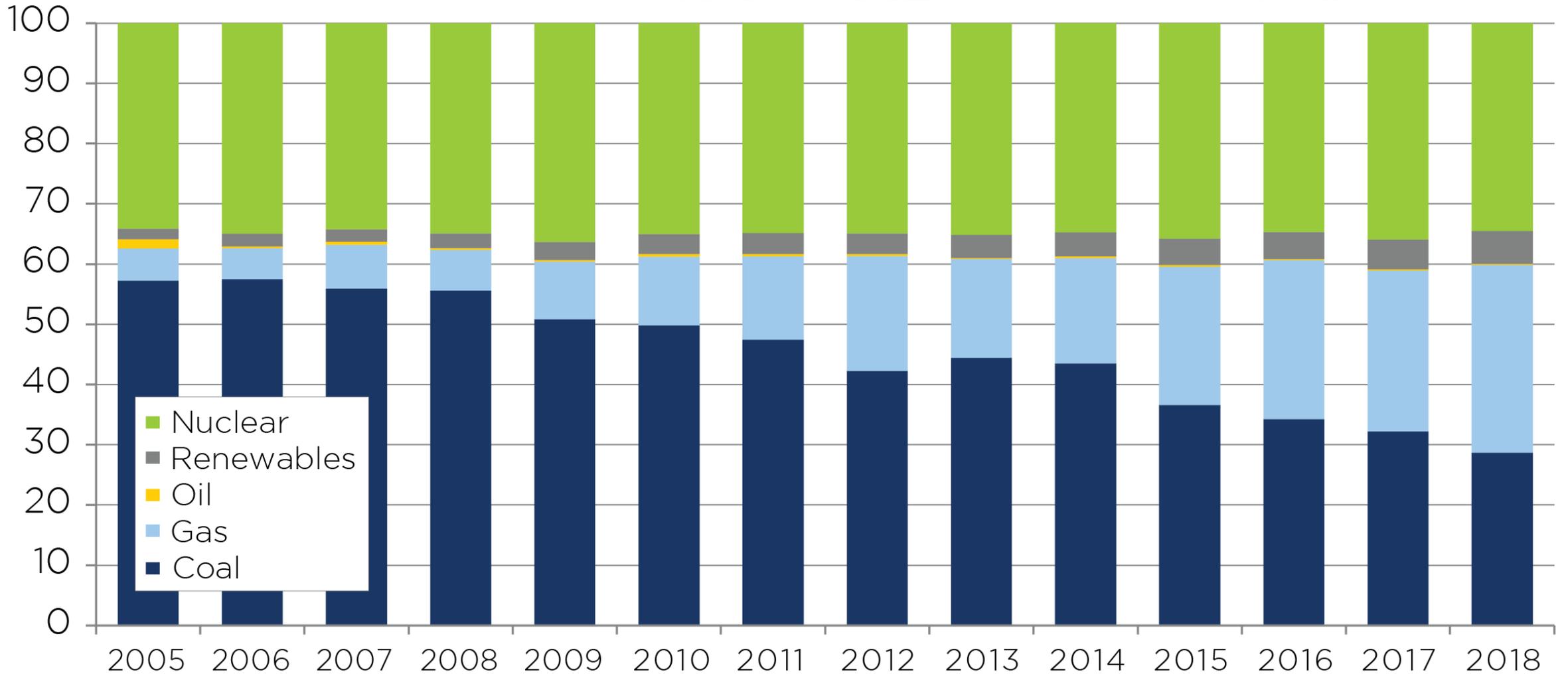




# Renewable Portfolio Standard Education

Ken Schuyler  
Manager, Renewable Services  
Carbon Pricing Senior Task Force  
July 26, 2019

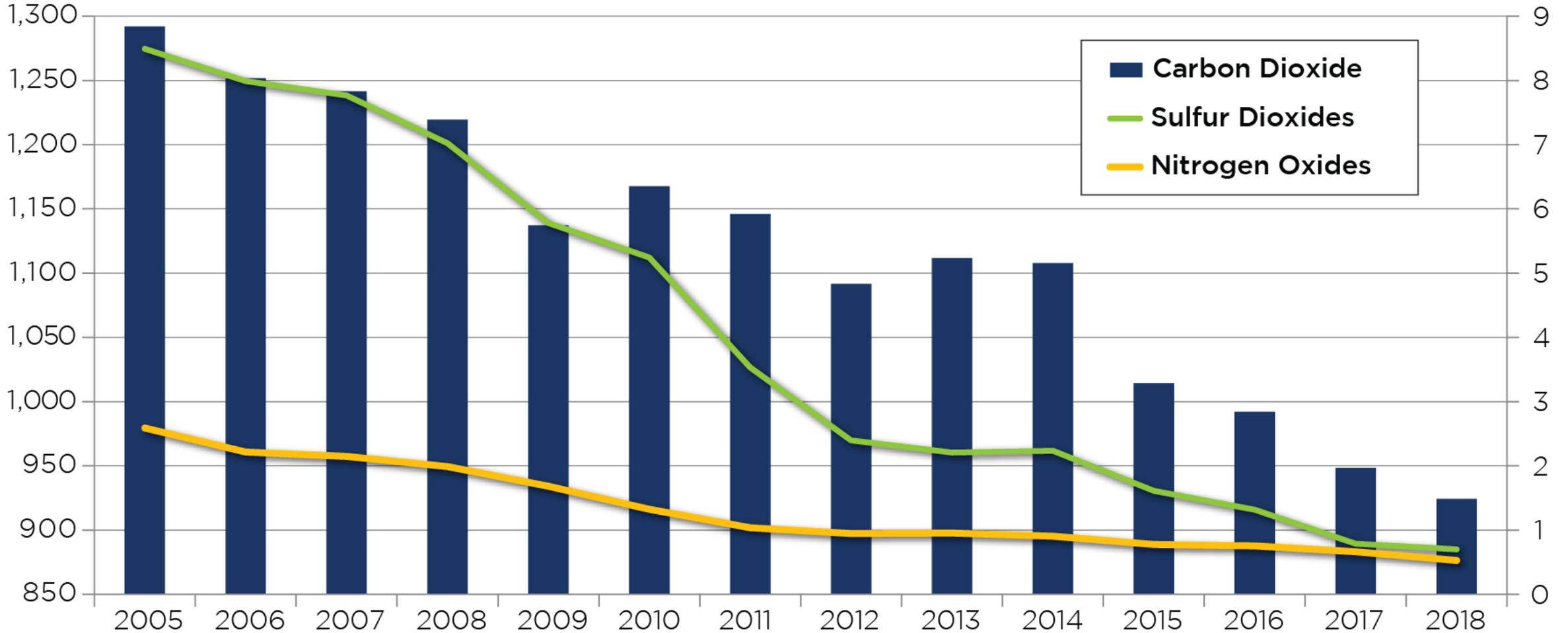




# 2005-2018 PJM Average Emissions

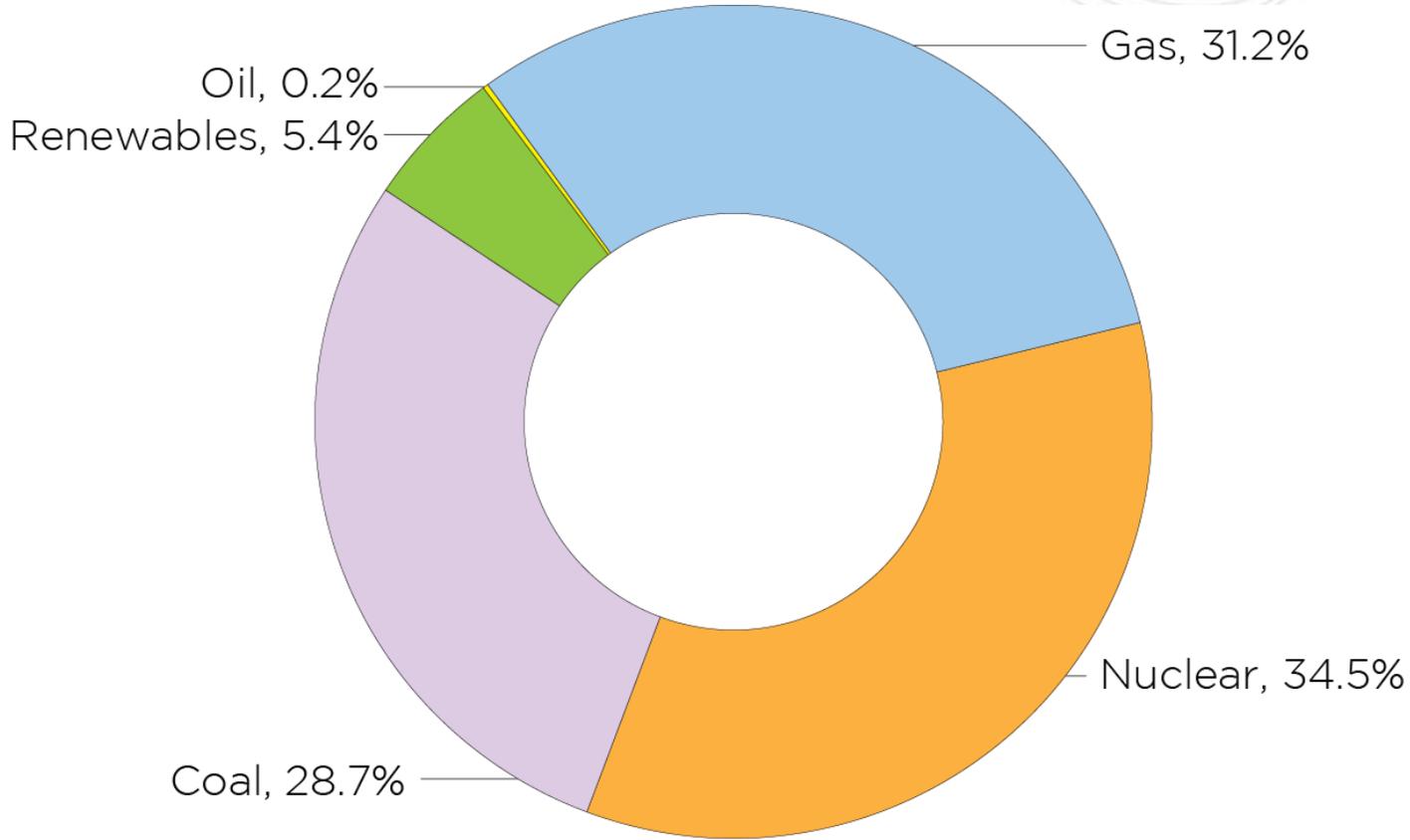
CO<sub>2</sub>  
lbs/MWh

SO<sub>2</sub> and NO<sub>x</sub>  
lbs/MWh

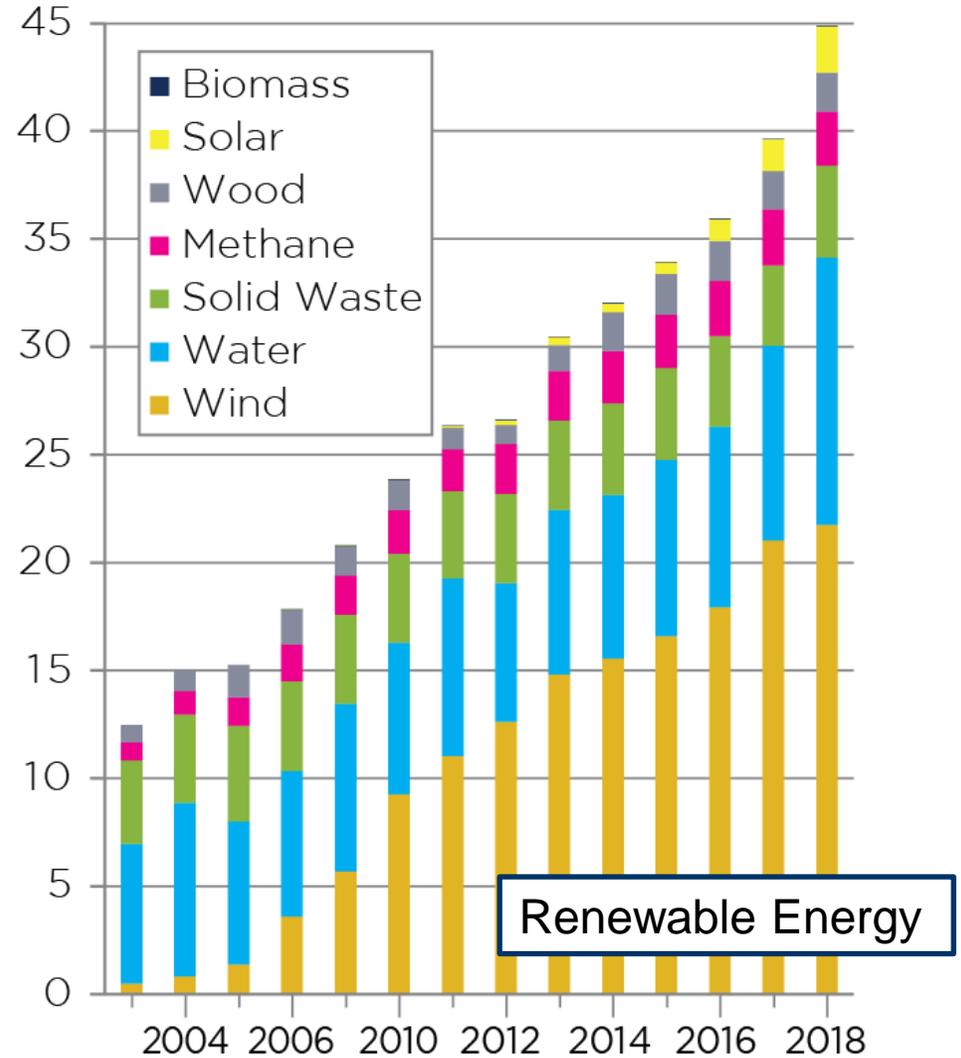


# Percentage of Renewable Energy is Small but Growing

## PJM Generation Mix – 2018 Annual Energy

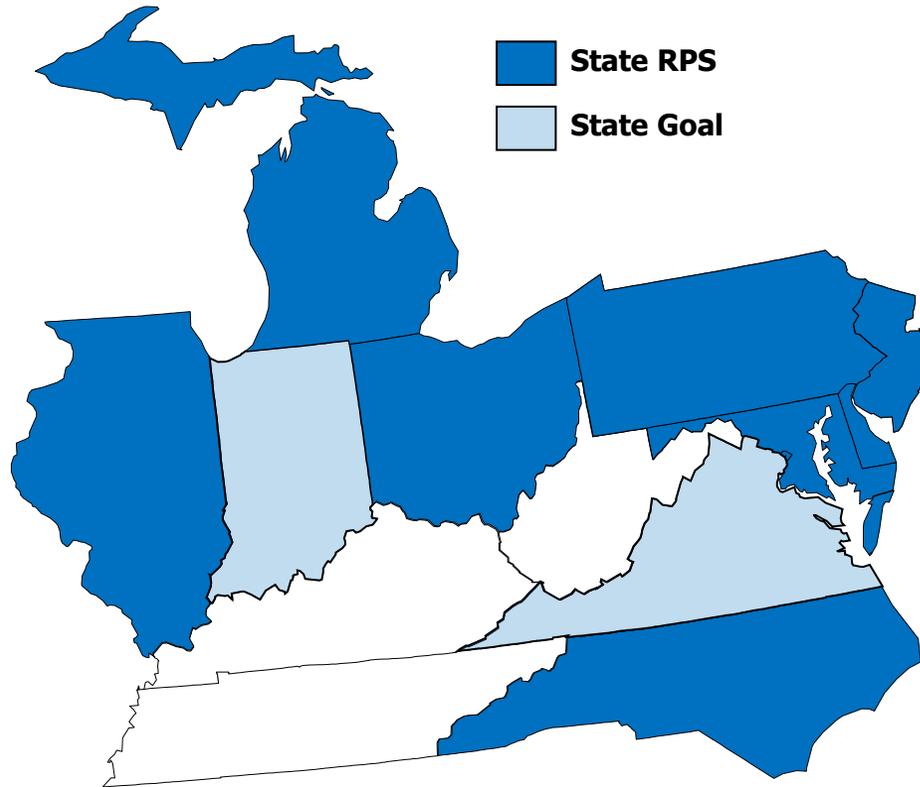


MWh (millions)



- States create renewable portfolio standards (RPS) to incent the development of new **renewable** and **alternative** energy sources.
- A state RPS defines the percent of electricity generated by renewable resources that must be sold in the state over a specified time period.
- The resource requirements determined by RPS policies vary state to state.

State Renewable Portfolio Standards (RPS) require suppliers to utilize wind and other renewable resources to serve an increasing percentage of total demand.



## State RPS Targets

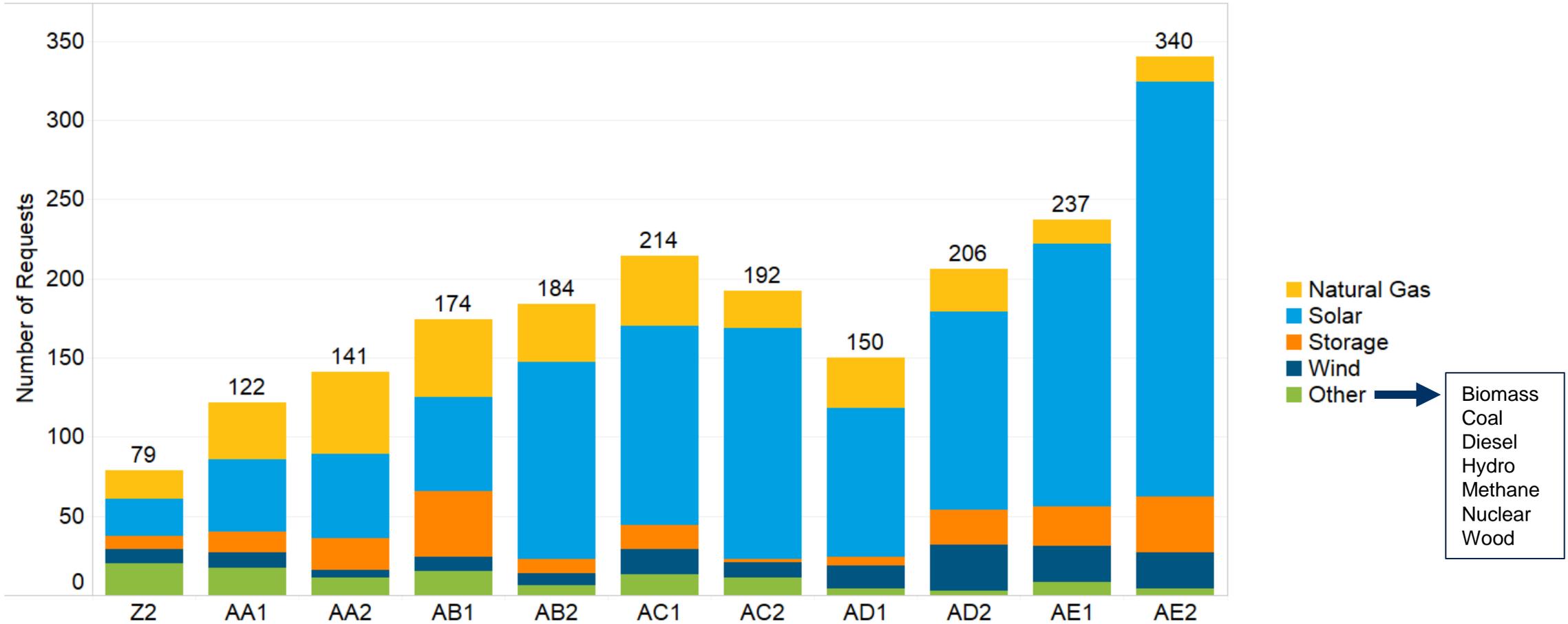
- ☀ NJ: 50% by 2030
- ☀ MD: **50% by 2030**
- ☀ DE: 25% by 2026
- ☀ DC: **100%** by 2032
- ☀ PA: 18%\*\* by 2021
- ☀ IL: 25% by 2026
- ☀ OH: 12.5% by 2026
- ☀ NC: 12.5% by 2021 (IOUs)
- MI: 15% by 2021
- VA: 15% by 2025
- IN: 10%\*\* by 2025

☀ Minimum solar requirement

\*\* Includes non-renewable “alternative” energy resources

# Recent Queue Trends: Z2 - AE2

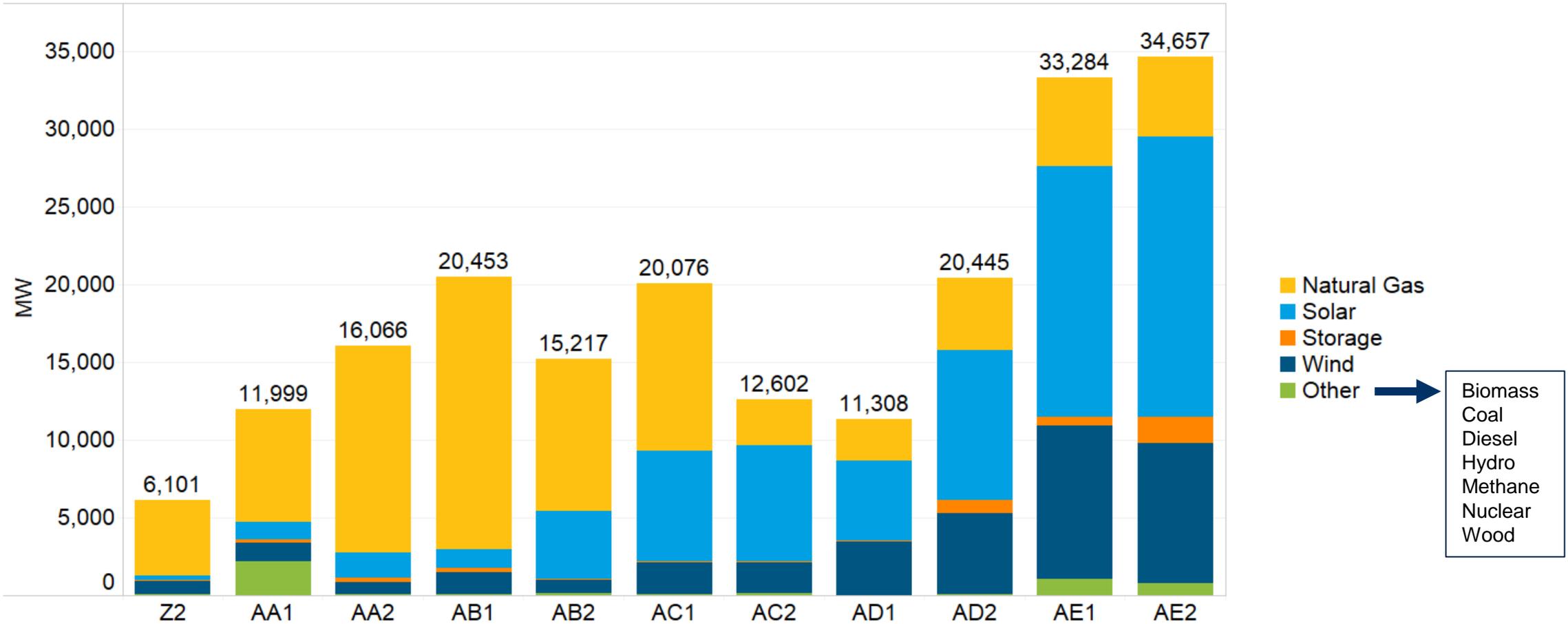
## Generation Interconnection Requests – Total Projects



Trend shows shift from mostly Natural Gas Interconnection Requests to Renewables (Solar and Wind). Uptick in Energy Storage

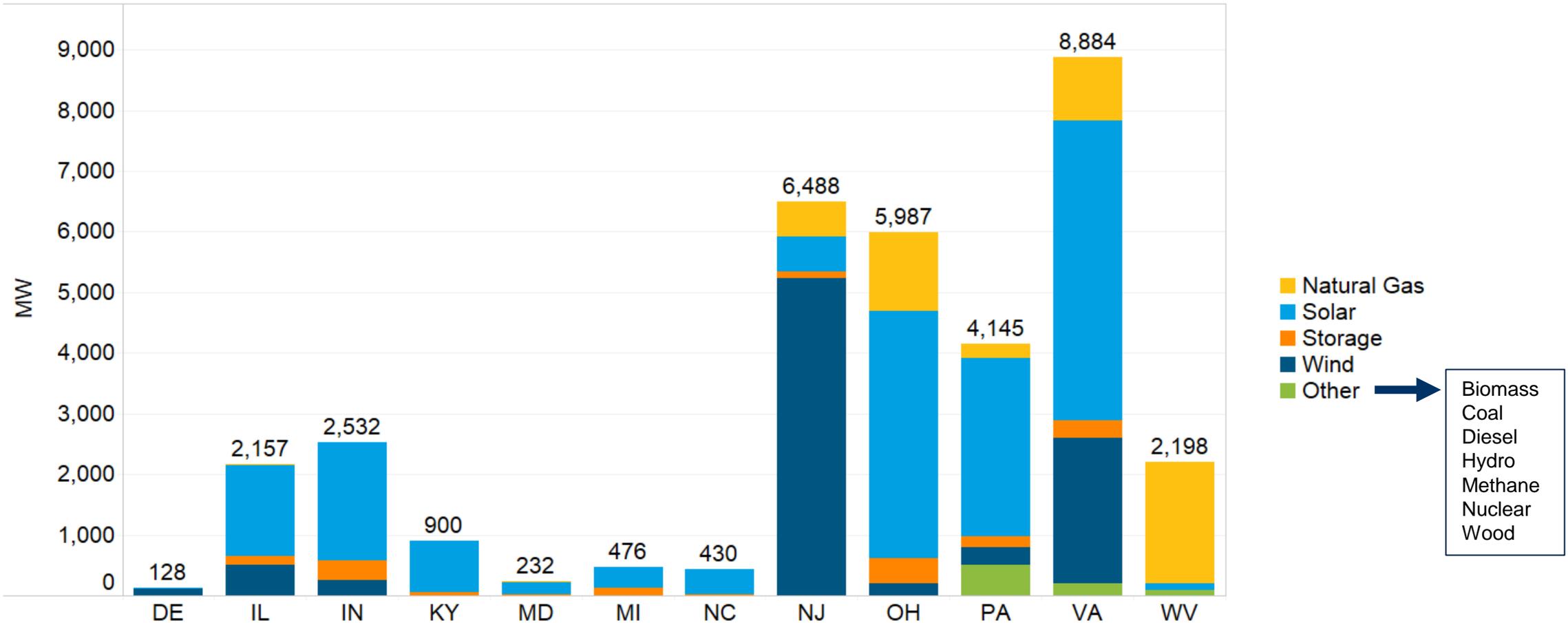
# Recent Queue Trends: Z2 - AE2

## Generation Interconnection Requests – Total Energy

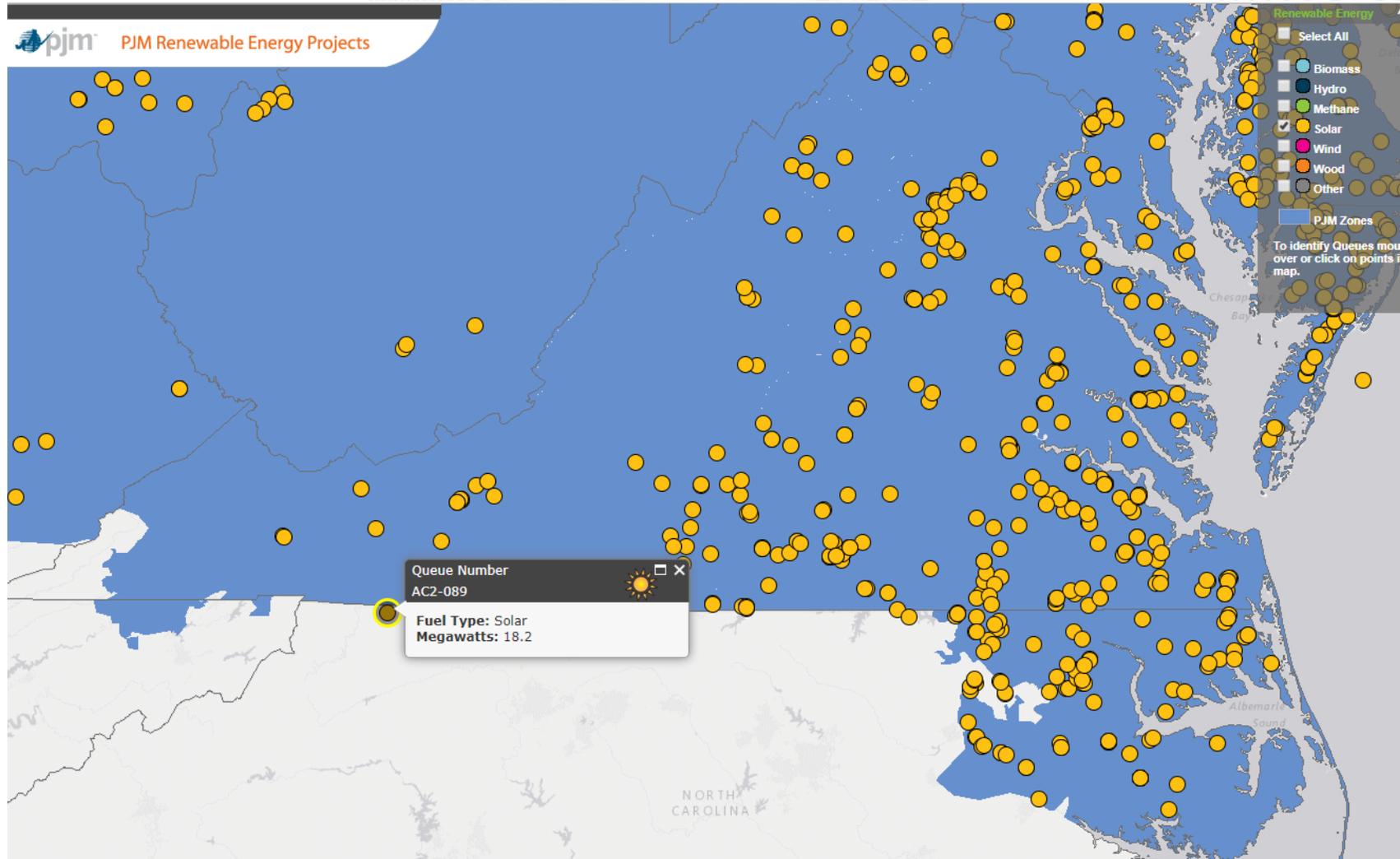


# Recent Queue Trends: Z2 - AE2

## Generation Interconnection Requests (Queue AE2) by State - Requested Energy

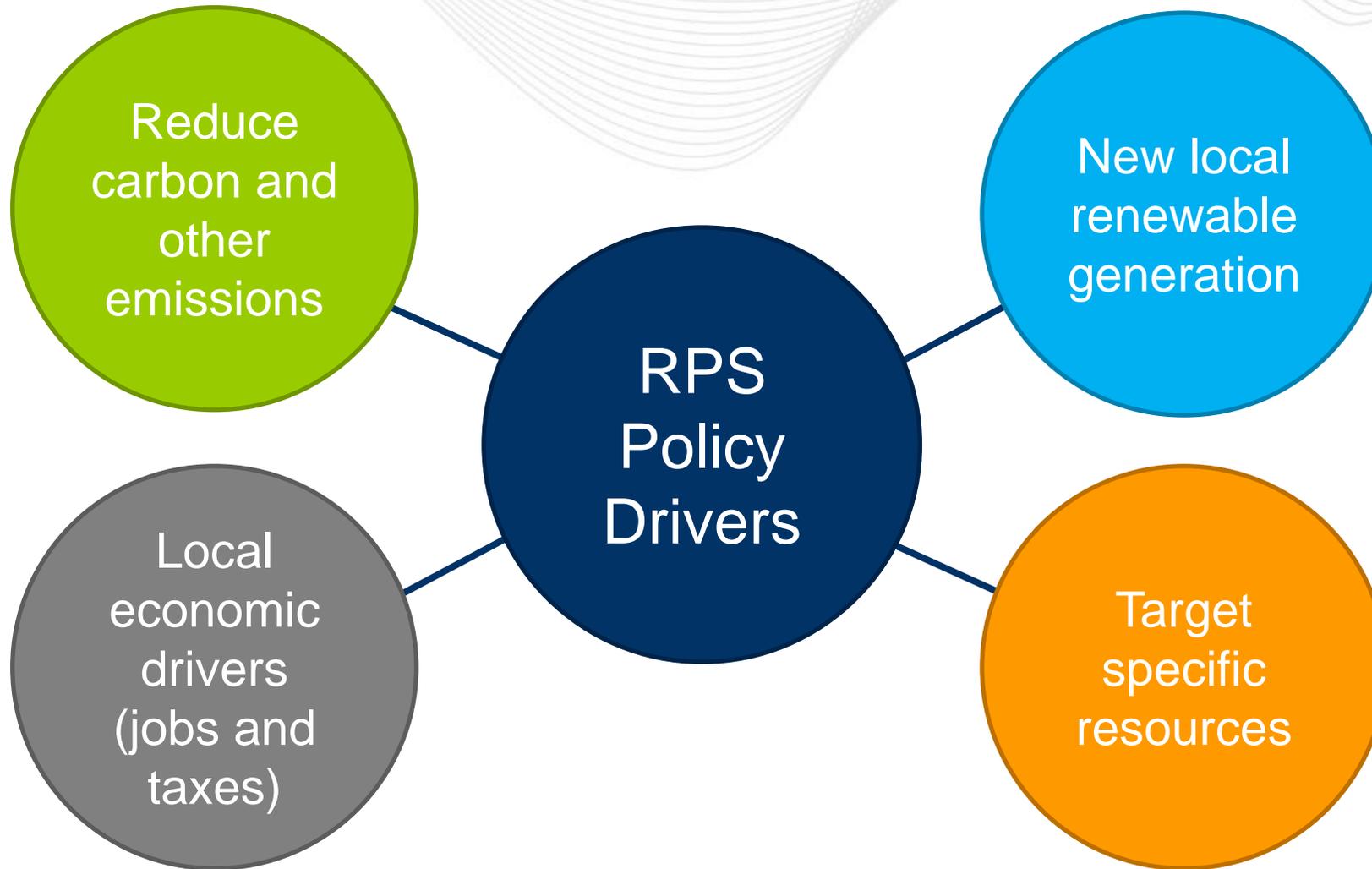


Bulk of Solar project requests are in VA, OH and PA. Bulk of Wind project requests are in NJ and VA (large offshore wind projects)



Available at: <https://mapservices.pjm.com/renewables/>

# Carbon reduction is not the only driver of RPS policies



## Common resources

- Solar
- Wind
- Landfill gas
- Hydro
- Biomass
- Geothermal

## State-specific resources

- Coal mine methane (PA)
- Pumped Hydro (PA)
- Waste Coal (PA)
- Poultry litter (MD and NC)
- Swine waste (NC)

- Geographic Eligibility, Banking, Multipliers, Price Caps
- Eligible generation sources (e.g., Tier I / Tier II)
- Technology-specific requirements (e.g., “carve-outs”)
- Schedule for increasing percent of renewable generation

- **PJM Environmental Information Services, Inc.**
  - Formed in February 2005
  - Capitalized independently of PJM Interconnection, L.L.C.
  - PJM members have no cost responsibility or liability
- **Generation Attribute Tracking System (GATS)**
  - GATS is owned and administered by PJM EIS
  - Tracks environmental attributes of generation
  - Supports reporting and verification requirements related to environmental compliance (e.g., state Renewable Portfolio Standards) and related markets
  - Costs borne solely by GATS users

- All MWhs of PJM generation are tracked.
- A certificate market separate from energy is enabled for renewable generation.
  - Certificates (i.e., credits) traded separate from energy
  - Certificates can have different value depending on their attributes (e.g., fuel type, location, date of generation, etc).
- It is a *single information system* that will support a range of reporting, verification, and compliance requirements (e.g., disclosure, RPS, voluntary retail markets, etc).
- It is a *regional* system that will enable PJM states and market participants to support varying needs and priorities.
- A system that is flexible enough to meet evolving state requirements.

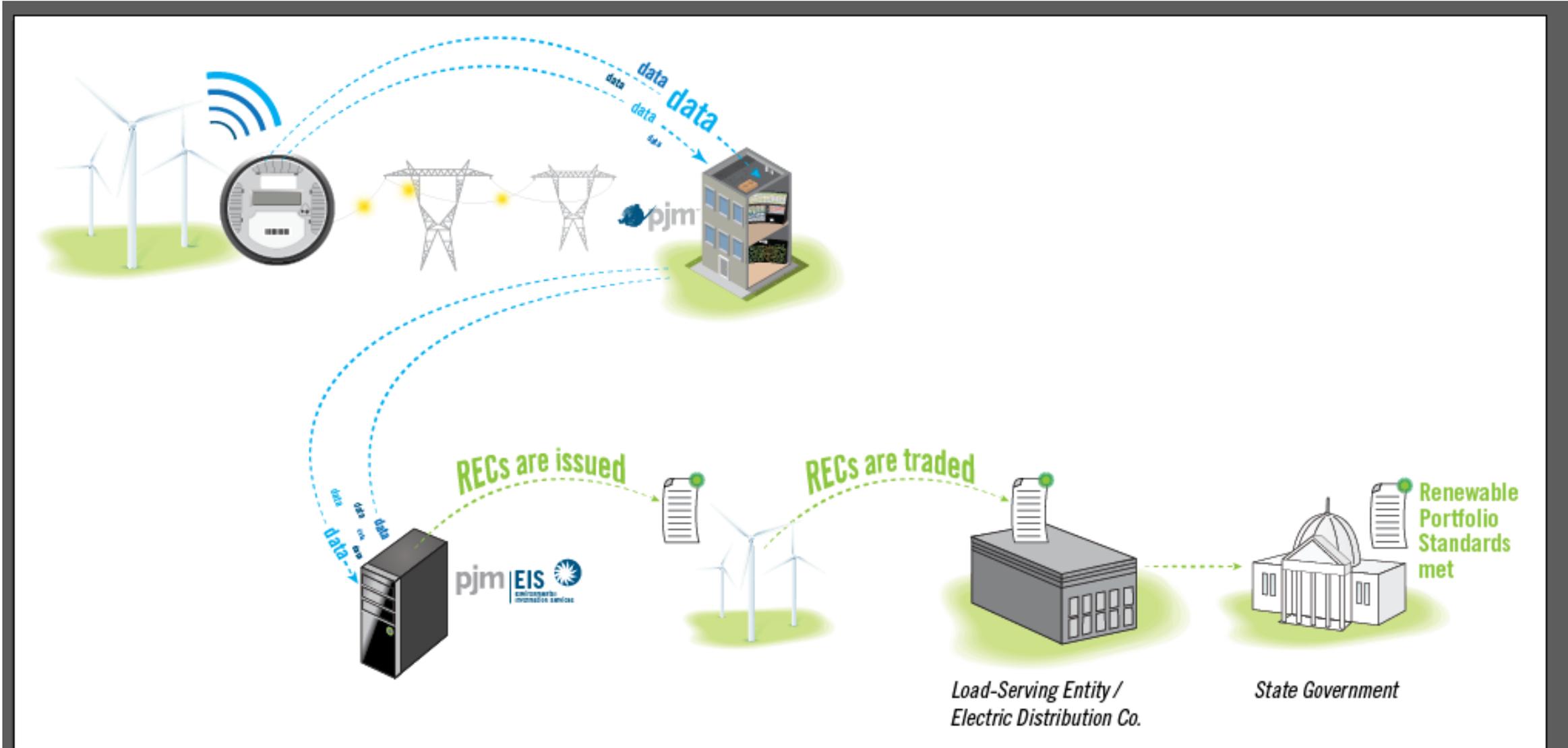
- A **renewable energy certificate (REC)** represents the environmental and other non-power data attributes created when renewable energy is generated.

## Data include:

- Generator location
- Emissions output
- Fuel source
- Generator vintage

## Buyers of RECs:

- Electricity suppliers
- Brokers / Aggregators
- Environmental firms
- Companies seeking to reduce carbon footprint



## Information publicly available to improve market transparency:

<https://www.pjm-eis.com/reports-and-events/public-reports.aspx>

- **Aggregator/Broker Listing**
  - Listing of Aggregators and Brokers in GATS
- **Renewable Generators Registered in GATS**
  - Listing of all RE systems and their State RPS Enrollment(s)
- **Solar Weighted Average Price**
  - Listing of SREC Trades by State, by Month
- **Bulletin Board & Buyer's Bulletin Board**
  - Listing of Credits for Sale/Purchase
- **RPS Eligible Certificates & RPS Retired Certificates**
  - Listing of Eligible / Used RECs (i.e., supply and demand)

# **GATS Technical & Customer Service / Administrative Support**

GATS Administrators

610-666-2245

1-877-750-GATS (4287)

610-771-4114 (fax)

GATSAdmin@pjm-eis.com

[www.pjm-eis.com](http://www.pjm-eis.com)