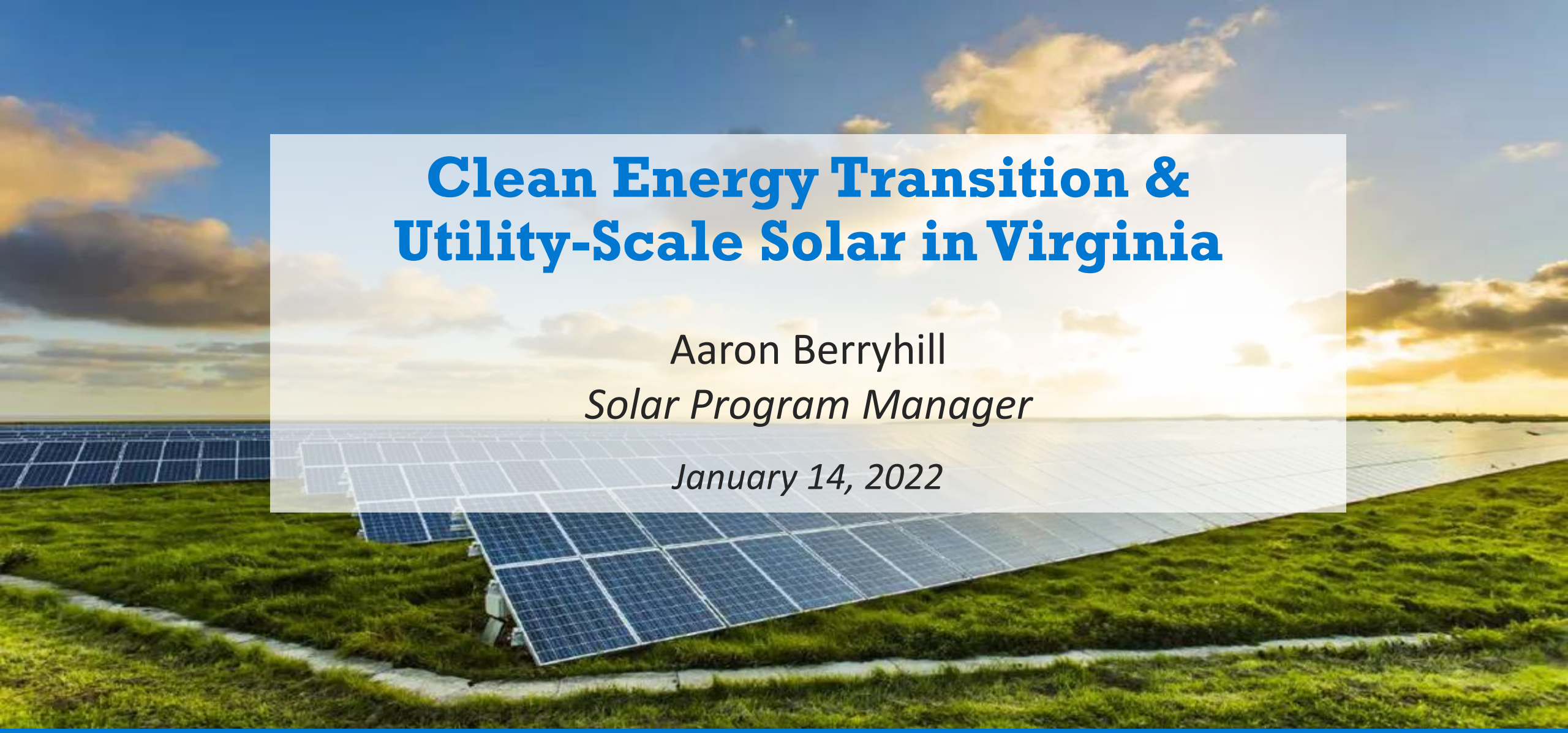

Clean Energy Transition & Utility-Scale Solar in Virginia

Aaron Berryhill

Solar Program Manager

January 14, 2022

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About Virginia Energy and the Virginia Solar Initiative

- **VA Department of Energy** rebranded from the Department of Mines, Minerals and Energy (DMME) on October 1, 2021
  - Stronger focus on clean energy and economic development
  - Worker safety and the environment remain priorities
- **Virginia Solar Initiative** established at the UVA Weldon Cooper Center in 2019
  - Goals to reduce policy uncertainty, promote informed decision-making, and deliver technical assistance
  - Work includes research, outreach, resources, surveys, and education

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ENERGY TRANSITION INITIATIVE AT UVA

Outline for Today's Presentation

-Solar Development Trends

-Virginia Policy Context

-Development and Permitting Considerations

-Resources

-Q&A

Solar Development Trends

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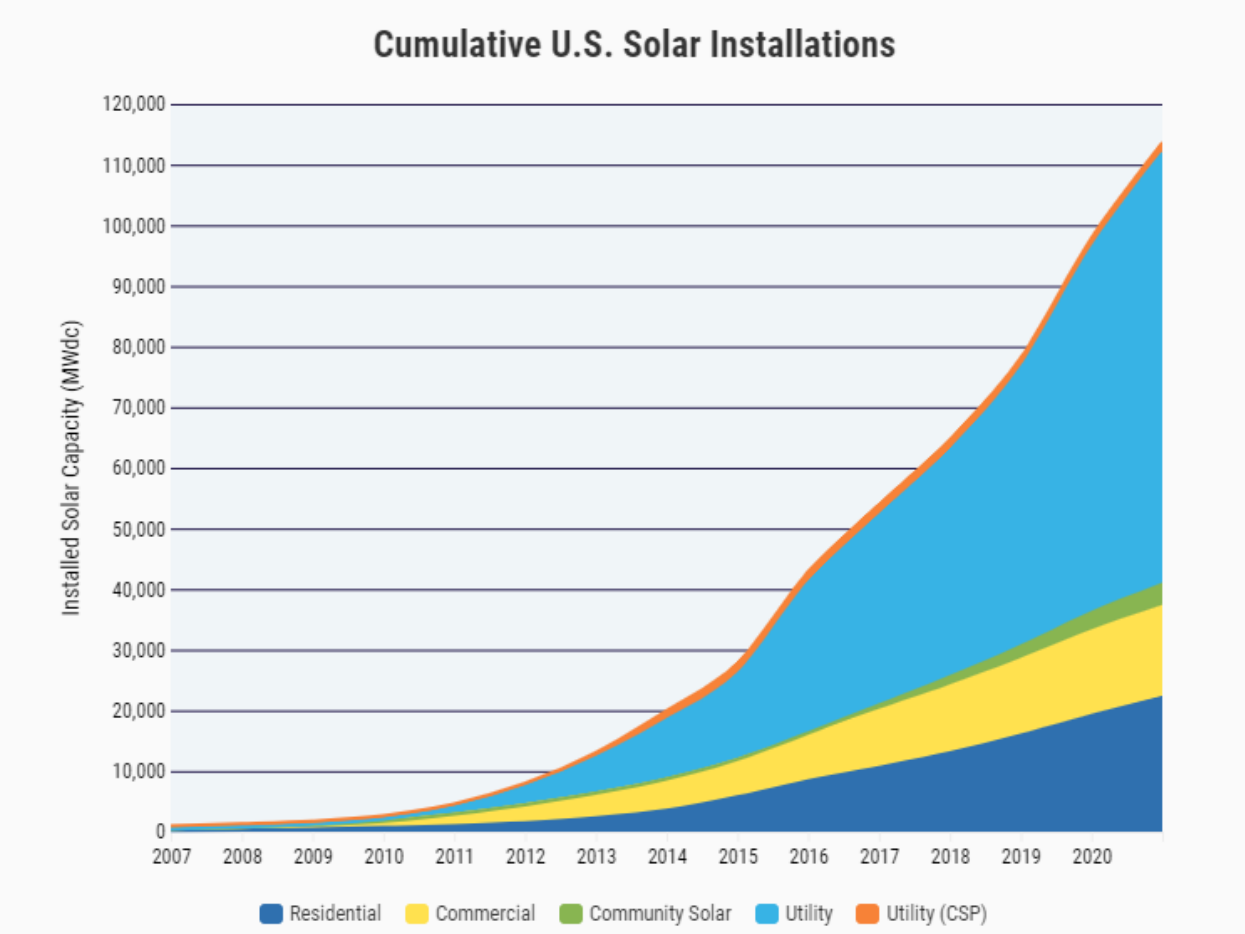
Exponential Growth in Solar Installations-U.S.



Source: https://www.seia.org/research-resources/major-solar-projects-list

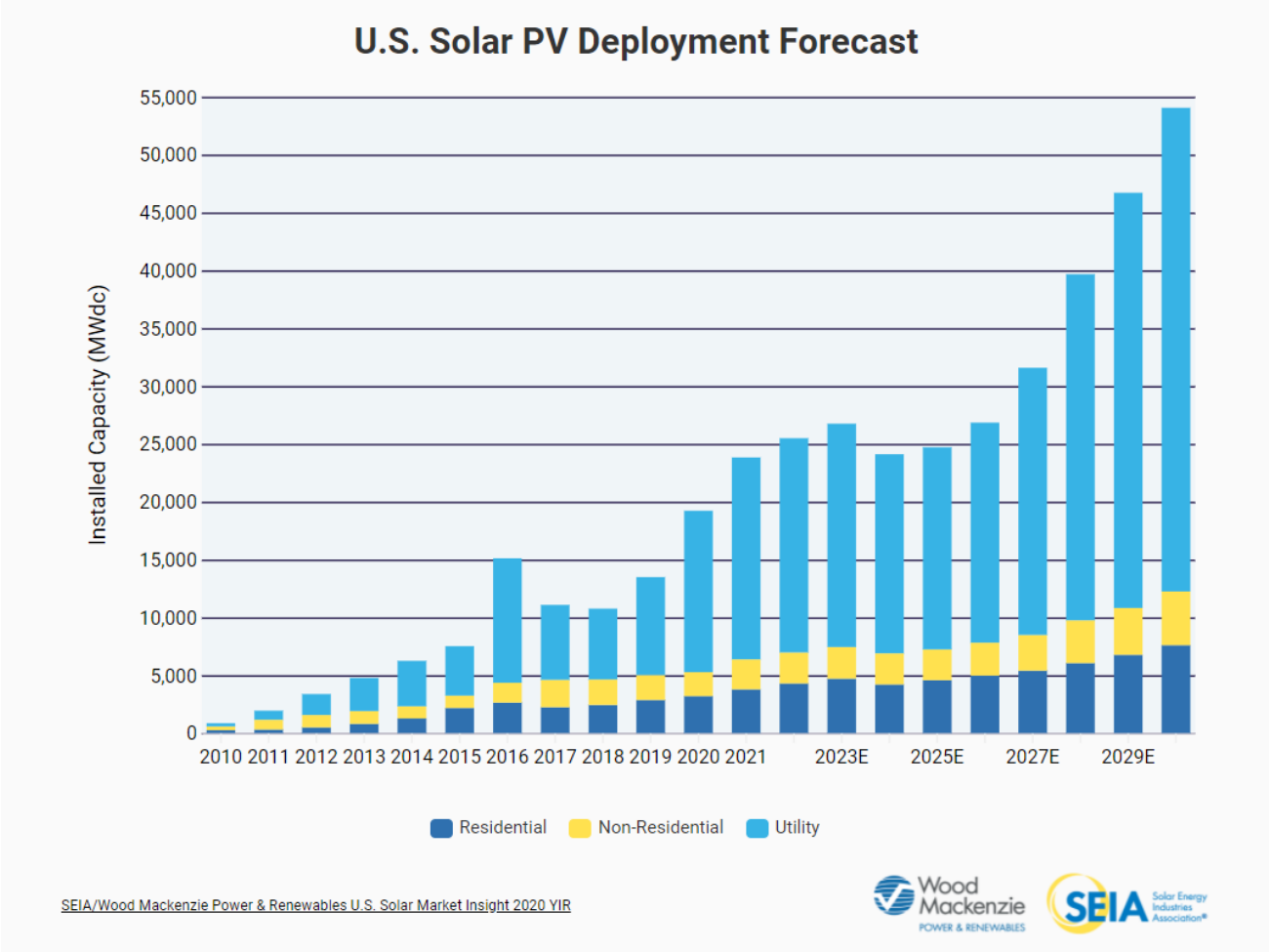
Factors:

- Increased market demand
  - Data centers
  - Corporate mandates
- Declining cost of solar PV
  - Hardware and soft costs
- Favorable policy environment
  - Federal and State
  - Ex: Solar Investment Tax Credit

Benefits:

- Clean, renewable energy
- Economic development and job creation
- Storage and Resiliency
- Fixed price, cost effective

Solar PV Forecast

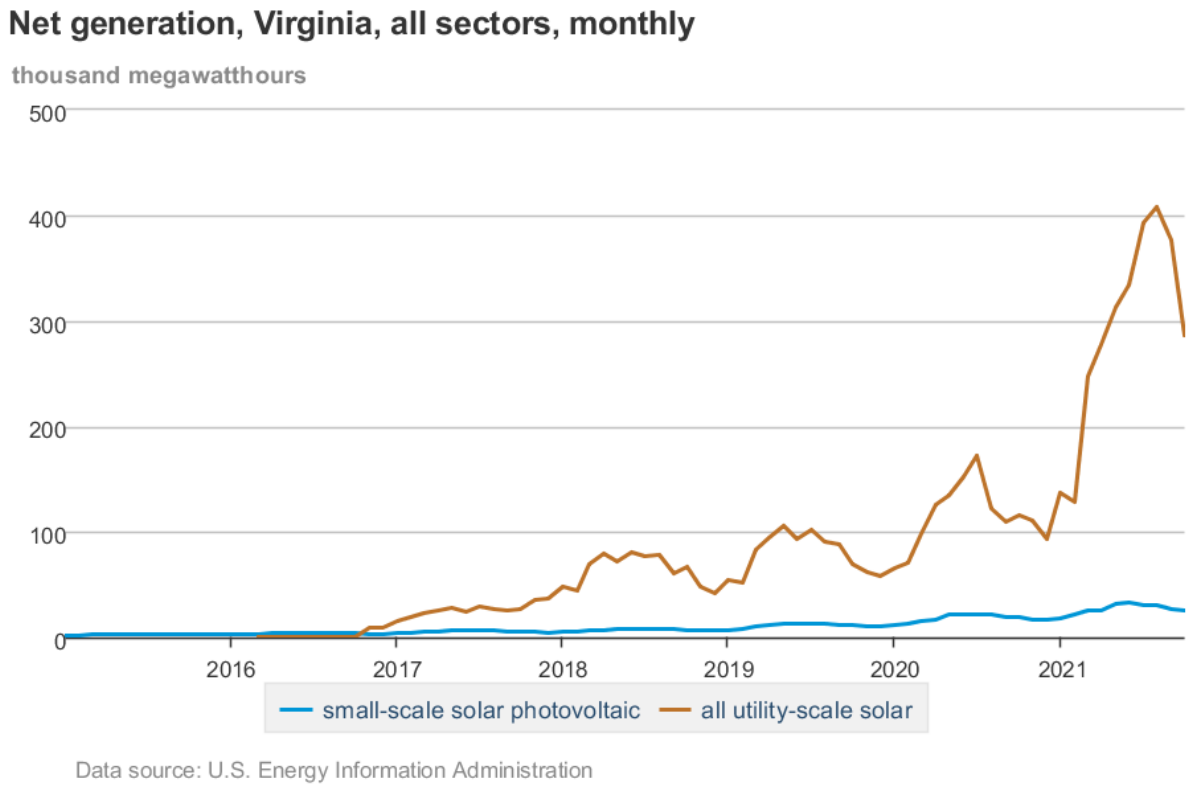


Factors:

- Technological advances
- Low cost, clean energy
- Carbon reduction policies
- Increased energy demands
  - Data centers
  - Business RPS
  - Transportation, EV
  - Electrification of…
- Energy Storage

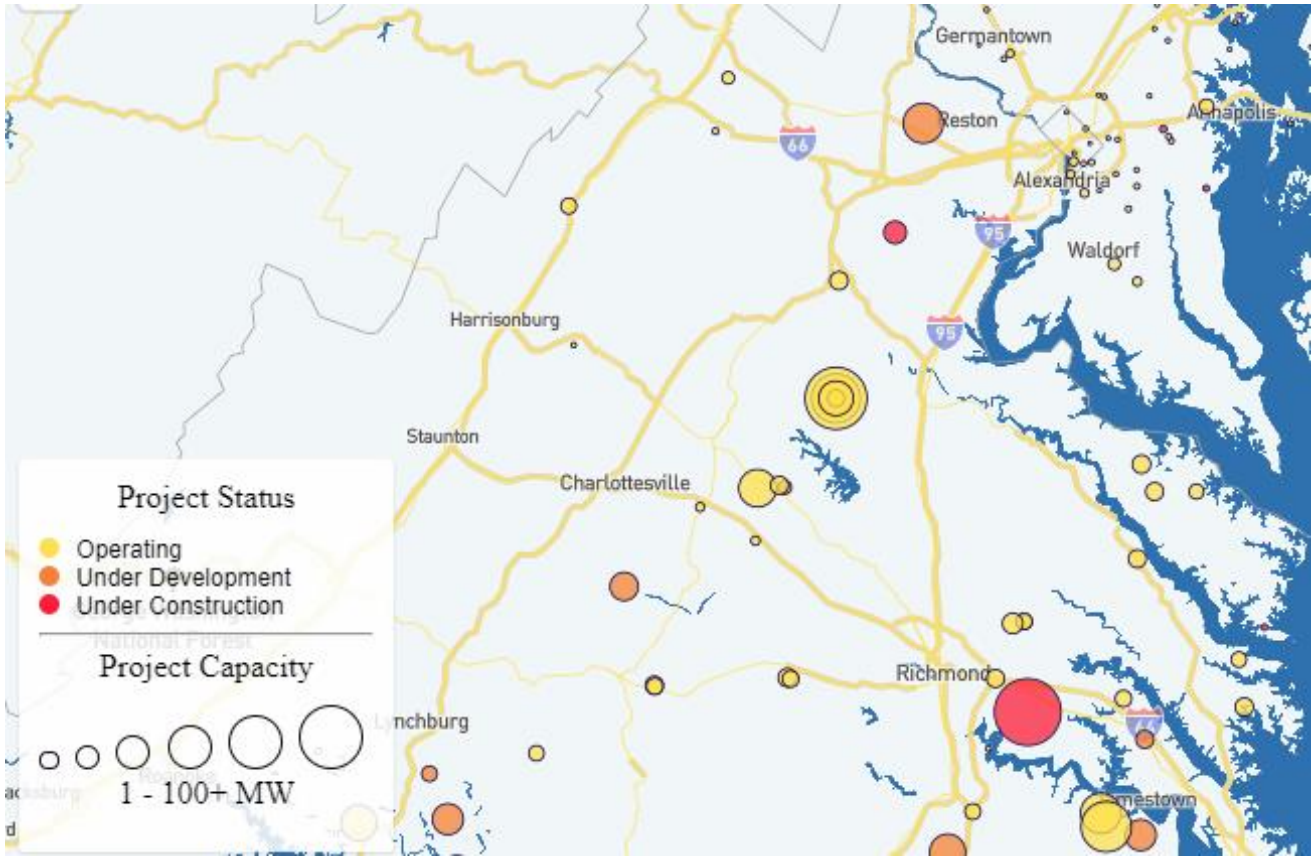
Utility-Scale Solar In Virginia

- 49 operational facilities (over 5 MW capacity)
  - Range in size up to 500 MW
  - Disturbs ~ 8-10 acres of land per MW
- Permitted by SCC or DEQ at state level
- Localities have major role through local land use regulations and permitting



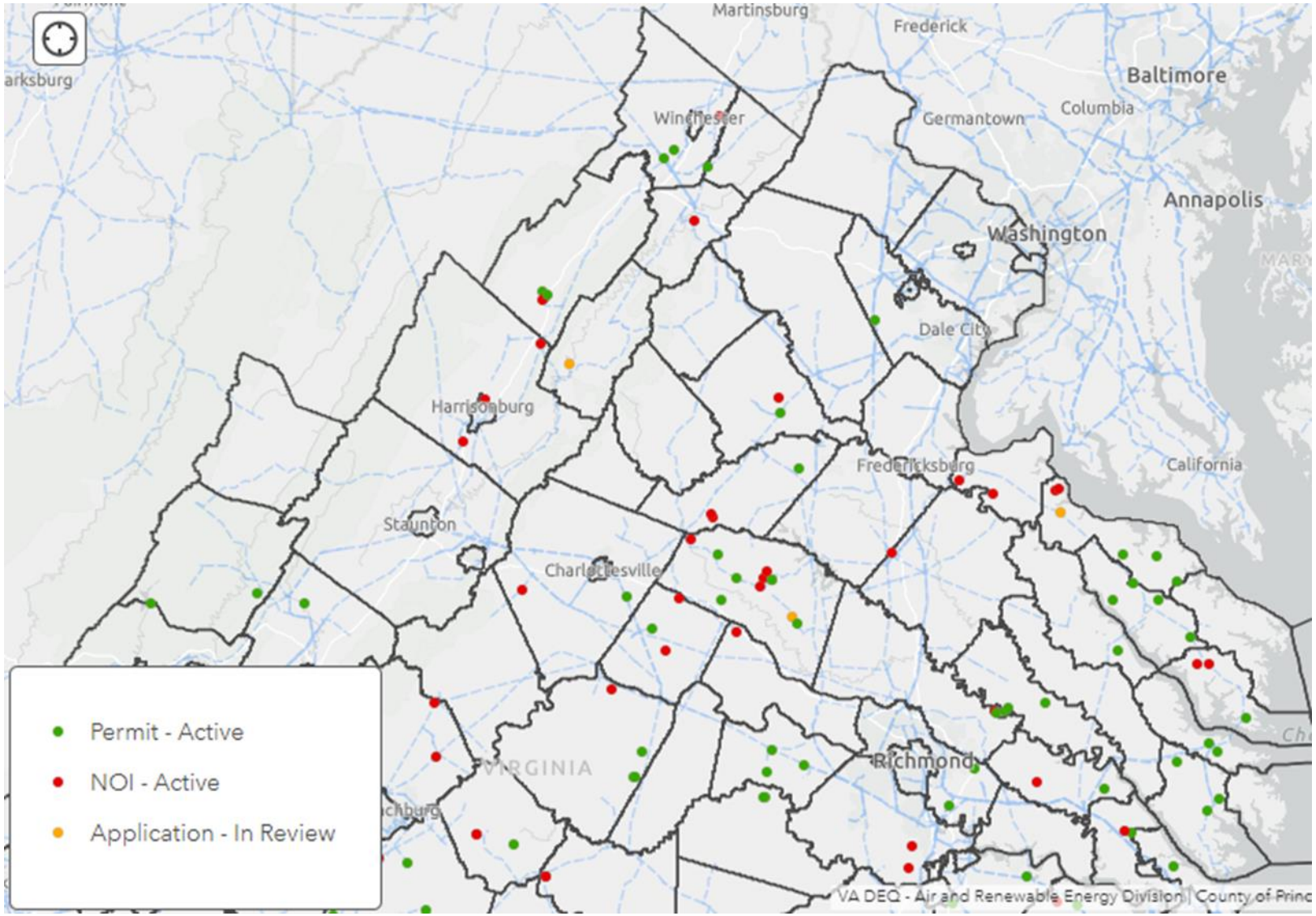
Local Projects

- **Westmoreland County**
  - Montross Solar (20 MW)
    - Facebook
  - Gardy's Mill Solar (14 MW)
    - Visa Data Center
  - Woodbine Rd. Solar (20 MW)
    - Dominion Customers
- **Fauquier County**
  - Remington Solar (20 MW)
    - Commonwealth of Virginia
- **Prince William, King George, and Loudoun** Counties have seen projects proposed



Source: https://www.seia.org/research-resources/major-solar-projects-list

Project Pipeline

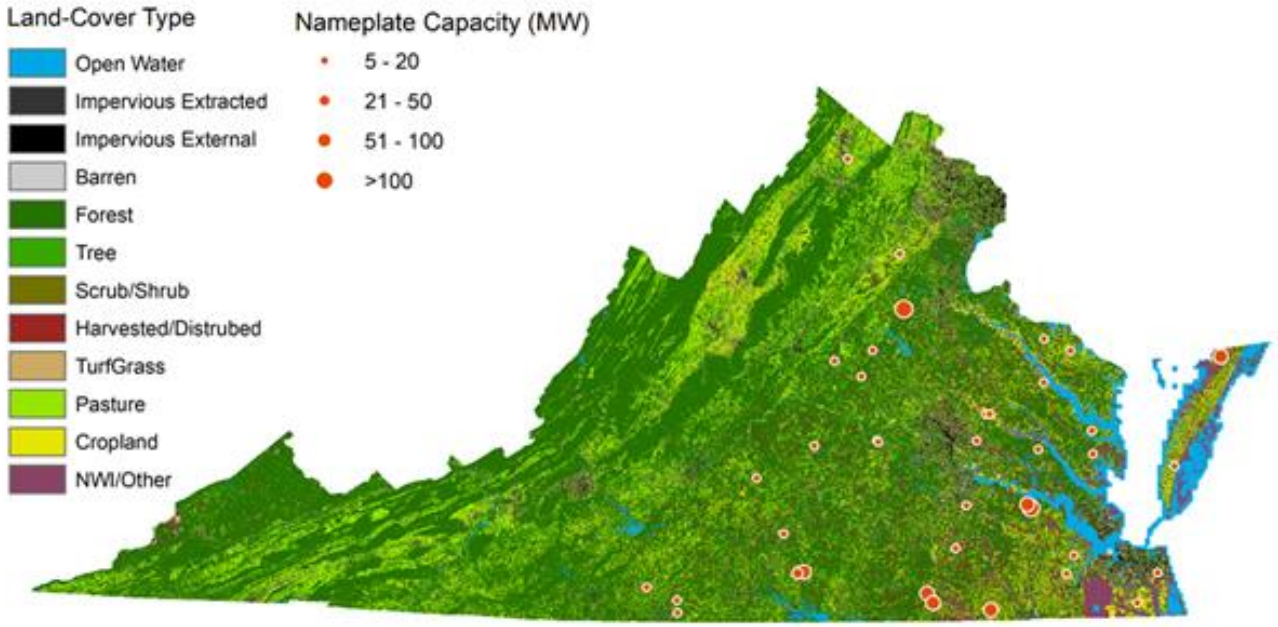


DEQ: Notices of Intent and Permit By Rule permits,
as of October 22, 2021:

	NOIs	PBRs
2014	1	0
2015	2	1
2016	6	6
2017	11	8
2018	11	11
2019	11	15
2020	18	13
2021	10	9

Land Use Analysis & Trends

- Virginia Land Cover Dataset (2015)
- 58% of all land impacted by utility-scale solar facilities through 2020 was forested*
  - Largest facilities have been more heavily forested
  - Most facilities have not been built on forested land
    - **Median**: 28.1% Forested



Gardy's Mill Solar *14 MW*
Westmoreland County

Montross Solar *20 MW*
Westmoreland County

Remington Solar *20 MW*
Fauquier County

Virginia Policy Context

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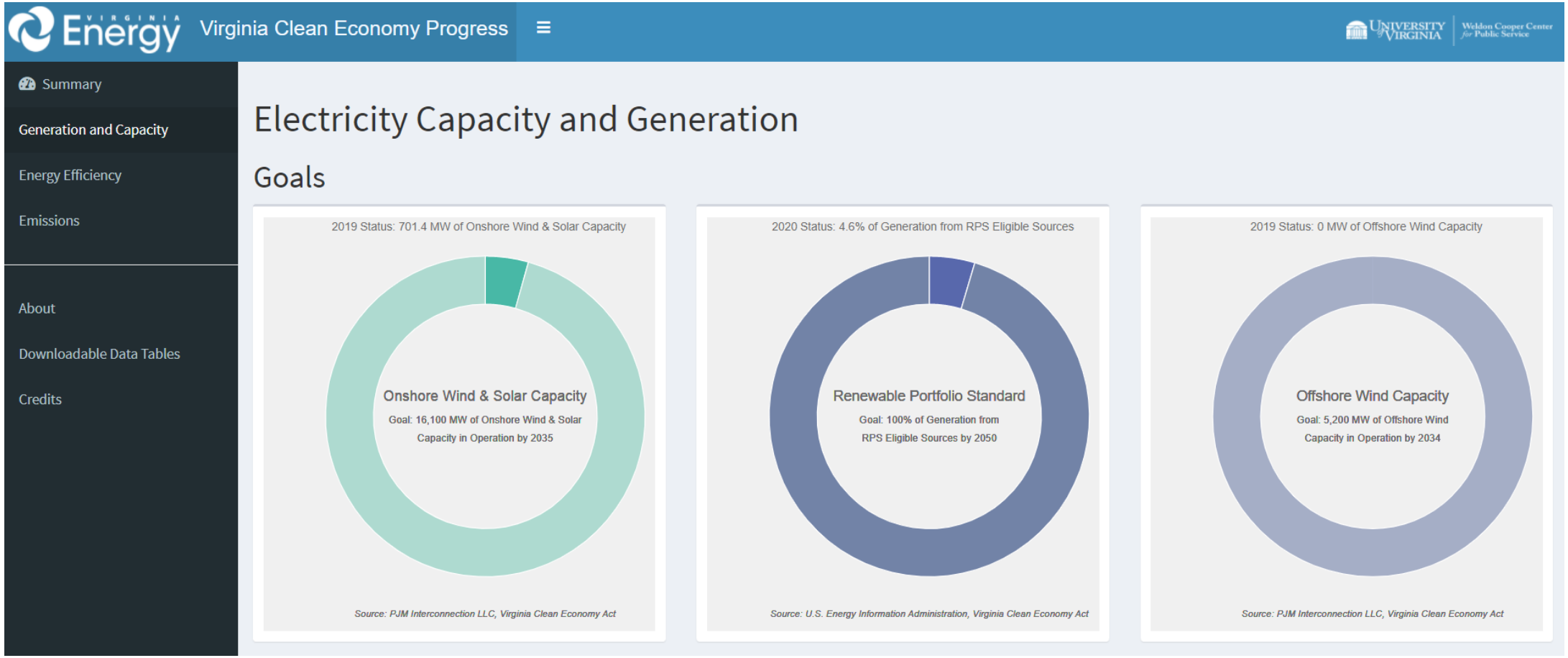
Virginia Clean Economy Act - 2020

- Dominion Energy and Appalachian Power to retire carbon-emitting sources by midcentury
- **Establishes mandatory Renewable Portfolio Standard (RPS): 100% clean energy sources by 2050**:
    - Dominion: 40% by 2030; 100% by 2045
    - APCo: 30% by 2030; 100% by 2050
    - Requires at least 1 RFP per year from Dominion and APCo
- **Deems in the public interest**:
    - **16,100 MW of solar and onshore wind**
    - 100 MW rooftop
    - 2,700 MW of energy storage
    - 5,200 MW of offshore wind

Virginia Clean Economy Progress Dashboard



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Policies That Adds Tools for Localities

- **Local Tax Exemption; Solar Energy Equipment** (§58.1-3660)
  - **Updates Machinery & Tools tax exemption policy to a stepdown**: 80% the first 5 years, 70% the next 5, 60% all remaining years in service
  - Note: §58.1-3661 allows local tax exemption, can be used to incentivize DG and more
- **Revenue Share for Solar Energy Projects** (§58.1-2636 and 58.1-3660)
  - **Locality may adopt by ordinance a revenue share policy to assess a revenue share of up to $1400 per MW of nameplate capacity of any solar project greater than 5 MW**
  - In 2021 a provision was added that the max revenue share a locality can impose shall increase 10% eff July 1, 2026 and every 5 years thereafter
- **National Standards for Solar Energy Projects** (§15.2-2286 A 13)
  - **Allows a locality to incorporate into its zoning ordinance generally accepted national standards for solar PV and battery storage equipment**

Tools for Localities, cont.

- **Special Exemption for Solar PV Projects** (§ 15.2-2288.8)
  - **Allows conditions that require dedications of real property** of substantial value to the locality **or substantial cash payments** for or construction of substantial public improvements. Condition should be reasonably related to the project.
- **Siting Agreement with Host Locality** (§15.2-2316.6 – 15.2-2316.9)
  - **Allows localities to negotiate siting agreements** that may include terms and conditions such as:
    - (i) mitigation of any impacts of such solar facility
    - (ii) financial compensation to address the locality's capital needs as set out in the locality's capital improvement plan, its current fiscal budget or its fiscal funds balance policy; or
    - (iii) assistance with deploying broadband in the locality.

Development and Permitting Considerations

Land-Use Considerations for Development of Utility-Scale Solar

- Future Land Use
- Agriculture, Forestry
- Residential Use
- Industrial Zoned Land
- Location
- Transmission Line Proximity
- Visual Impacts
- Decommissioning

- Wildlife Corridors
- Stormwater, Erosion, Sediment
- Cultural, Hist., Env. Resources
- Financial Incentives
- Employment (Short/Long-Term)
- Fiscal Impacts
- Property Values; Taxation
- Storage safety preparedness

Typical Permitting for Utility Scale

- **Interconnection, Studies and Approval Process**
  - Developer submits request for interconnection studies/approval to PJM (regional transmission organization), and/or SCC
  - Lengthy and involved process (years); likely started prior to local and state approvals
- **Local Approval, "Local Certification"**
  - Land Use and/or Zoning approval (public, stakeholder input)
  - State code 15.2-2232 requires substantial accord with comp plan; but localities may waive "2232" requirement
  - Started, if not completed, prior to state review.
- **State Notification, Review, and Approval**
  - DEQ Permit By Rule ("PBR") application (<150 MW), or SCC process (>150 MW)
  - PBR- Reviews proposed project to ensure potential significant impacts to cultural or threatened and endangered species are avoided or mitigated
  - Requires local certification for a complete application

State Permitting: Permit By Rule

Administered by Virginia Dept of Environmental Quality (9VAC15-60-30)

There are 15 Components of Permit By Rule:

- Notice of Intent to DEQ
- Local government certification
- Interconnection Studies/Final Interconnection Agreement
- Certification project does not exceed 150 MW
- Cultural, wildlife, natural heritage resource assessments
    - in consult w/ DHR, DWR, DCR
    - Coastal aviation protection zone analysis
- Mitigation Plan
- Operating Plan
- Site map, context map with engineer certification
- Certification of application for environmental permits
- 30-day public comment period
    - public meeting and resulting report
- Fee

DEQ must make determination within 90 days of receipt of all required documentation.

Planning for Solar Locally

Comprehensive Plan

- Land Use Plan, Energy Plan, Economic Development Plan, Sustainability goals, Climate Change or Resiliency goals
- Impact analysis studies
- Master Plans or Policies adopted by reference

Codes and Ordinances

- Zoning Code, Site Plan Ordinance, Building Code, E&S Program and Regulations
- Tax Code- M&T/Real Estate Tax, Revenue Share, Local tax option on solar equipment

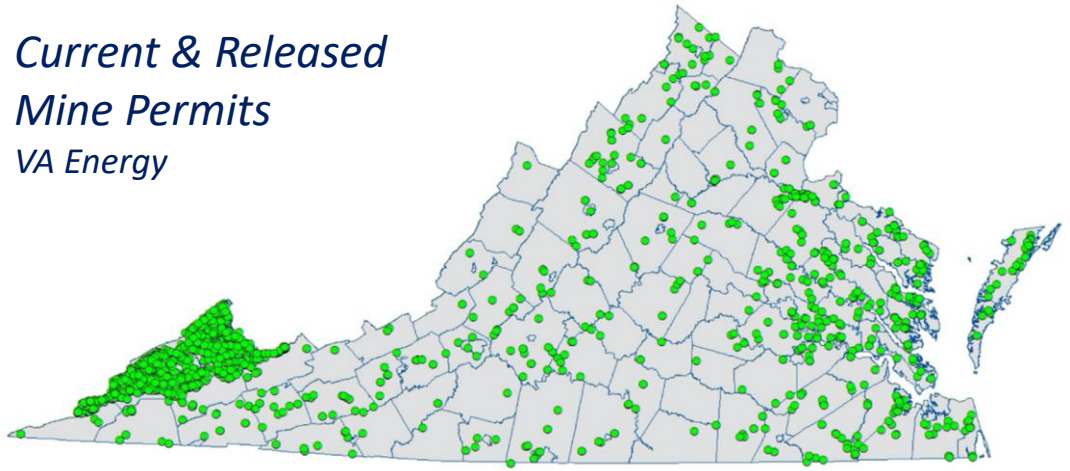
Project Specific/Agreements

- Negotiated siting agreement
- Conditions
- Operating and Maintenance Plan
- Decommissioning Plan

Planning for Solar Locally: *Development Strategies*

- **Previously disturbed lands**
  - Abandoned Mine Lands
  - Brownfields
- **Wildlife-friendly design elements**
- **Livestock grazing**
- **Low impact development**
  - Vegetative ground cover
  - Pollinator-friendly planting
    - DCR's Virginia Pollinator Smart Program
  - Agrivoltaics
- **Erosion and sediment control**

Current & Released Mine Permits
VA Energy



Resources

Statewide Solar Survey

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with input from the following organizations:

The Nature Conservancy

SolUnesco

vapdc virginia association of planning district commissions

BERKLEY GROUP

VACo Virginia Association of Counties

30 YEARS MDV-SEIA

DEQ Virginia Department of Environmental Quality

Statewide Solar Survey: *Results from the Potomac Watershed*

- All localities reported they have already or are considering updating their solar policies and regulations
- Decommissioning and agricultural impacts emerged as top priorities related to siting and development
- All localities reported they have a process to allow utility-scale solar facilities through a conditional use permit
- One locality reported to have negotiated a siting agreement
- One locality reported to have adopted a revenue share ordinance
- Three localities reported they have had utility scale energy storage projects proposed or planned

SolSmart Technical Assistance

- National designation program to recognize localities for encouraging solar energy growth at DG and utility scales
  - Funded by DOE Solar Energies Technology Office and The Solar Foundation
  - Focus on reviewing and improving the planning and zoning regulations and processes for all scales of solar
- VA Energy partnered with UVA to offer no-cost technical assistance to Virginia localities
- LOCALITIES may request consultations here

Eight SW Virginia communities receive SolSmart designation (2019)
Photo credit: Chelsea Barnes, Appalachian Voices

Virginia SolTax Model

https://solar-tax-webapp.herokuapp.com/

Project Parameters

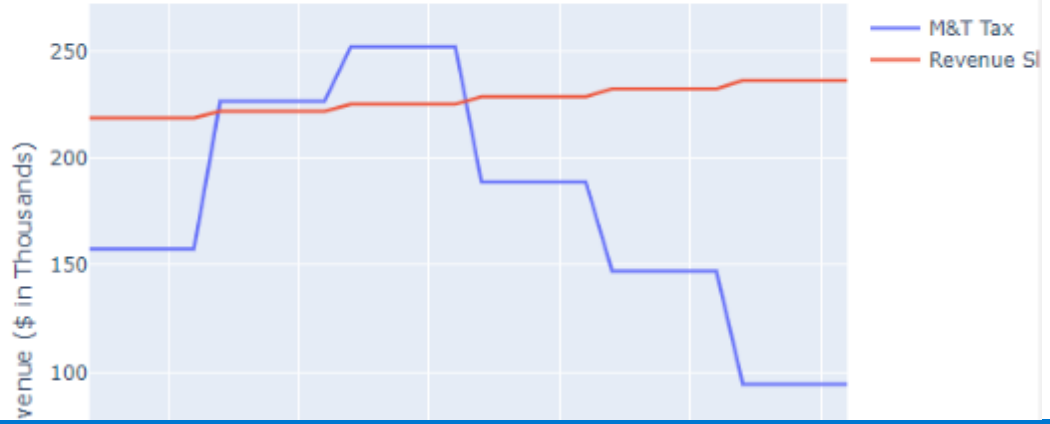
Parameter	Value
User	carrie.hearne@dmme.virginia.gov
Discount Rate	6%
Revenue Share Rate	$1,400 /MW
Real Property Rate per $100 of Assessed Value	$0.87
M&T Tax Rate per $100 of Assessed Value	$0.30
Total Capitalized Investment	$100,000,000
Initial Year	2022
Project Size	125 MW
Total Land Acreage	1,500 acres
Inside Fence Acreage	875 acres
Base Land Value	$1,000 /acre
Inside the Fence Land Value	$10,000 /acre
Outside the Fence Land Value	$1,000 /acre

Total expected lifetime revenue

(In 2020 $, discounted at 6% per year):

Revenue Share	$2,913,000
M&T/Real Estate Tax	$2,441,000
Increase from Revenue Share	$472,000

Lineplot of Nominal Cashflows through 2050



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Local Policy Examples

- Inventory of local policy examples:
  - Revenue Sharing Ordinances
  - Local Solar Property Tax Exemptions

Virginia Solar Energy Revenue Share Inventory

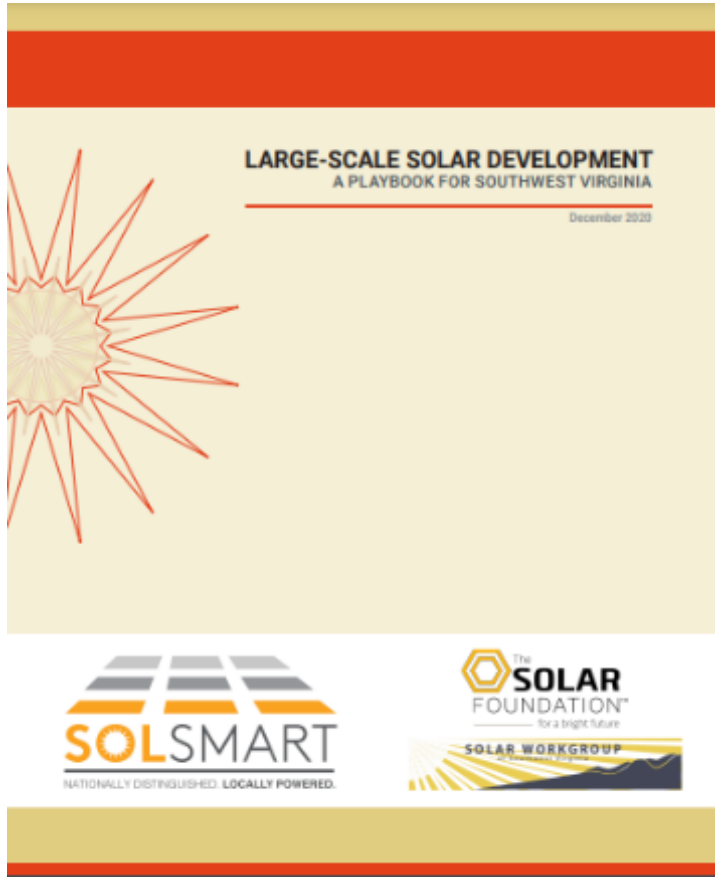
Search for Locality...

Select Localities

Locality	Date Adopted	Rate Adopted ($/MW)	Link to Ordinance	Other Relevant Links
Buckingham County	10/12/2021	1400	Link to Ordinance	
Charlotte County	2/8/2021	1400	Link to Ordinance	
Cumberland County	9/14/2021	1400	Link to Ordinance	
Greensville County	12/21/2020	1400	Link to Ordinance	Greensville County December 21, 2020 Borad of Supervisors Minutes
Lancaster County	6/24/2021	1400	Link to Ordinance	Lancaster County June 24, 2021 Board of Supervisors Minutes
Lunenburg County	6/10/2021	1400	Link to Ordinance	

Solar Playbook for Large Scale Solar

- Detailed, step-by-step guide for how municipalities and counties can encourage utility-scale or commercial solar projects
- An overview of the state and local permitting process for solar projects
- Information on local tax revenue options and financing incentives
- **Specific information on redevelopment of brownfields and previously mined lands for solar in SW VA.**



swvasolar.org/swva-solar-playbook

Thank You

For more information, please visit our websites or contact me directly.

https://solar.coopercenter.org/
https://energy.virginia.gov/

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