiversity, soils and forest land
- **Historic sites** Impacts and areas
- **Viewsheds** Effect on valuable areas and neighbors
- **Tourism** Impact
- **Glare** Effects on aircraft and motorists
- **Maintenance** requirements and effects of cleaning
- **Revenue:** TBD tax for Loudoun



Glare viewed from the air traffic control tower at Manchester-Boston Regional Airport that impacted controllers. Rows of PV panels, installed at a cost of \$3.5 million, had to be covered with tarp. Photo courtesy of: Stephen B Barrett



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OUR MAJOR QUESTION:

How To Guide Toward the Best Outcome for Loudoun?

Should Loudoun:

- Encourage solar arrays on poorer soils, brownfields, industrial and commercial rooftops?
- Encourage arrays near major power users?
- Restrain or prohibit arrays in sensitive locations?
- Set limits on individual property array size and on total amount in Loudoun?
- Set guidelines for acceptable maintenance practices?



Current Litigation

Solar array in floodplain, limestone overlay, providing electricity expanded beyond “accessory” use.

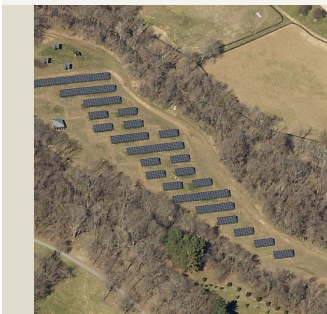
Va. Code § 15.2-2288.7(2) and 2018 Acts of Assembly Ch. 495 and 496, approved March 29, 2018.

2. That the provisions of this act with respect to ground-mounted solar energy generation facilities **shall become effective on January 1, 2019**. Unless a locality regulates ground-mounted solar facilities in the provisions of its zoning ordinance as a **permitted principal or accessory use**, or expressly as a solar facility, a ground-mounted solar energy generation facility **existing as of January 1, 2018**, shall be deemed a **legally existing nonconforming use** under § 15.2-2307 of the Code of Virginia and shall not be subject to removal.

Unless a local ordinance provides otherwise, a ground-mounted solar energy generation facility to be **located on property zoned agricultural** and to be operated under § **56-594 or 56-594.2** **shall be permitted**, provided that such installation is

- (a) in compliance with any height and setback requirements in the zoning district where such property is located and
- (b) in compliance with any provisions pertaining to any local historic, architectural preservation, or corridor protection district adopted pursuant to § 15.2-2306 where such property is located.

Except as otherwise provided herein, any other **solar facility proposed on property zoned agricultural**, including any solar facility that is designed to serve, or **serves, the electricity or thermal needs of any property other than the property where such facilities are located**, shall be subject to any applicable zoning regulations of the locality.



Loudoun Needs Appropriate Regulations, Transparent Review and Approval Process

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Current State Code encourages solar; gives regulatory authority to County.

County Authority

Current County Zoning regulations

- lack performance standards
- do not address commercial use
- or adequately for residential use.

Current Regulations

Process for handling and reviewing applications is unclear – therefore undefined use definitions and regulations could create loopholes.

Process v. Loopholes

New Regulations

New Zoning regulations will take time, but large scale array applications are likely soon.
LOCATION based regulation?

Interim Requirements

1. NEED **SHORT TERM RESTRAINT**
2. While longer term approach is determined and approved thru ZOR
3. No Special Exceptions

*Prevent
Premature
Precedents*



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Solar Workgroup is Assessing Situation

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- Reviewing solar basics
- Defining sensitive locations and regulatory alternatives
- Examining how other jurisdictions addressing this issue
- Investigating financial/ tax
- Meeting with county officials and other experts
- Developing recommendations for the county



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ZOR Staff Work In Progress: WSP Code Audit

2019 Comp Plan review of
Solar zoning regs *included*
in Zoning Ordinance
Rewrite (ZOR)
Uses & Standards.

Solar Array Workgroup:
Assisting Staff with
research for Solar BMI.

Sustainable Development Practices		
Adopt solar zoning and permitting best practices for accessory use solar development arrays	Solar power panels are a permitted residential accessory use (Section 5-101(A)(16)). The Board of Supervisors recently endorsed national standards for the use of solar panels and battery technologies for solar photovoltaic (electric energy) projects. However, the Zoning Ordinance currently does not define solar uses or include specific standards for such uses.	<ul style="list-style-type: none"> • Include and define specific use categories for accessory and utility scale solar facilities • The County can deem a solar facility to be substantially in accord with the comprehensive plan according to specified criteria (Code of Virginia § 15.2-2232.H). • The County may include in the Zoning Ordinance reasonable regulations and provisions for a special exception for any solar photovoltaic project, pursuant to Code of Virginia § 15.2-2288.8 • The County may include in the Zoning Ordinance provisions to incorporate generally accepted national environmental protection and product safety standards for the use of solar panels and battery technologies for solar photovoltaic (electric energy) projects (Code of Virginia § 15.2-2286) • Include standards for solar facilities that are consistent with the Code of Virginia, including both the plan
Support solar farms with locational criteria to be identified.	Regulation of roof-and ground-mounted solar facilities serving individual properties, is limited to the height and setback requirements of the underlying zoning district and provisions related to historic, architectural preservation, and corridor protection requirements. (Code of Virginia § 15.2-2288.7. Local regulation of solar facilities).	
Establish zoning regulations and design standards that permit alternative electrical generation such as wind and solar generation by and for individual users.		

DISCUSSION



How do solar arrays fit the vision for Loudoun County?



Loudoun Coalition Solar Workgroup assistance



Other ideas or questions that need addressing?

Additional Research



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Examples: Solar Parking Canopies



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Code of VA:

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§ 67-103. Role of local governments in achieving objectives of the Commonwealth Energy Policy.

In the development of any local ordinance addressing the siting of renewable energy facilities that generate electricity from wind or solar resources, the ordinance shall:

1. Be consistent with the provisions of the Commonwealth Energy Policy pursuant to subsection C of § [67-102](#);
2. Provide **reasonable criteria to be addressed in the siting** of any renewable energy facility that generates electricity from wind and solar resources. The criteria shall provide for the protection of the locality in a manner consistent with the goals of the Commonwealth to promote the generation of energy from wind and solar resources; and
3. Include **provisions establishing reasonable requirements** upon the siting of any such renewable energy facility, including **provisions limiting noise, requiring buffer areas and setbacks, and addressing generation facility decommissioning.**

Any measures required by the ordinance shall be consistent with the locality's existing ordinances. 2011, c. [750](#).



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Code of VA:

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§ 67-701. Covenants regarding solar power.

- A. **No community association shall prohibit an owner from installing a solar energy collection device on that owner's property unless the recorded declaration for that community association establishes such a prohibition.** However a **community association may establish reasonable restrictions concerning the size, place, and manner of placement** of such solar energy collection devices on property designated and intended for individual ownership and use. Any resale certificate pursuant to § [55.1-1990](#) and any disclosure packet pursuant to § [55.1-1809](#), as applicable, given to a purchaser shall contain a statement setting forth any restriction, limitation, or prohibition on the right of an owner to install or use solar energy collection devices on his property.
- B. A restriction shall be deemed not to be reasonable if application of the restriction to a particular proposal (i) increases the cost of installation of the solar energy collection device by five percent over the projected cost of the initially proposed installation or (ii) reduces the energy production by the solar energy collection device by 10 percent below the projected energy production of the initially proposed installation. The owner shall provide documentation prepared by an independent solar panel design specialist, who is certified by the North American Board of Certified Energy Practitioners and is licensed in Virginia, that is satisfactory to the community association to show that the restriction is not reasonable according to the criteria established in this subsection.
- C. The community association may prohibit or restrict the installation of solar energy collection devices on the common elements or common area within the real estate development served by the community association. **A community association may establish reasonable restrictions as to the number, size, place, and manner of placement or installation of any solar energy collection device installed on the common elements or common area.**

2006, c. [939](#); 2008, c. [881](#); 2009, c. [866](#); 2013, c. [357](#); 2014, c. [525](#); 2020, cc. [272](#), [795](#).



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ZOR Proposed Definitions (*in progress*):

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Solar Facility, Site-specific

A solar facility that **serves only the electricity or thermal needs of the dwelling unit, building, or lot** on which it is installed.

"Solar facility" means a "rooftop solar installation" or "solar energy system" as defined in Code of Virginia, § 56-576.

Solar Facility, Commercial

A solar facility (see definition in "solar facility, site specific") that is designed to **serve, or serves, the electricity or thermal needs of any property other than the property where the facility is located.**

[Note:

"**Rooftop solar installation**" means a distributed electric generation facility, storage facility, or generation and storage facility utilizing energy derived from sunlight, with a rated capacity of not less than 50 kilowatts, that is installed on the roof structure of an incumbent electric utility's commercial or industrial class customer, including host sites on commercial buildings, multifamily residential buildings, school or university buildings, and buildings of a church or religious body.

"**Solar energy system**" means a system of components that produces heat or electricity, or both, from sunlight.]



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Current Zoning vs. County TAX Policies

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County Planning & Zoning Permitted Uses (recap)

Allowed:

- Residential Accessory Use & Structure ("Solar panels")

Not Allowed:

- Commercial & Industrial Solar Arrays



Commissioner of Revenue County Tax Subsidy – Solar Arrays

Loudoun recently adopted the **state approach** for large solar arrays which is *Forgive 80% of the normal tax in the first 5 years, 70% in the second 5 years, and 60% thereafter.*



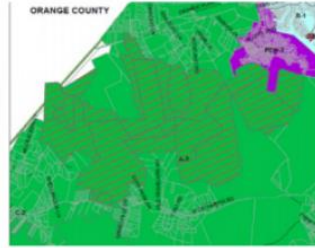
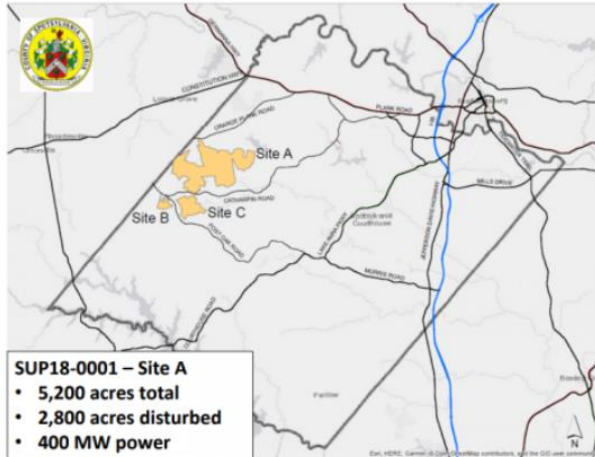
Applicable tax for commercial scale arrays either **Personal property rate** (\$4.20/\$100 of assessed value) or **Machinery & tools rate** (\$2.75/\$100 assessed value)

Solar Arrays involve millions of dollars of installed equipment – *this is a **major subsidy to solar companies** provided by the county.*



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Special Use Permit Application



All properties are zoned A-3. Properties have a future land use designation of Rural Residential or Agricultural and Forestal Land Use development per the Comp. Plan.

- 5,200 acres approved Site A
- 80 %cent of the 6,350-acre
- 3,500 acres will be disturbed, with the remainder serving as buffers, resource protection areas and wildlife corridors.
- Expected to generate 400 of the 500 megawatts



Spotsylvania County

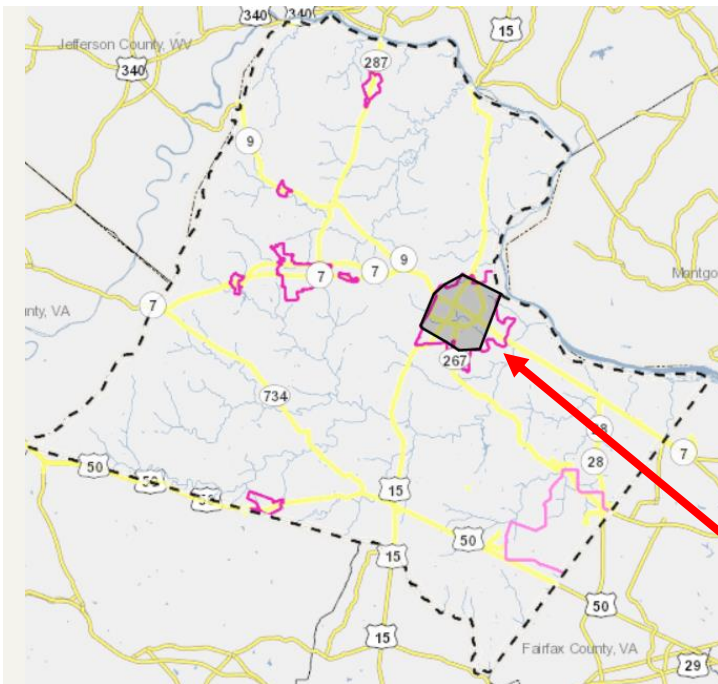
<https://www.virginiamercury.com/2019/04/10/biggest-piece-of-spotsylvania-solar-farm-approved/>



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Spotsylvania Array on Loudoun County

<https://www.virginiamercury.com/2019/04/10/biggest-piece-of-spotsylvania-solar-farm-approved/>



- **6350 acres**, 5,200 acres approved Site A
- 80% (3500 acres) will be disturbed, with the remainder serving as buffers, resource protection areas and wildlife corridors.
- 1.8 million solar panels
- Expected to generate 500 megawatts



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Current 1993 Zoning Ordinance – *Property Rights*

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All buildings & Structures require a Zoning Permit. Permits are only given for defined/permitted uses.

1-103 Application of Ordinance.

(A) Territorial Application. The regulations and restrictions in this Ordinance shall apply to all buildings, structures, land, water and uses within the unincorporated area of Loudoun County, Virginia, excepting those areas determined by law to be under the sovereign control of the United States of America or the Commonwealth of Virginia.

(B) General Application. All buildings and structures erected hereafter, all uses of land, water or buildings established hereafter, all structural alterations or relocations of existing buildings occurring hereafter, and all enlargements of, additions to, changes in and relocations of existing uses occurring hereafter shall be subject to all regulations of this Ordinance which are applicable to the zoning districts in which such buildings, structures, uses or land are located. Existing buildings, structures and uses which comply with the regulations of this Ordinance shall likewise be subject to all regulations of this Ordinance. Existing buildings, structures and uses which do not comply with the regulations of this Ordinance shall be allowed to continue subject to the provisions of Section 1-400 of this Article relating to nonconformities.

(C) General Prohibition. No building or structure; no use of any building, structure or land; and no lot of record now or hereafter existing shall hereafter be established, altered, moved, diminished, divided, eliminated or maintained in any manner except in conformity with the provisions of this Ordinance.

Exemptions do Not include Solar Panels/ Arrays

(1) Pursuant to Section 56-46.1 of the Code of Virginia, electrical transmission lines of 150 kV or more, approved by the State Corporation Commission, shall be deemed to have satisfied the requirements of this ordinance. In addition, the following utility uses are exempt from the provisions of this article: poles, wires, cables, conduits, vaults, laterals, pipes, mains, valves or any other similar equipment when used for the purpose of distributing service to individual customers, but not including substations, transmission lines, or trunk lines located on or above the surface of the ground, for the distribution to consumers of telephone, cable television or other communications, electricity, gas or water; or for the collection of sewage or surface water.

(2) The zoning district building height limitations of this Ordinance shall not apply to towers, gables, penthouses, scenery lofts, cupolas, barns, silos, farm buildings, residential chimneys, spires, flag poles, monuments or transmission towers and cables, telecommunications or data transfer antennas or other similar structures and necessary mechanical appurtenances; nor to any smokestack, water tank, radio or television antenna or tower not exceeding in height the distance therefrom to the nearest lot line; provided that this height limitation shall not apply to any of the above enumerated structures now or hereafter located on existing public utility easements.

(3) Stream Restoration and Wetland Mitigation shall be exempt from the zoning district requirements in Articles 2, 3 and 4 except for the following environmental overlay districts: FOD - Floodplain Overlay District, Section 4-1500; MDOD - Mountainside Development Overlay District, Section 4-1600; LOD - Limestone Overlay District, Section 4-1900.

Research: Issues/Considerations

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Storm Water Management

- Solar arrays classified as permeable –clearly allow rainwater to reach the ground.
- However, Arrays concentrate flow into specific locations - which can cause erosion especially during storms.
- In some cases that erosion has been sufficient enough to actually cause the array structure to tilt.
- Storm water management provisions should be included in regulations for large scale solar and additional limits on locations where such damage could be a problem.

Bankruptcy of Solar Firms

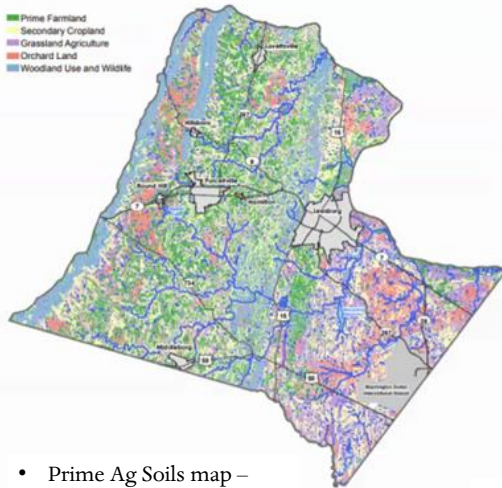
- Solar array leases are lengthy - 20 years or more, with no guarantee firm will continue in business for that entire time.
- If firm abandons project -- what happens to the equipment and property?
- Issue is land owners need to insure they are protected from this eventuality; easy reversibility may be part of 20 year contract, but is not assured.
- Financial bond to cover dismantlement at end of lease (or other time) may address concerns.

Uniqueness vs. Commodity Issues

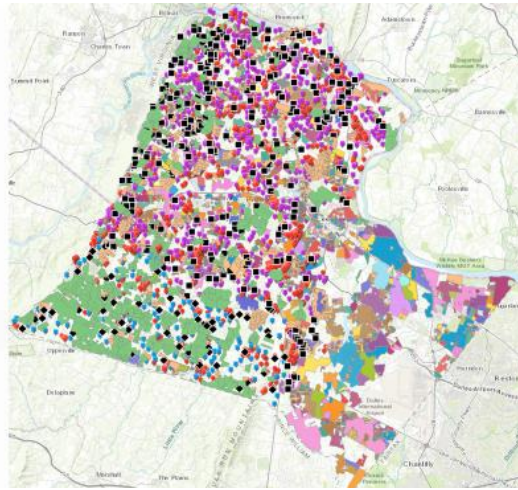
- There is only a certain amount of solar power our regional electrical system can utilize.
- Utility sized solar plants power plants can be located essentially anywhere and, through electrical grid, still provide desired climate, environmental and other benefits.
- But, some landscapes are unique and especially valuable – like much of ours.
- Loudoun Rural Economy is based on factors that irresponsible siting of large scale solar may damage – including its historic authenticity, agricultural economy, appeal to visitors.
- Must ensure that what does get located here is a useful supplement to our economy and lifestyle – not a displacement.

Current Land Use: What's at Risk?

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- Prime Ag Soils map – 2019 Comprehensive Plan



- AR-1 20+ ac Vacant
- ◆ AR-2 40+ ac vacant
- AR-1 20+ ac Improved
- AR-2 40+ ac Improved
- AR-1, AR-2 Recombined parcels
- County Development easement
- Gift/private easement
- Color polygons = Residential communities

- Parcels **ELIGIBLE** under current (1993) Zoning for Cluster development,
- Parcels **ELIGIBLE/ LIKELY** receiving solar array solicitation letters.
- Note: Solar solicitations also being sent to land under conservation easement



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