Overview of Solar in Virginia

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CLEAN ENERGY VIRGINIA
Solar Development Trends
Exponential Growth in Solar Installations-U.S.

Factors:
- Increased market demand
  - Data centers
  - Corporate mandates
  - Energy savings
- Declining cost of solar PV
  - Hardware and soft costs
  - Favorable policy environment

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

Source: https://www.seia.org/research-resources/major-solar-projects-list
National Development Trends by Energy Type

Total Capacity in Queues, 2007 - 2020

Source: Berkeley Lab - https://emp.lbl.gov/generation-storage-and-hybrid-capacity
National Development Trends by Energy Type

Figure 6.1.C. Utility-Scale Generating Units Planned to Come Online from December 2021 to November 2022

Sources: U.S. Energy Information Administration, Form EIA-860, 'Annual Electric Generator Report' and Form EIA-860M, 'Monthly Update to the Annual Electric Generator Report.'
Solar Facilities in Virginia

Active VA Solar Facilities (51)*
Nameplate Capacity (MW)
- 5 - 10
- 10 - 20
- 20 - 50
- 50 - 150
- >150

*Active Facilities as of December 31, 2021

Proposed Solar Facilities (DEQ Permit-by-Rule)

Clean Energy Virginia
Virginia Clean Economy Act (VCEA) - 2020

- Dominion Energy and Appalachian Power to retire carbon-emitting sources by midcentury
  - Electric Cooperatives are not mandated by the VCEA
    - Main power supplier of the cooperatives (ODEC) has a net-zero goal

- 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

- Establishes a mandatory energy efficiency resource standard (EERS):
Virginia Clean Economy Act - 2020

- Deems in the public interest by 2035:
  - 16,100 MW of solar and onshore wind
    - 1,100 MW of solar facilities not to exceed 3 MW
    - 200 MW on previously developed sites
    - 100 MW large rooftop solar installations (>50 kW)
  - 2,700 MW of energy storage
  - 5,200 MW of offshore wind
Monthly Solar Generation in Virginia

Net generation, Virginia, all sectors, monthly

Data source: U.S. Energy Information Administration

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Distributed Solar (Net Metering) Growth Since 1999

248 MW, Q4 2021

26,237 Solar Installations
25,369: Residential
868: Non Residential

Source data:
Virginia State Corporation Commission,
Compiled by Virginia Energy
Types of Solar And Relevant Considerations
Types of Solar

• **Utility-Scale Solar** (‘In-front-of-the meter’)  
  • Electricity generated and fed directly into the utility grid  
    • Facilities are not directly connected to an end-user  
  • Ground-mounted and generally sized 1 MW + in capacity  
  • Land leased or purchased for a project life of ~35-40 years  
    • Utility-Owned Projects  
    • Project Owner Sells Electricity to Utility (Power Purchase Agreement-PPA)  
    • Project Owner Sells Electricity in the Wholesale Market to a Corporate Offtaker (PPA)
Types of Solar (cont.)

- **Community/Shared Solar**
  - Electricity generated at a single source with multiple consumers purchasing a share of the electricity
    - Most or all customers are not directly connected to the solar facility
  - Ideal for individuals and businesses that cannot install solar panels
  - Customers receive a bill credit through net-metering
  - Generally less than 5 MW in capacity
    - Ground-mounted or large rooftops
Types of Solar (cont.)

- **Distributed Solar (‘Behind-the-meter’)**
  - Electricity generated on-site at or near where it will be used by the customer (residential, commercial, or agricultural producer)
    - Solar installation directly connected to an end-user
  - Interconnected to distribution system and net-metered with a bidirectional meter
  - Rooftops, parking canopies, or ground-mounted on adjacent property
  - Sized to meet the need of the property owner
    - 25 kW for residential
    - 3 MW for commercial

Photo credit: GRID Alternatives Mid Atlantic
Solar Programs In Virginia
Utility-Scale Solar in Virginia

- Dominion and Appalachian Power issue annual RFPs to acquire projects for electricity from utility-scale solar projects through ownership or PPAs.
  - *Example: Dominion Energy* (2021 RFP)
    - 175 megawatts of *small-scale solar projects* (limited to 3 MWs of capacity)
      - *Most viable for active farmers* (Use a portion of property that is least productive)
    - 1,000 megawatts of solar and onshore wind from projects greater than 3 MW capacity
    - 100 megawatts of energy storage

- Current laws limit taxation, revenue sharing, and siting agreement benefits to projects larger than 5 MW
  - Proposed legislation in 2022 seeks to lower this limit to 1 MW to allow small-scale projects to generate direct revenue for a locality
Shared/Community Solar in Virginia

• **Shared Solar**: Third-party owned and operated by subscriber organizations
  • 30% of output reserved for low-income customers
  • Program to start by Jul 2023
  • Program in Dominion territory only
    • 150 megawatts (projects sized 3MW to 5MW)
    • Proposed legislation to expand to cooperatives

• **Multi-family Shared Solar**

• **Community Solar**: Utility administered program
  • Dominion is seeking 8 megawatts (projects sized no larger than 2 MW)
Distributed Solar (Net Metering)

- **§ 56-594.** Net energy metering provisions.
  - Measure the difference between electricity supplied and electricity generated and fed back into the grid
  - Utility purchases excess power
  - Credits accrued over an annual billing cycle
  - Daily or seasonal surpluses
- Rules set by State Corporation Commission (SCC)
- Varies by utility territory
  - Investor-owned utilities (IOUs), Cooperatives, Municipal

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**Electric Service Territories**

Source: State Corporation Commission, 2020
Created by: Division of Public Utility Regulation, 2020

Disclaimer: This is an approximation, please contact the Division of Public Utility Regulation for official electric territory maps.
Net Metering Caps

• Dominion Energy and Appalachian Power
  • Cap increased from 1% to 6% of utility’s adjusted Virginia peak-load forecast for previous year
  • 5% available to all customers; 1% reserved for low-income customers

• Electric Cooperatives
  • Choose Cap (Can’t pass 7%** of peak-load forecast for previous year)

• Residential: 25 kW
• Nonresidential (Commercial): 3 MW
• Small Agricultural Generators: 1.5 MW
• Limit capacity of system to 150% of annual energy consumption for Dominion customers
• SCC to conduct review of net metering program when each utility approaches the cap
DG Solar could grow from 248 MW (current) to **1,421 MW by 2030** for Virginia’s investor-owned utilities with a 6% cap.
Thank You

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

https://energy.virginia.gov/

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