



# PJM Strategy – Powering Our Future

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# Rationale for Refreshing PJM's Strategy

There is a broad set of trends reshaping the energy ecosystem, e.g.,

- States & stakeholders adopting decarbonization goals
- Intermittent resource penetration increasing rapidly, with changing mix
- DER proliferating rapidly, with limited visibility to us
- High investment in grid modernization
- Innovation in technology, business models, etc.



Across our footprint, we see these trends progressing at varied pace and impacting some stakeholders sooner than others.

These trends are impacting our ability to fulfill our fundamental functions.

- Operations
- Markets
- Planning



This transition represents a significant change in our environment.

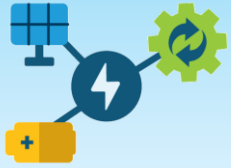
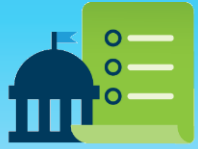
Continuing to deliver value to the region requires us to take a significant role in managing an efficient and reliable transition.

PJM needs to make sure our strategy reflects the factors driving our industry to continue to maximize our value to the region we serve.

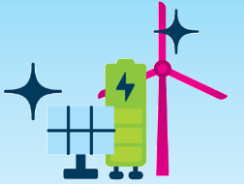


# Reliability





# 22 Trends



**CO<sub>2</sub>  
Policies**

**Increasing  
Renewables**

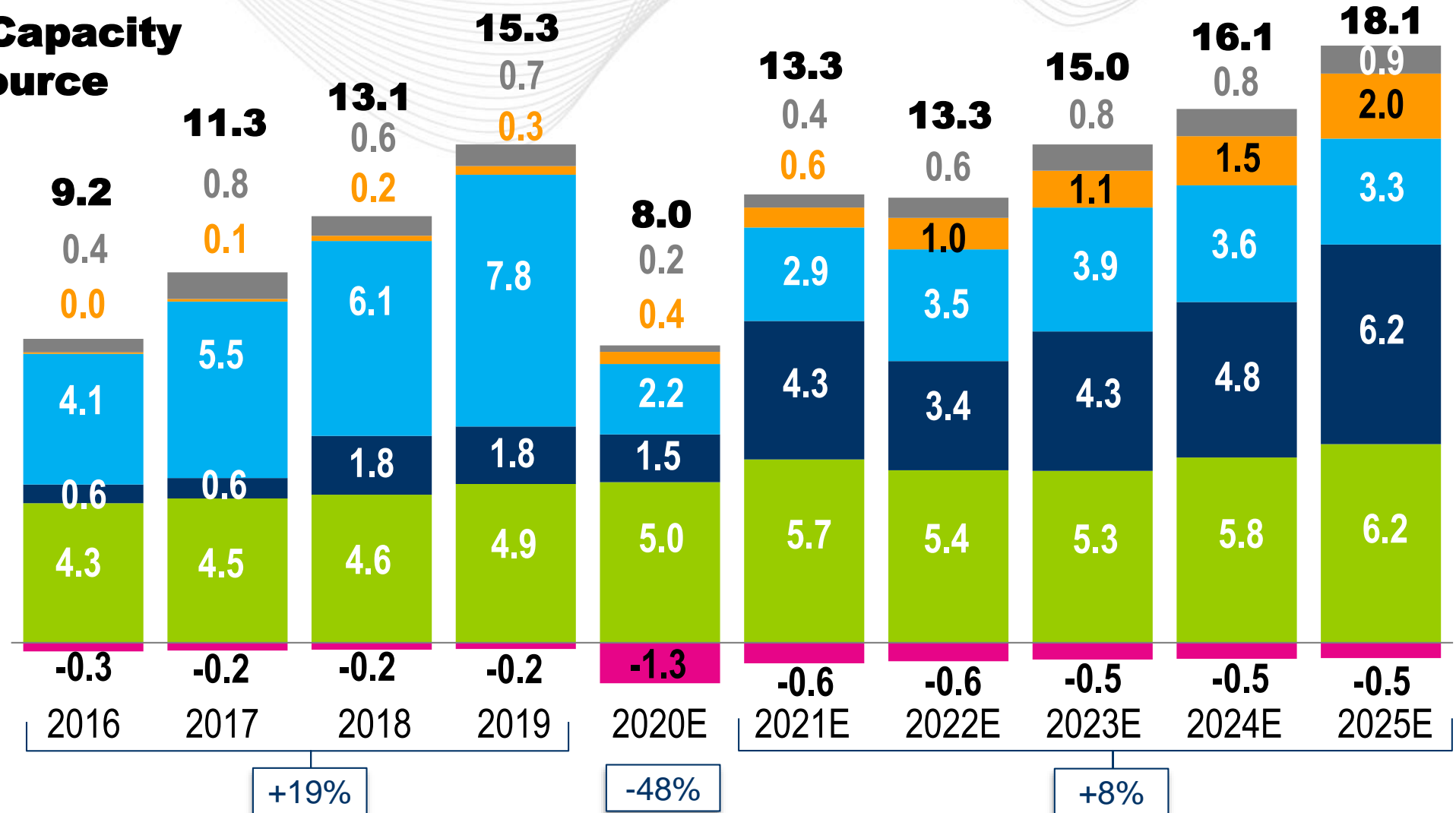
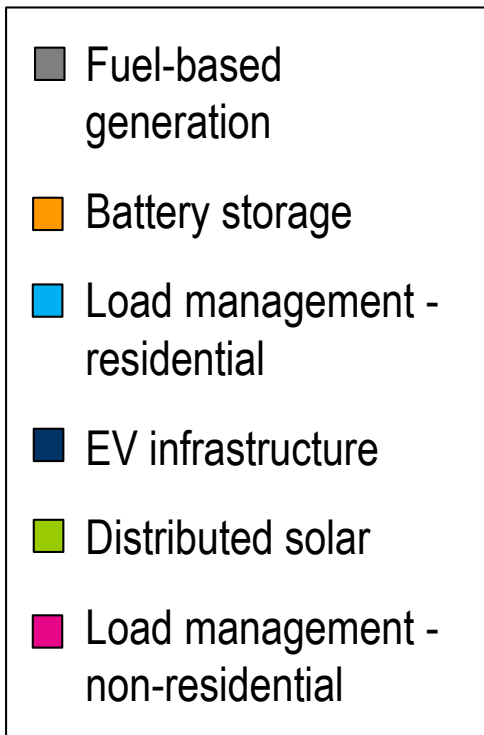
**DER  
Growth**

**Aging  
Infrastructure**

**Tech/Business  
Innovations**

**Stakeholder  
Expectations**

## U.S. DER Annual Capacity Additions by Resource Type (GW)



Note: Non-residential load management forecast to decline due to shrinking brick and mortar retail sector, energy efficiency improvements, and falling business investment in commercial and industrial facilities. Residential load management is largely comprised of smart thermostats, with a growing share of grid-interactive water heaters.  
 Source: Wood Mackenzie US DER Outlook, June 2020

**30 States + DC** have a Renewable Portfolio Standard, 5 states have a Clean Energy Standard

8 states have renewable portfolio goals, 5 states have clean energy goals

▪ **8 PJM states + DC**

have a Renewable Portfolio Standard

▪ **2 PJM states**

have a Renewable Portfolio Goal

▪ **1 PJM state**

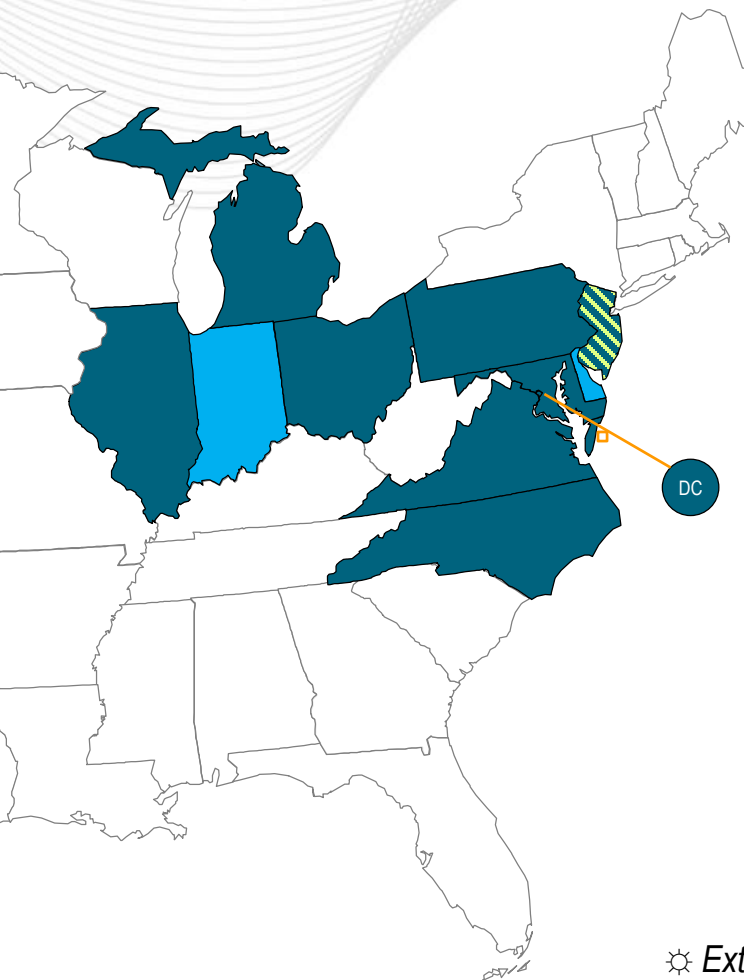
has a Clean Energy Goal

**Renewable Portfolio**

- Standard
- Goal

**Clean Energy**

- Standard
- Goal

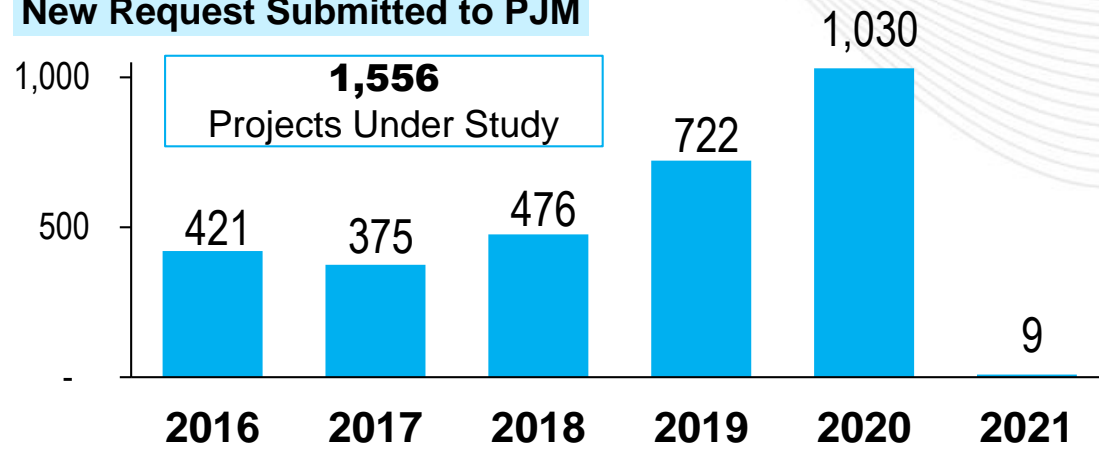


<b>DC</b>	100% x 2032
<b>DE</b>	25% x 2026 ☀
<b>IL</b>	25% x 2026
<b>IN</b>	10% x 2025 ▲
<b>MD</b>	50% x 2030
<b>MI</b>	15% x 2021 ☀▲
<b>NC</b>	12.5% x 2021 (IOUs)
<b>NJ</b>	50% x 2030; (100% x 2050)
<b>OH</b>	8.5% x 2026
<b>PA</b>	18% x 2021 ▲
<b>VA</b>	100% x 2045/2050

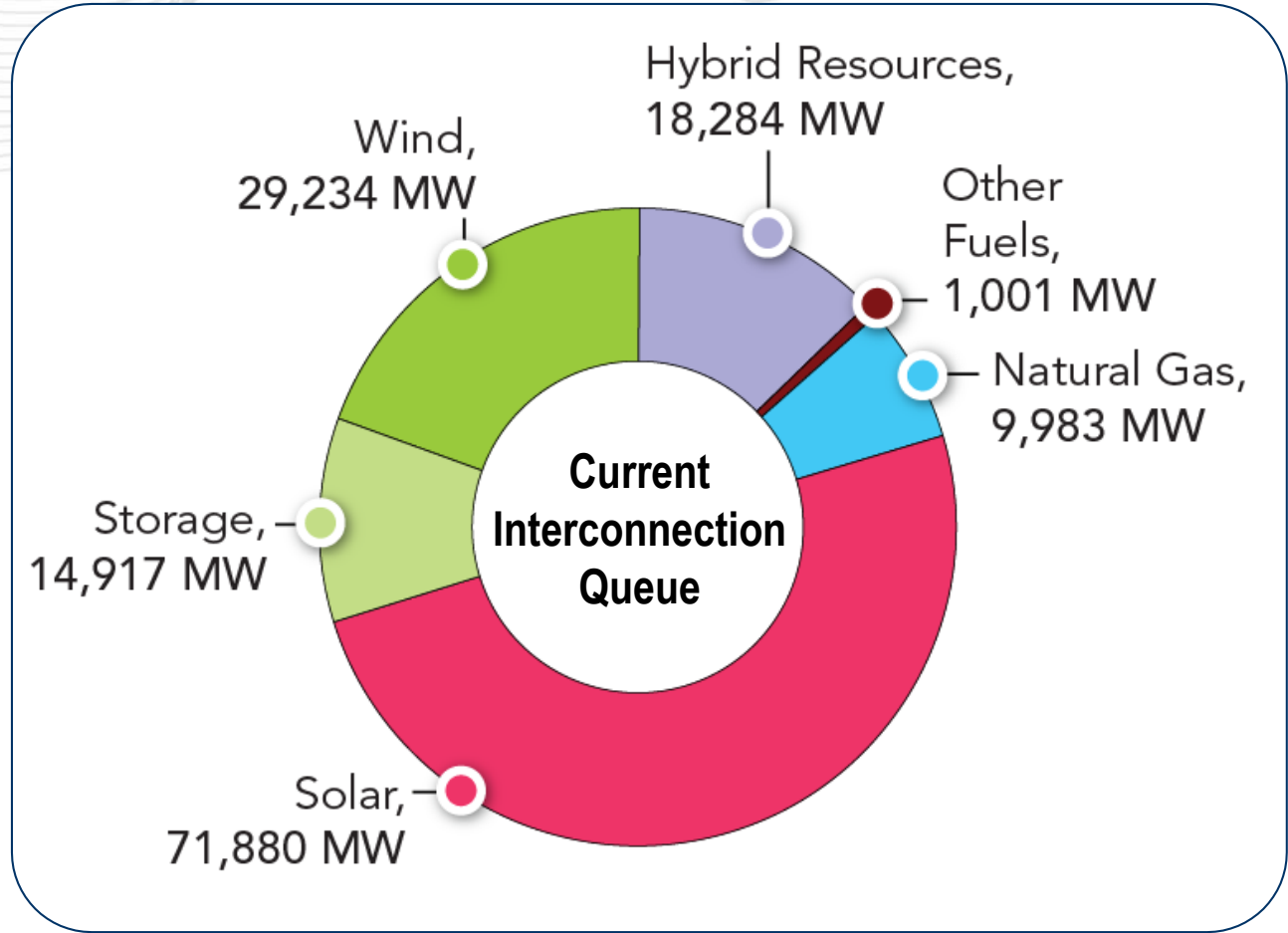
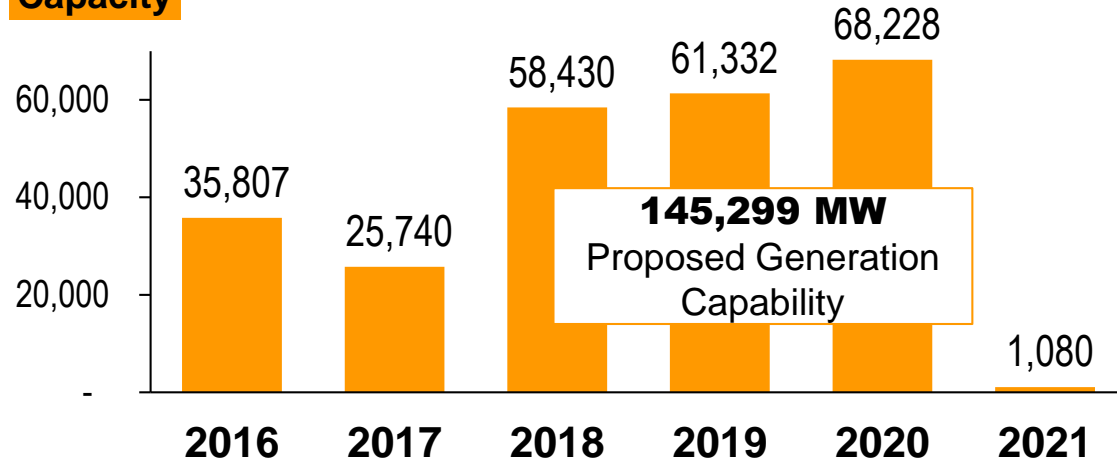
☀ Extra credit for solar or customer-sited renewables  
 ▲ Includes non-renewable alternative resources

# Growth of Renewables in PJM Queue

**New Request Submitted to PJM**



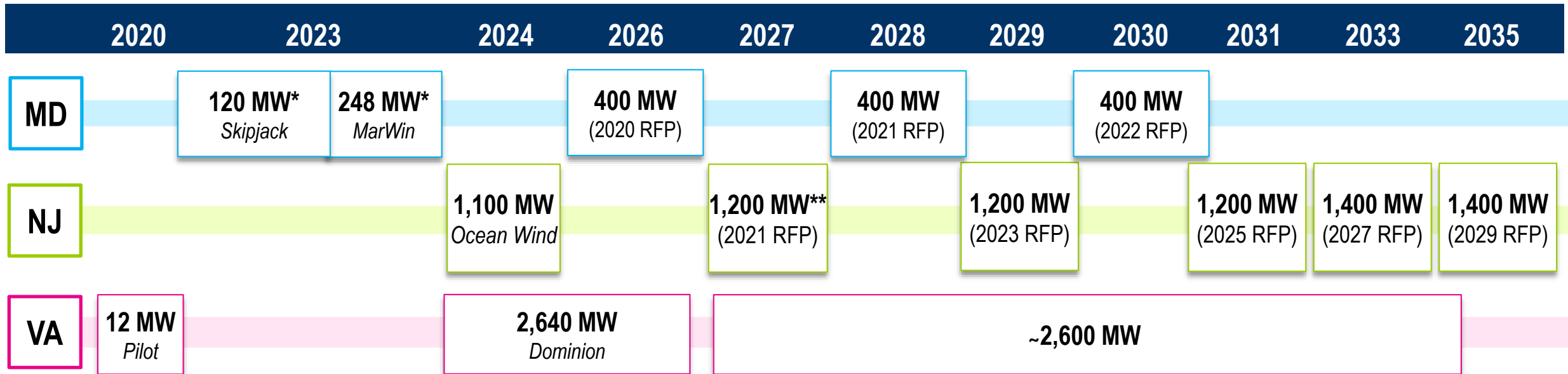
**Capacity**



As of Jan. 21, 2021

# States' Offshore Wind Plans Are Approaching Fast

	Maryland	New Jersey	Virginia
	Target: <b>1,568 MW by 2030</b>	Target: <b>7,500 MW by 2035</b>	Target: <b>5,200 MW by 2034</b>
<b>POLICIES</b>	<ul style="list-style-type: none"> <li>Maryland PSC Order No. 88192 (2017)</li> <li>Clean Energy Jobs Act of 2019</li> </ul>	<ul style="list-style-type: none"> <li>Clean Energy Act of 2018</li> <li>Executive Order No. 92 (2019)</li> </ul>	<ul style="list-style-type: none"> <li>Virginia SCC Order (2018)</li> <li>Virginia Clean Economy Act of 2020</li> </ul>



\*Subject to delay; \*\*NJ solicitation #2 may result in the procurement of up to 2,400 MW.





Facilitate Decarbonization



Grid of the Future



Innovation

## THE ENABLING FOUNDATION



Maintain Reliability



Stakeholder Engagement and Governance



Risk Management



Workforce Development



Efficiencies of Scale



CULTURE

Monitor Developments

# Facilitating the Reliable and Cost-Effective Decarbonization Transition

## Major trends

We currently manage one of the most diverse groups of states in the country with regard to decarbonization policy.

Absent federal policy, we will continue to face this divergence over the next decade.

PJM is not a policymaker, but can play a key role in informing and facilitating policy choices.

## Implications

Growth in ambition and differences in state decarbonization policies pose risk for our ability to administer efficient markets and effective planning.



Recognizing the magnitude of the climate change issue and the unique position PJM holds and the role we fulfill, PJM will enable decarbonization efforts by policymakers and consumers in a reliable, cost-efficient manner utilizing at-scale, market-based solutions whenever possible.



## Our strategic intent and initial associated initiatives

We will facilitate pursuit of policy-maker and consumer decarbonization objectives by establishing ourselves as a trusted, unbiased policy adviser & driving consensus for at-scale, market-based solutions where possible.

- Convene stakeholders to develop a resource adequacy construct that better supports state and federal decarbonization goals
- Support states' decarbonization objectives using competitive, market-based solutions wherever possible
- Utilize State Agreement Approach to enable state decarbonization goals where appropriate
- Explore solutions to operating challenges associated with intermittent resource penetration

# PJM's Unique Position to Drive an Efficient Transition to the Grid of the Future

## Major trends

Utility-scale wind and solar generation is increasing in our territory (from 3% today to as high as 100% under a Biden plan)



DER penetration is increasing in our territory (distributed PV projected to grow at 13% CAGR '19-'25)

Aggressive offshore wind agenda by certain PJM states

Aging transmission infrastructure and associated replacement spend

## Implications

We need to:

- Ensure operational reliability and long-term resource adequacy with a higher share of intermittent resources
- Develop markets and planning criteria to incorporate DER
- Incorporate OSW into planning processes
- Continue to help drive transparency into supplemental project spend and encourage regional approaches while respecting CTOA limits



## Our strategic intent and initial associated initiatives

We will be successful in facilitating an efficient transition to the grid of the future given our unique regional role and position operating and administering one of the largest grids in the U.S.

- Establish a clear vision of the future grid
- Develop Order 2222 compliance framework
- Evolve planning criteria to ensure reliability given increasing intermittent resources
- Ensure reliable and efficient integration of offshore wind
- Evolve interconnection process to better meet changing stakeholder needs
- Ensure resource adequacy construct accurately accounts for reliability value of resources
- Explore products to value grid reliability services
- Ensure system reliability given DER proliferation
- Define model of coordination with distribution utilities

# Fostering Innovation Will Be Essential to Responding to Major Trends Driving Change in the Power System

## Major trends

Major trends like DER/intermittent resource growth and state decarbonization policies are driving changes across the power sector and will require us to adapt.

Increasing volume of data and advanced analytical tools are creating new opportunities to drive value for the region.



## Implications

Increasingly complex power systems will require testing and implementing new technologies, market structures and operational practices.

Opportunity to leverage technology and innovation to create value for stakeholders.

New skillsets and mindsets are needed to drive required changes.



## Our strategic intent and initial associated initiatives

We will create an environment to become a center for grid innovation in the U.S. by fostering innovative approaches to addressing challenges both internally and with our external stakeholder community.

- Build high-value data and analytics use cases
- Build a robust data & analytics foundation
- Enhance innovation process, frameworks & organization
- Foster innovative talent & culture

# Successful Execution of Strategy Requires a Strong Enabling Foundation

**Maintain  
reliability**

**Stakeholder  
engagement and  
governance**

**Workforce resources,  
capacity and  
expertise**

**Risk  
management  
principles**

**Maximum  
value though  
regional scale**

**Culture of  
success**

# Reliably and Efficiently Enabling the Energy Transition

