

Overview of Solar in Virginia

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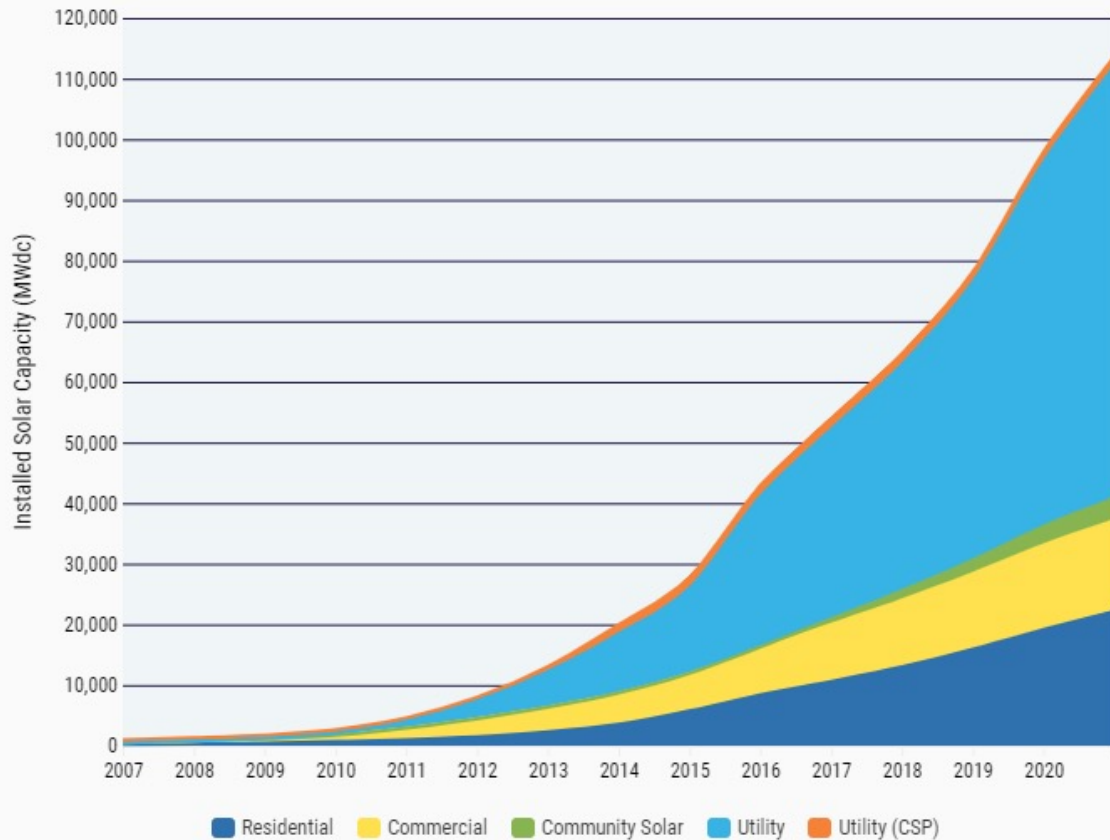




Solar Development Trends

Exponential Growth in Solar Installations-U.S.

Cumulative U.S. Solar Installations



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

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

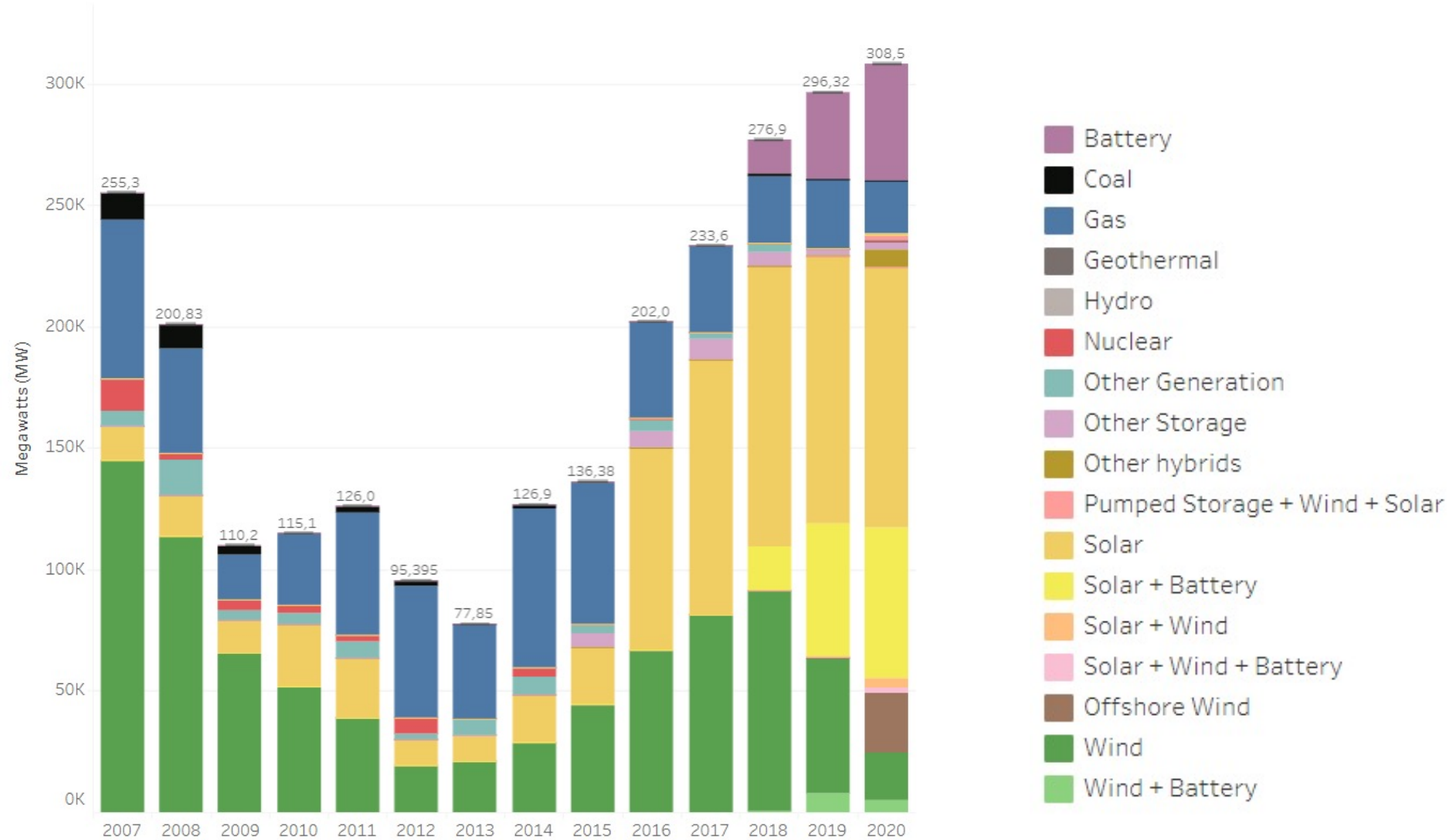


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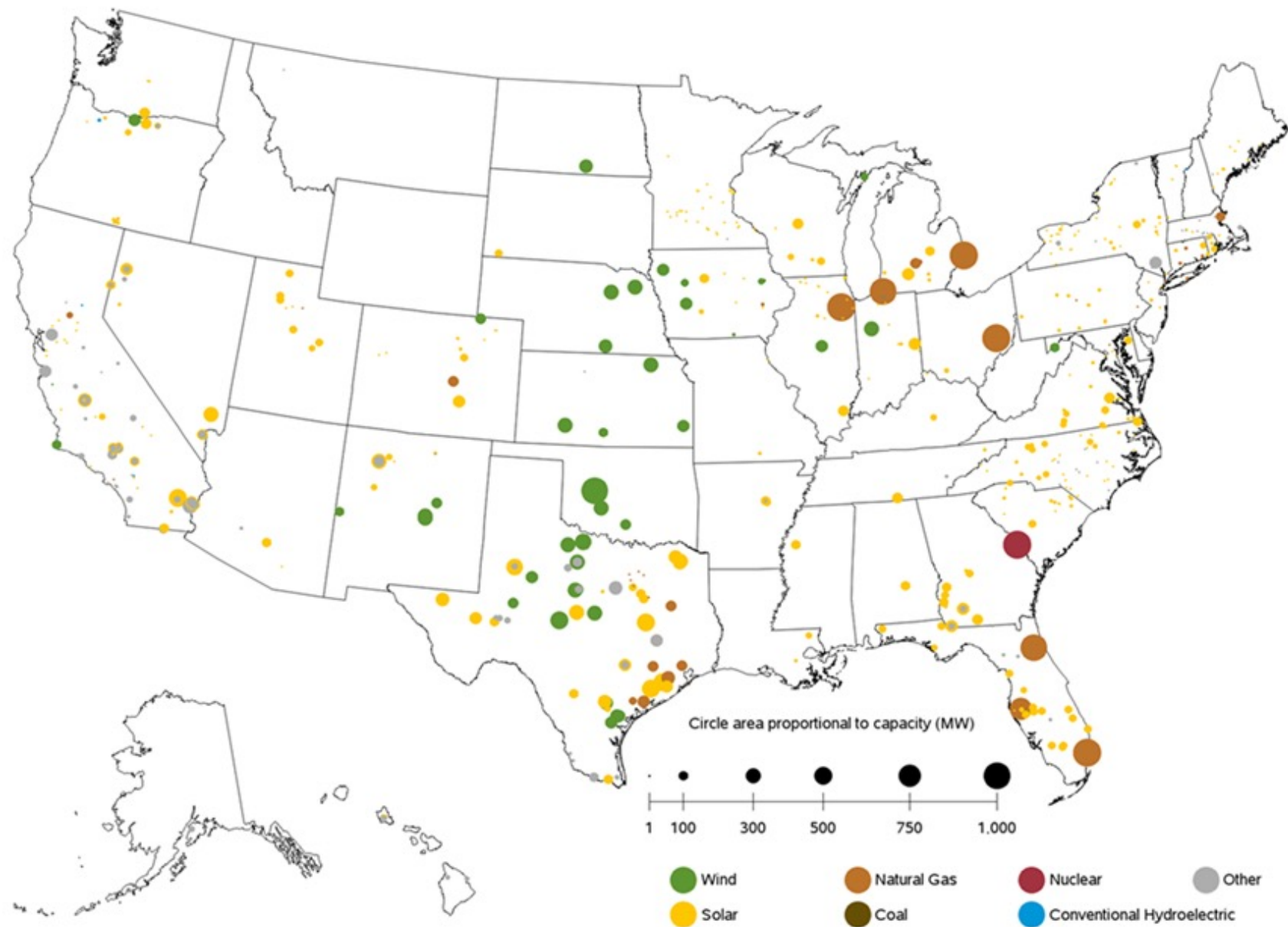
National Development Trends by Energy Type

Total Capacity in Queues, 2007 - 2020



National Development Trends by Energy Type

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



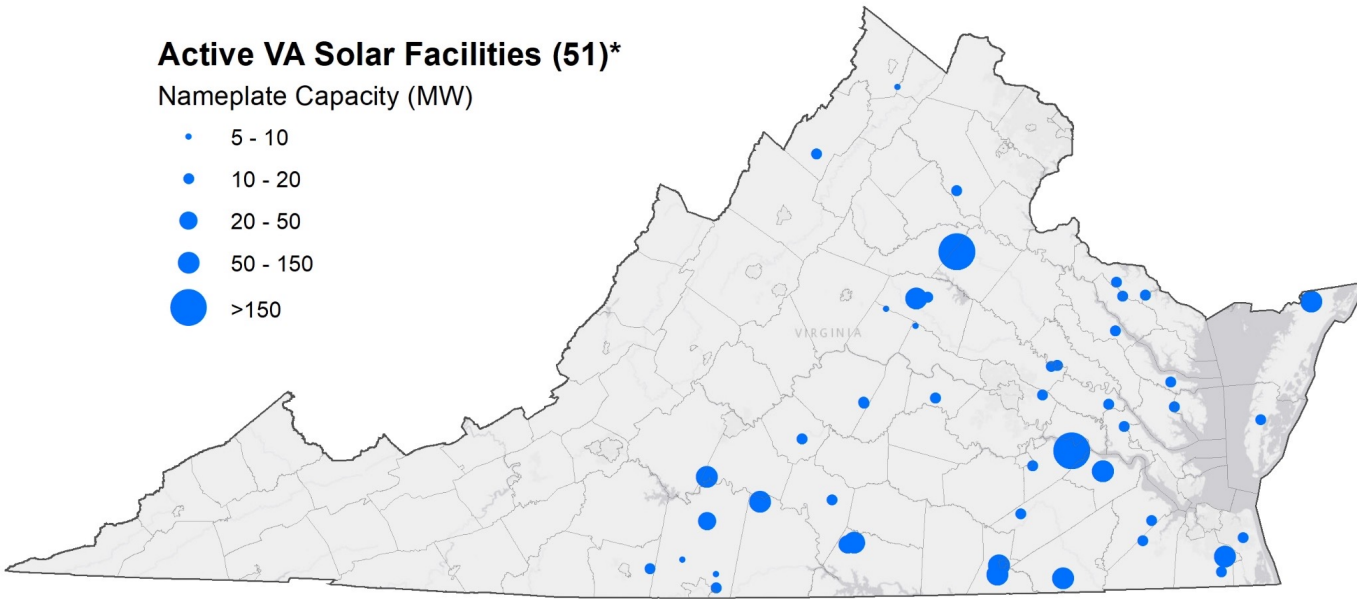
Sources: U.S. Energy Information Administration, Form EIA-860, 'Annual Electric Generator Report' and Form EIA-860M, 'Monthly Update to the Annual Electric Generator Report.'

Solar Facilities in Virginia

Active VA Solar Facilities (51)*

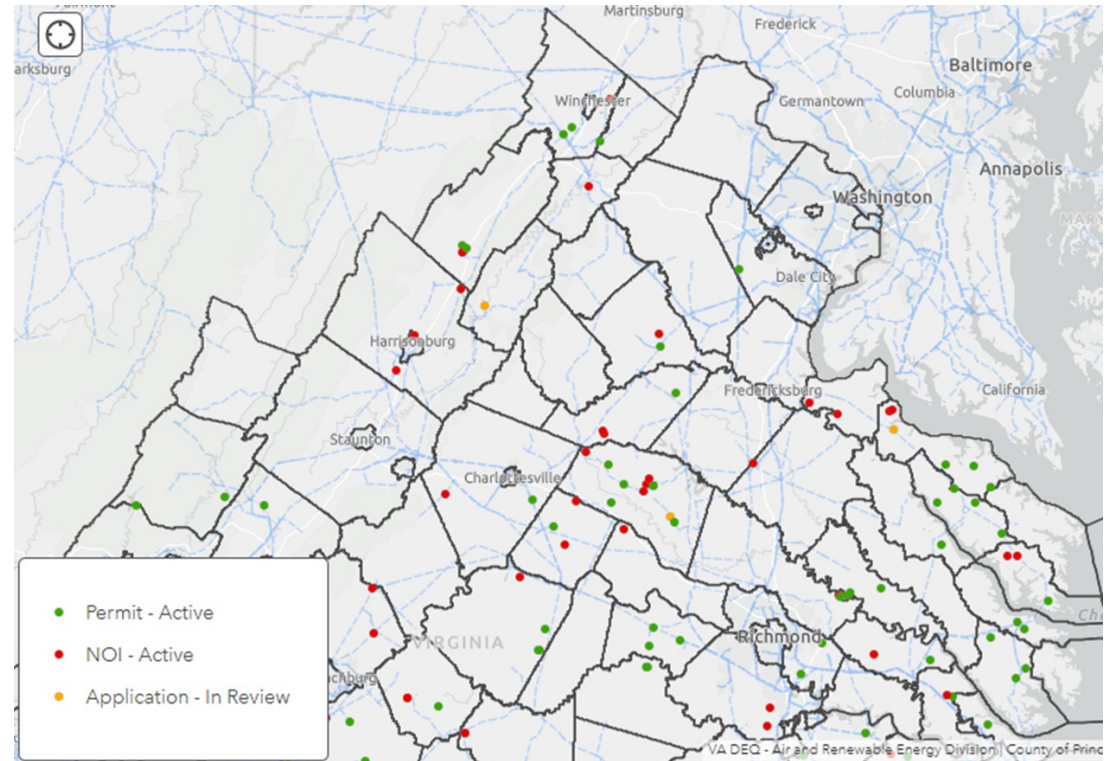
Nameplate Capacity (MW)

- 5 - 10
- 10 - 20
- 20 - 50
- 50 - 150
- >150



* Active Facilities as of December 31, 2021

Proposed Solar Facilities (DEQ Permit-by-Rule)



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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):**

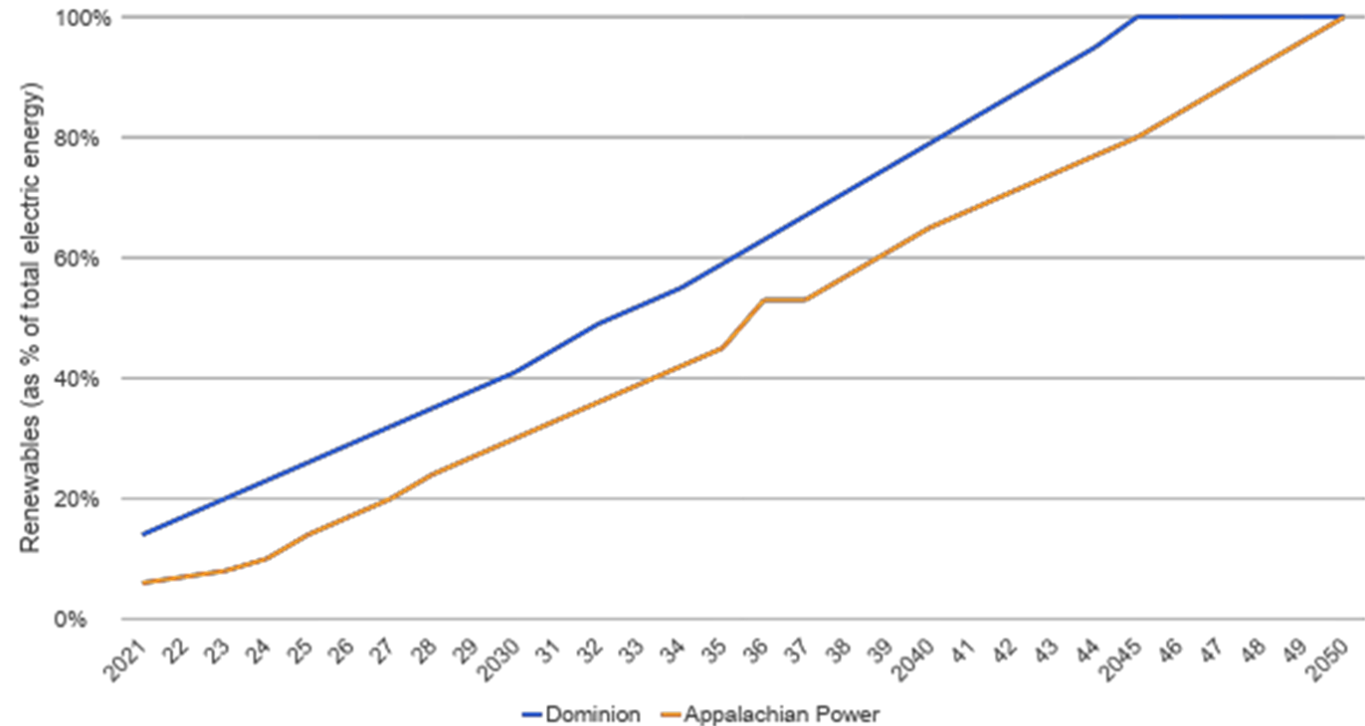


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Virginia Clean Economy Act - 2020

- 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



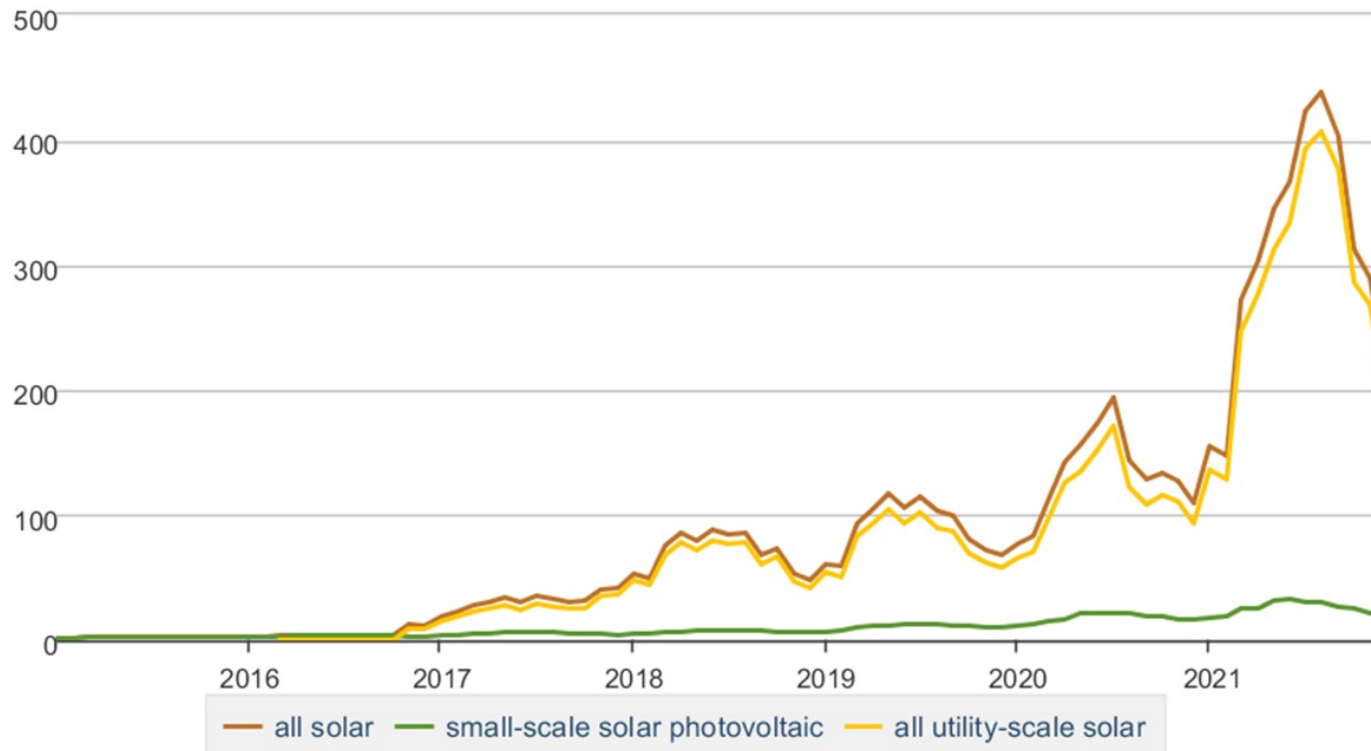
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Monthly Solar Generation in Virginia

Net generation, Virginia, all sectors, monthly

thousand megawatthours



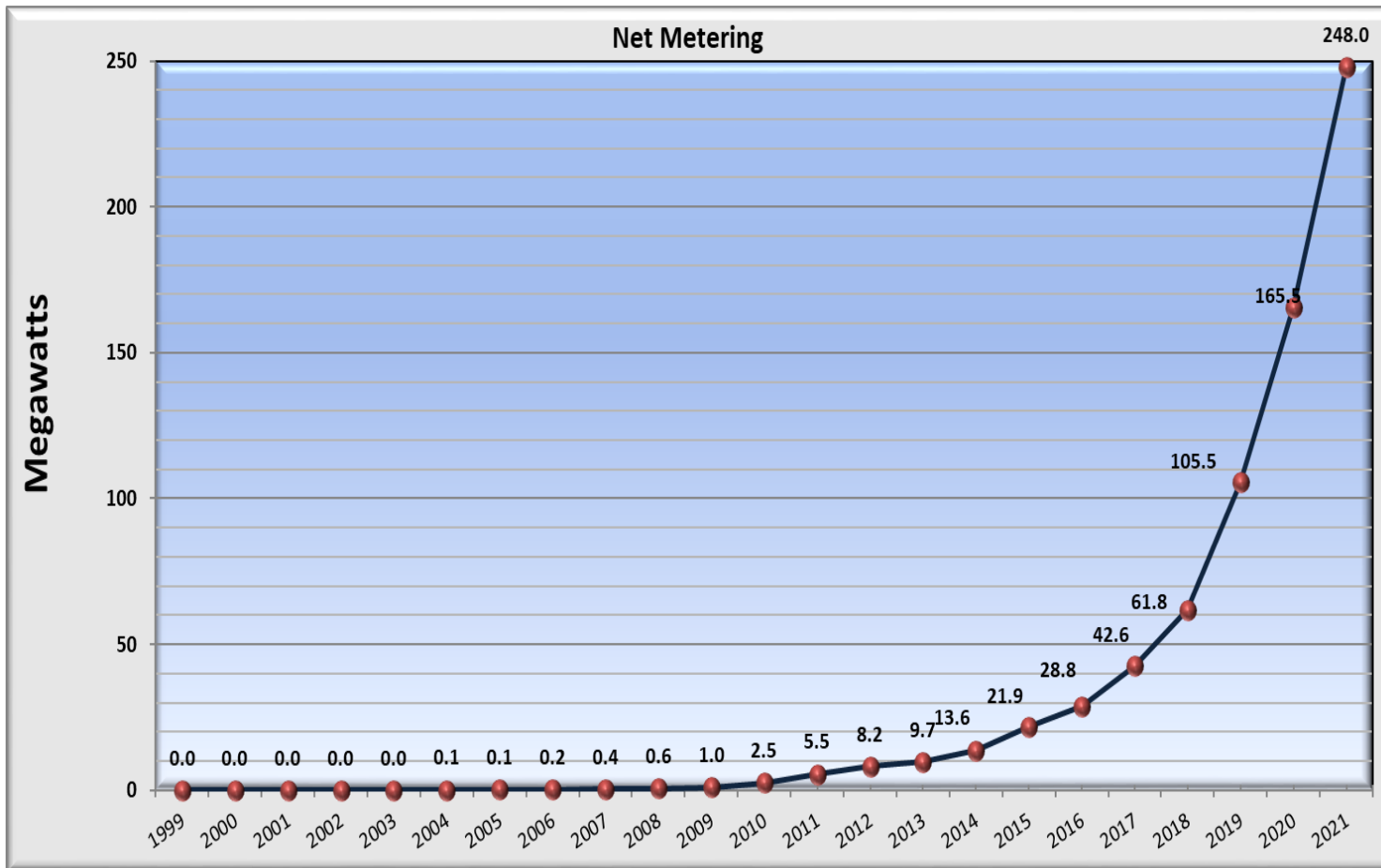
Data source: U.S. Energy Information Administration



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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*



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Types of Solar And Relevant Considerations

Types of Solar

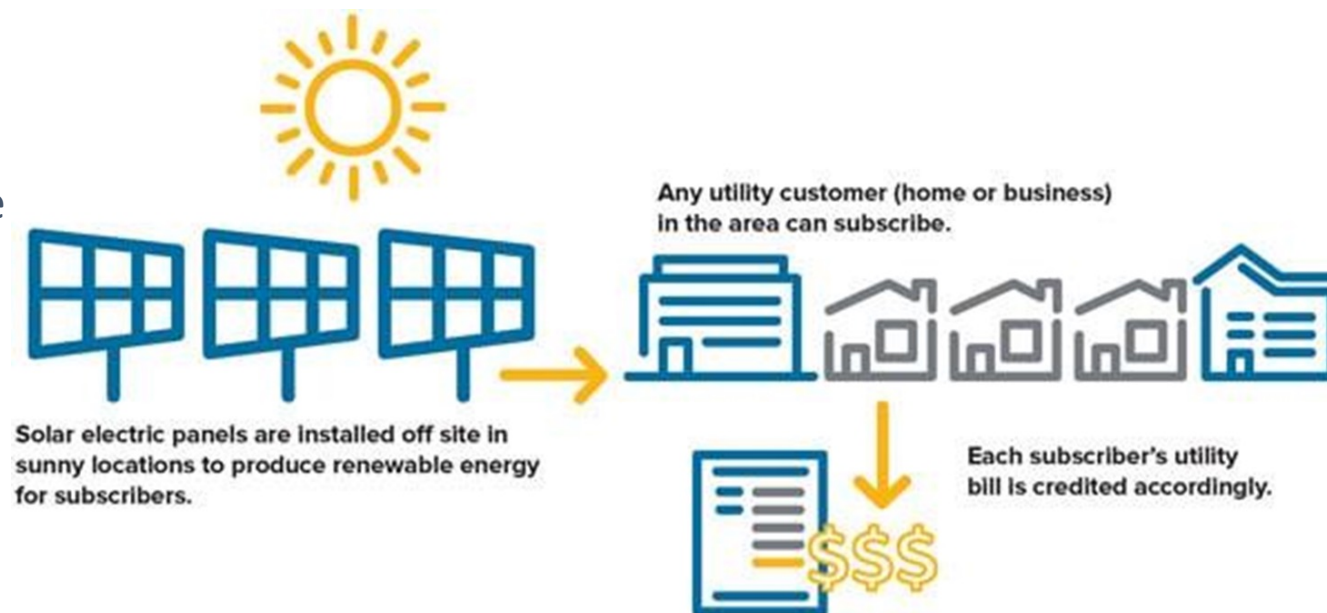
- **Utility-Scale Solar** ('In-front-of-the meter')
 - Electricity generated and fed directly into the utility grid
 - Facilities are not directly connected to an end-user
 - Ground-mounted and generally sized 1 MW + in capacity
 - Land leased or purchased for a project life of ~35-40 years
 - **Utility-Owned 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



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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



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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)

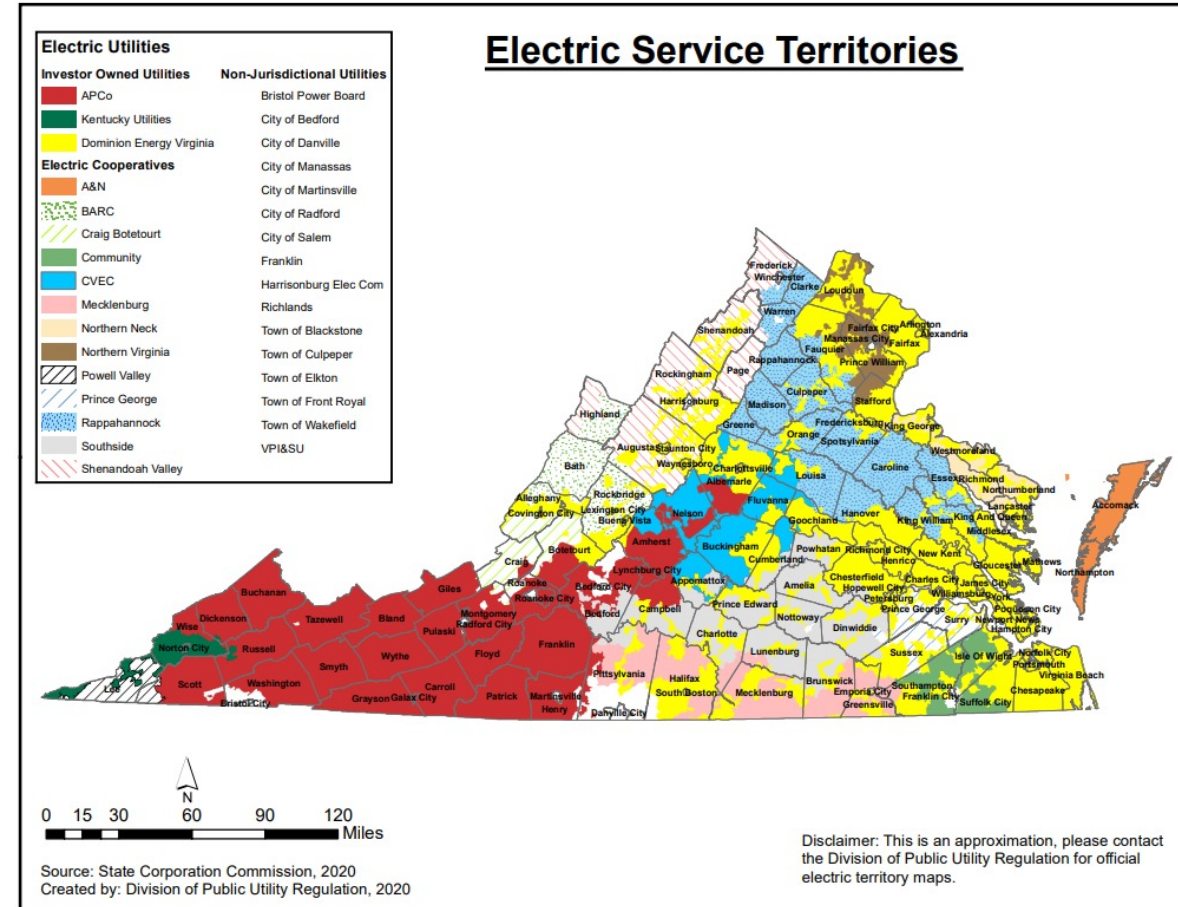


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Distributed Solar (Net Metering)

- § 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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Net Metering Caps

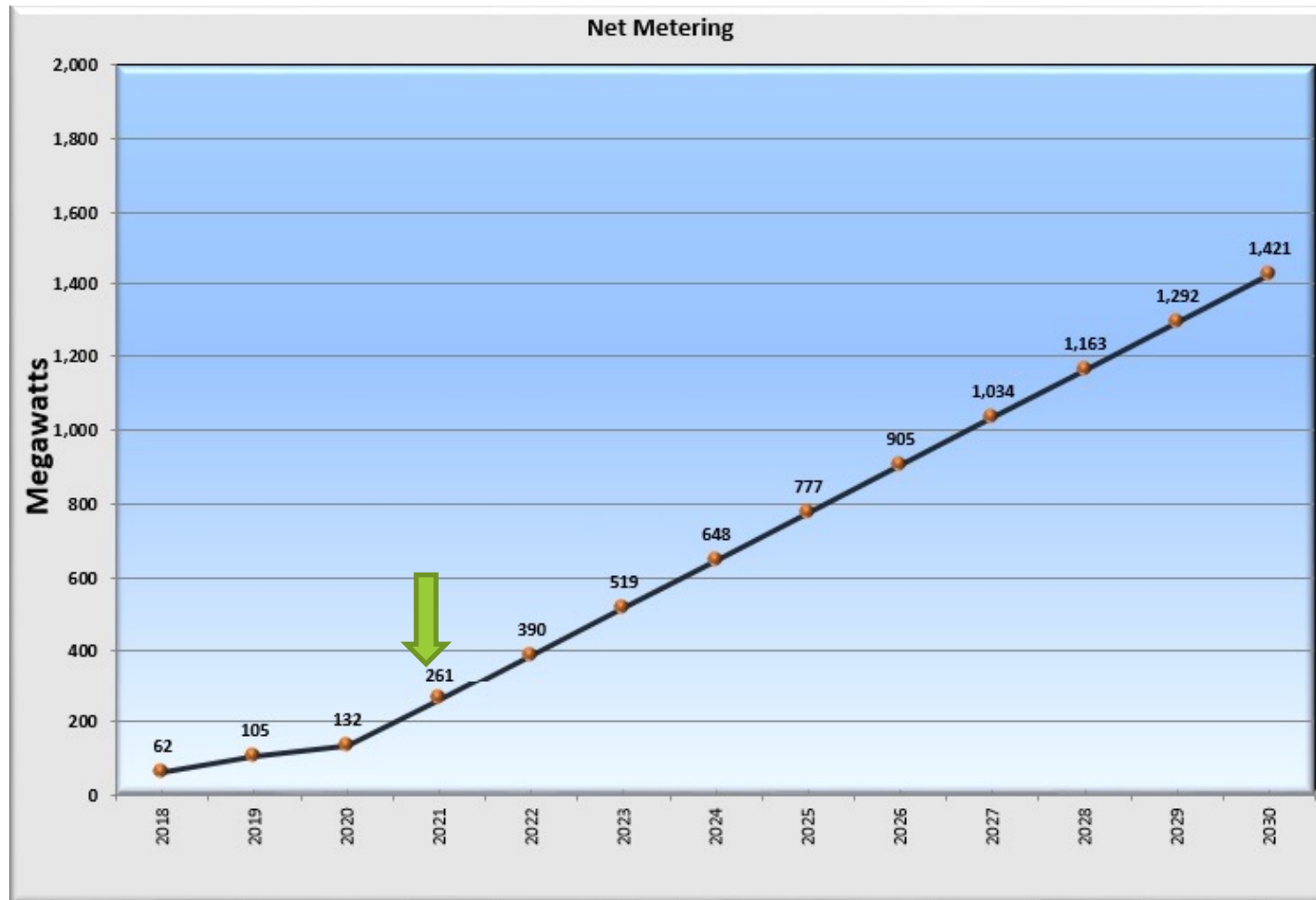
- **Dominion Energy and Appalachian Power**
 - **Cap increased from 1% to 6%** of utility's adjusted Virginia peak-load forecast for previous year
 - *5% available to all customers; 1% reserved for low-income customers*
- **Electric Cooperatives**
 - **Choose Cap** (Can't pass **7%**** of peak-load forecast 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



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Target DG Growth to reach 6% by 2030



DG Solar could grow from 248 MW (current) to **1,421 MW by 2030** for Virginia's investor-owned utilities with a 6% cap



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A photograph of a worker in a grey shirt and black cap installing solar panels on a brown shingled roof. The worker is leaning over the panels, which are mounted on a metal racking system. The background shows a blue sky with light clouds and green trees. A semi-transparent white box with a grid pattern is overlaid on the right side of the image, containing text.

Thank You

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

<https://energy.virginia.gov/>

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