

# IHS ENERGY: POWER, GAS, COAL, AND RENEWABLES

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Presentation

## Solar PV Capacity Additions Forecast for PJM States: 2017–32

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[ihs.com](http://ihs.com)

**Andy Lubershane**, Associate Director

**Thomas Maslin**, Associate Director



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# Overview of scenarios

## Solar forecast scenario overview

Assumptions	Scenario 1: “Policy continuity”	Scenario 2: “NEM reform”	Scenario 3: “Lower cost solar”
Federal policy support	Current ITC schedule (see slide 5)	Current ITC schedule	Current ITC schedule
Net energy metering (NEM) policies and retail rate structures	Current retail rate structures are maintained, and NEM policies on the books are enforced. Utilities no longer offer NEM once states have exceeded aggregate statewide NEM caps that are currently in place.	From 2020–25, utilities adopt (and regulators approve) changes to NEM and retail rate structures which result in a more cost-based approach to customer-sited solar compensation. (see slide 6)	Current retail rate structures and NEM are maintained for 3 years beyond the reform timeline in Scenario 2. They are then reformed in a similar manner.
Solar costs (\$/kW)	Solar costs decline by 13–20% in nominal terms from 2017–32 (see slide 7)	Solar costs decline by 13–20% in nominal terms from 2017–32	Solar costs decline by 30–40% in nominal terms from 2017–32; driven by a combination of technology advancements and policy incentives
State policy support	Current RPS policies and state-level incentives maintained	Current RPS policies and state-level incentives maintained	Current RPS policies and state-level incentives maintained

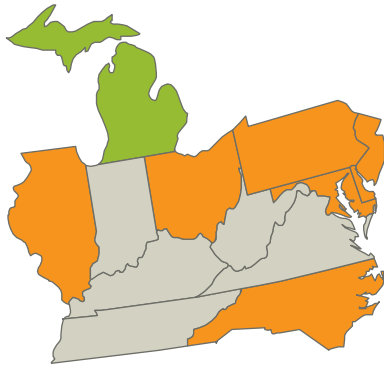
Note: NEM = Net energy metering



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# Key state policy assumptions

## State renewable power mandates



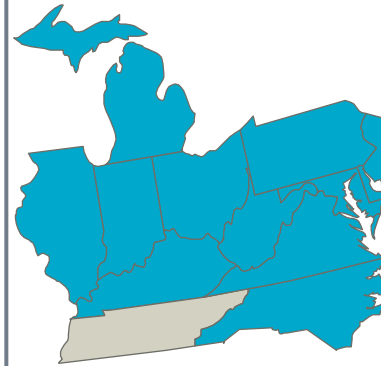
-  Mandatory solar/distributed generation req.
-  Mandatory unconstrained renewable power req.



Note: See summary report for additional state-level policy details.

Source: IHS

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## Net energy metering (NEM) policy



-  Mandatory full retail rate NEM
-  No mandatory full retail rate NEM

Note: See summary report for additional state-level policy details.

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# Investment tax credit assumptions

## Evolution of tax credits by under-construction deadline and online date

2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
				<b>Start construction or safe harbor panels</b>					
				<b>Full ITC (30%)</b>					
				<b>26% ITC</b>					
				<b>22% ITC</b>					
				<b>Permanent 10% ITC*</b> →					
<b>Solar ITC progression</b>									

Notes: Assumes that solar projects may be completed within four years of qualifying for the tax credit via start of physical construction or “safe harbor” provisions, as IRS guidance allows for wind. \*ITC applied to residential taxes terminates for projects that start construction after 2021.

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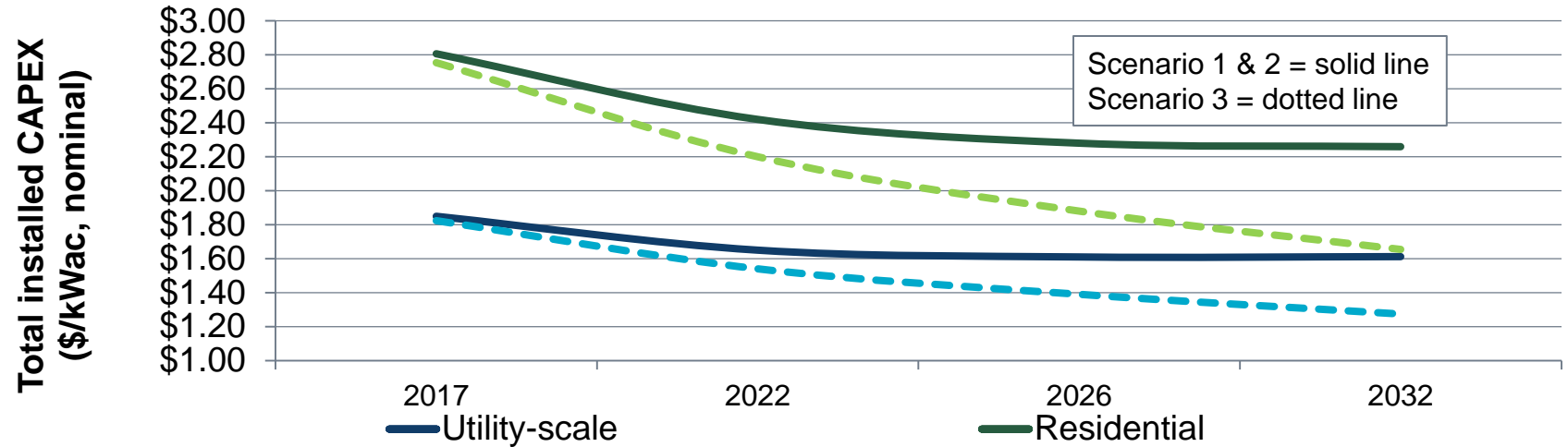
## Options for NEM and retail rate reform

**For Scenarios 2 & 3, we have not predicted specific changes to state or utility NEM policies or rate structures; instead, we assume states will choose from a variety of options that align the compensation for distributed solar with the value of the energy and capacity that it provides.**

- **Holistic rate reform options: lower volumetric (\$/kWh) price in favor of higher:**
  - a) Minimum (fixed) bill charge
  - b) Peak demand (\$/kW) charge
- **Narrowly-tailored NEM reform options:**
  - a) Add “standby” charge for NEM customers only
  - b) Reduce bill credits for all solar generation exported to the grid in real time (may require new meters)
- **NEM replacement options:**
  - a) Value-based tariff (adjusted periodically to account for changes in wholesale power markets and T&D costs)
  - b) Competitive process (for example, rolling tenders)

# Solar costs

## Solar costs in PJM forecast scenarios



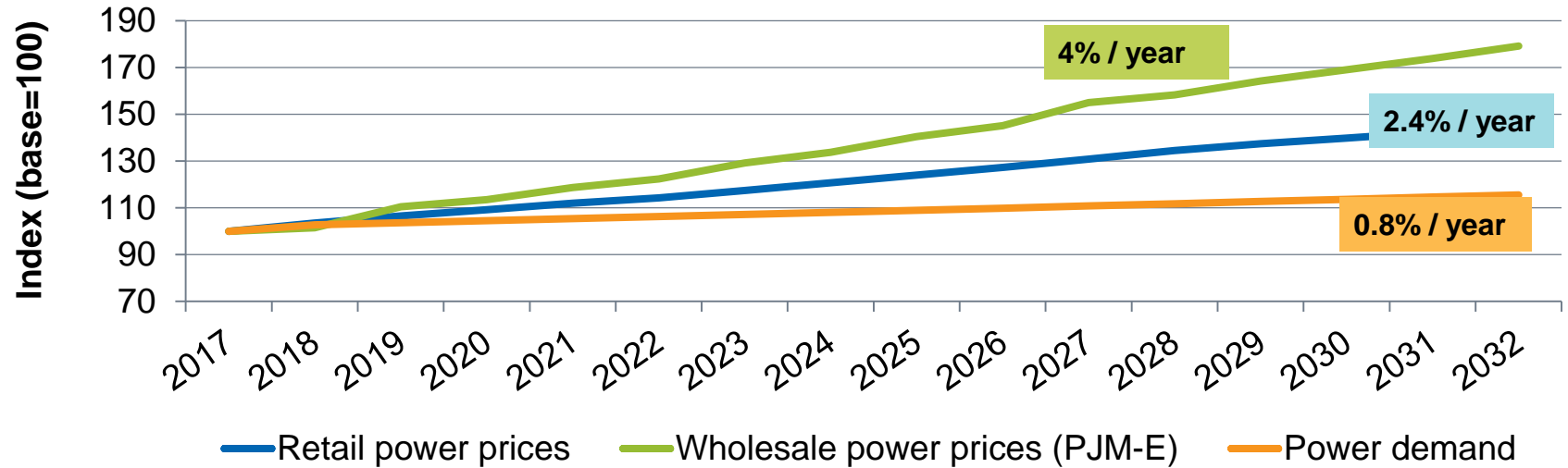
Note: Utility-scale cost represents a project with single-axis tracking technology larger than 5 MW. Commercial segment costs are in between utility-scale and residential—see summary report for detailed cost series.

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# Key power market assumptions (all scenarios)

## Power price and demand growth (PJM average)



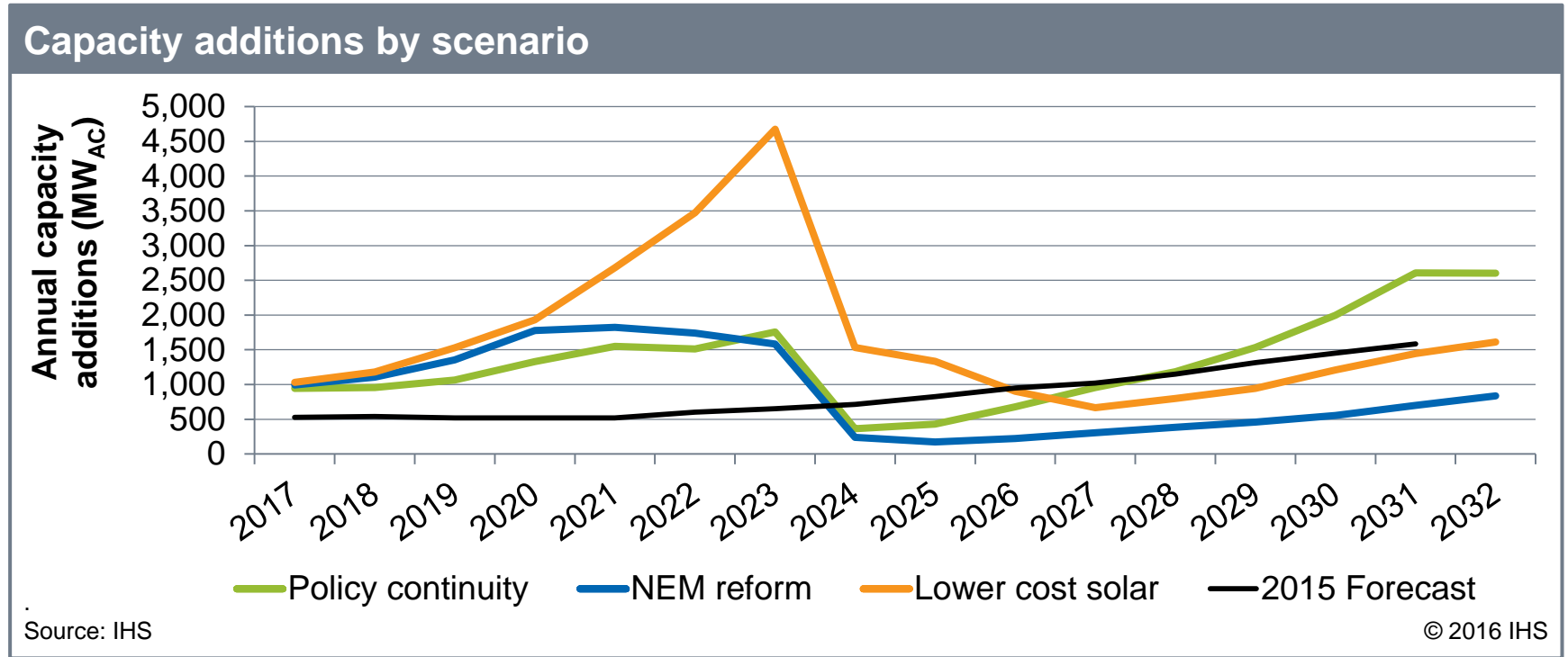
Note: Power price growth rates are in nominal terms. Power demand reflects demand at the customer level, including load that is served by behind-the-meter solar.

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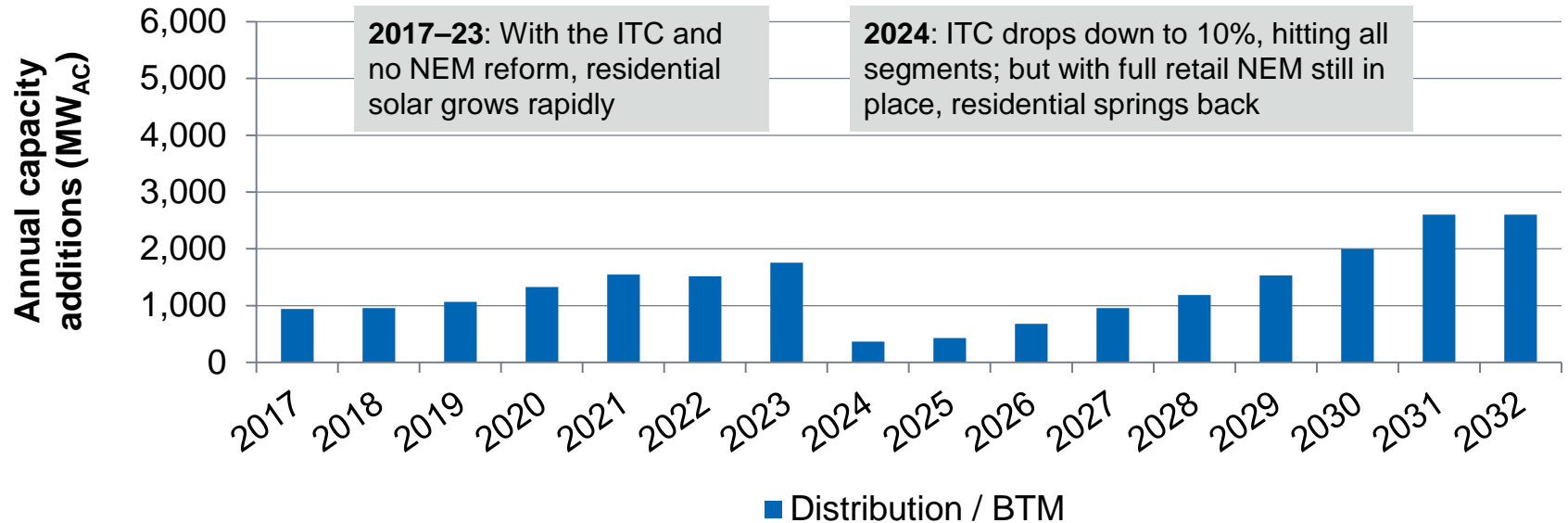
# Capacity additions by scenario



# Solar PV capacity additions by segment:

## Scenario 1: “Policy continuity”

### PJM annual solar PV capacity additions by segment: Scenario 1

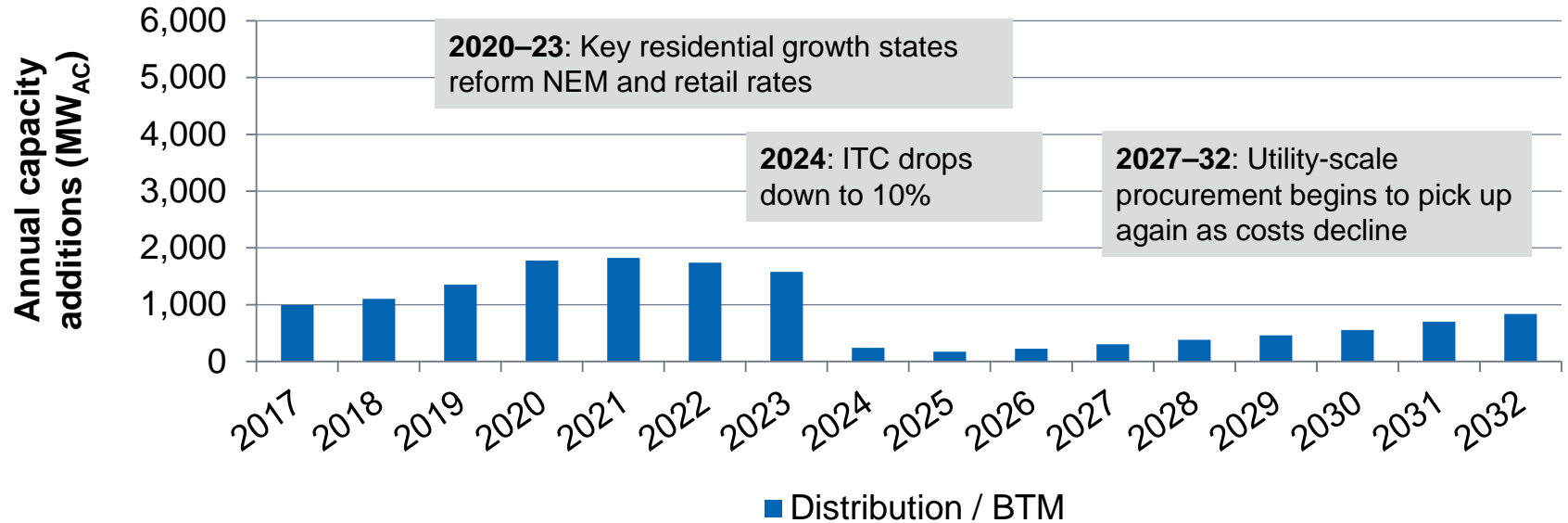


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# Solar PV capacity additions by segment: Scenario 2: “NEM reform”

PJM annual solar PV capacity additions by segment: Scenario 2

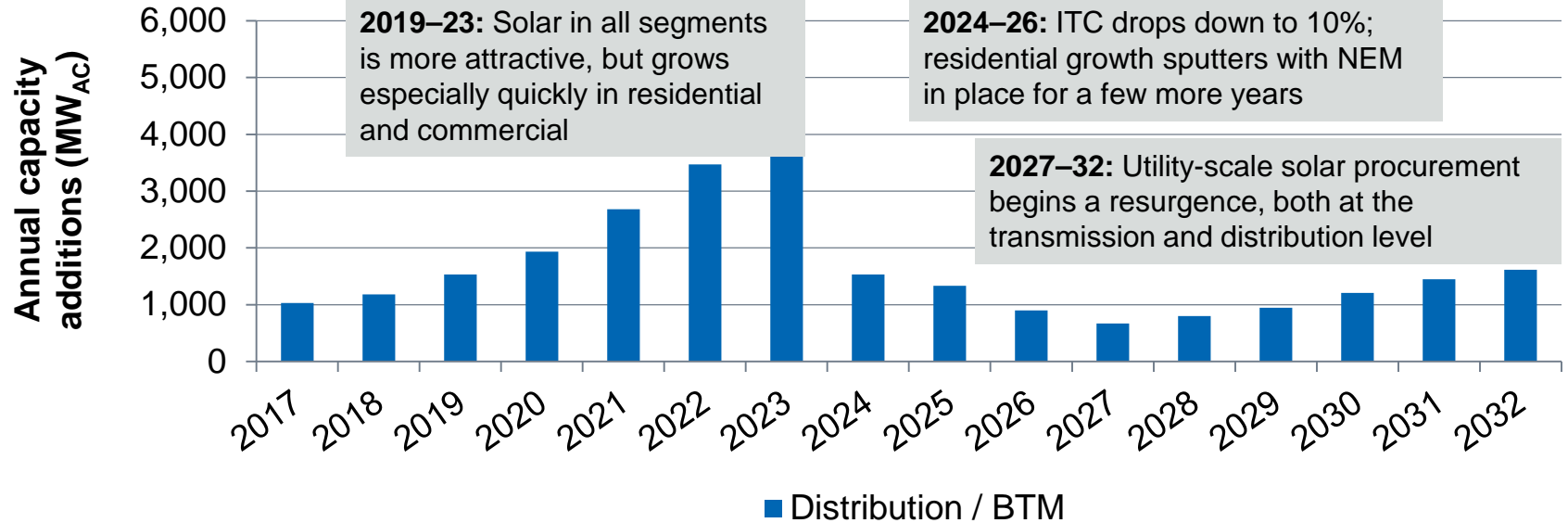


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# Solar PV capacity additions by segment: Scenario 3: “Lower cost solar”

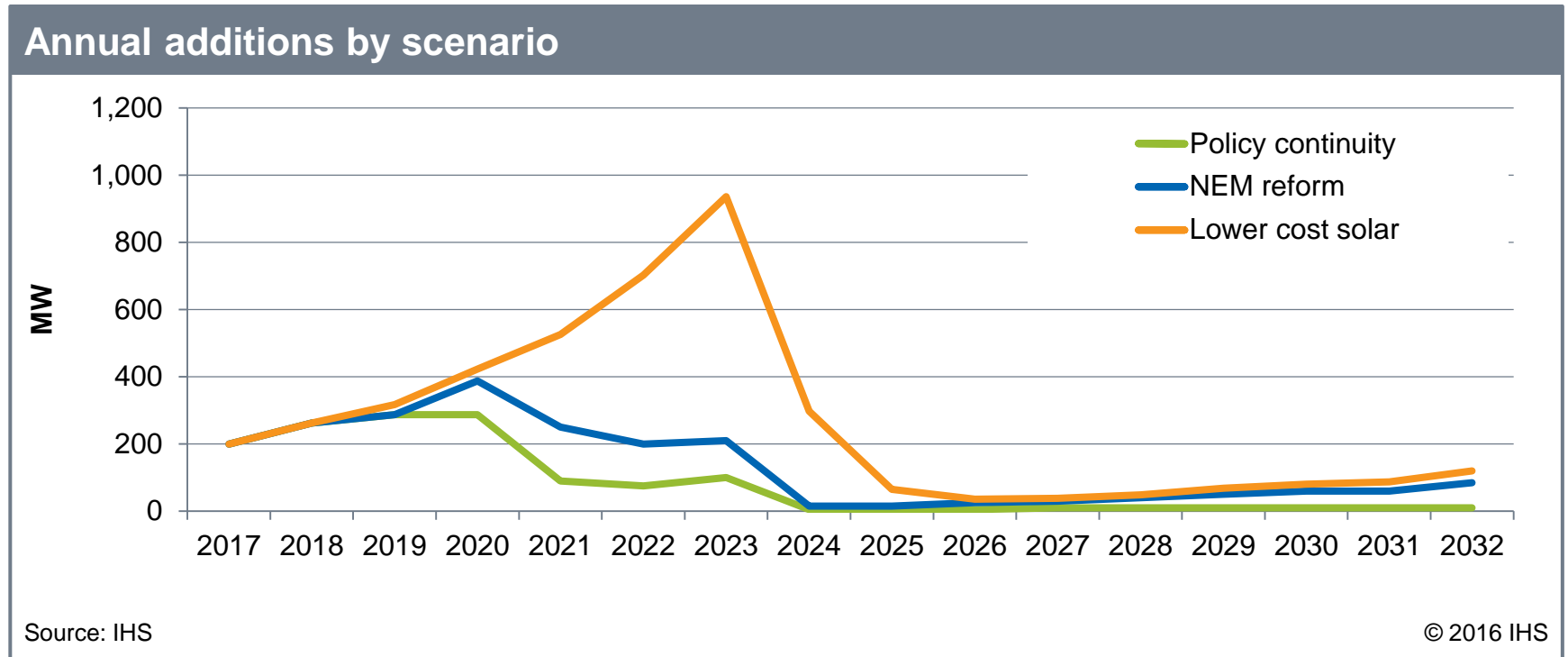
## PJM annual solar PV capacity additions by segment: Scenario 3



Source: IHS

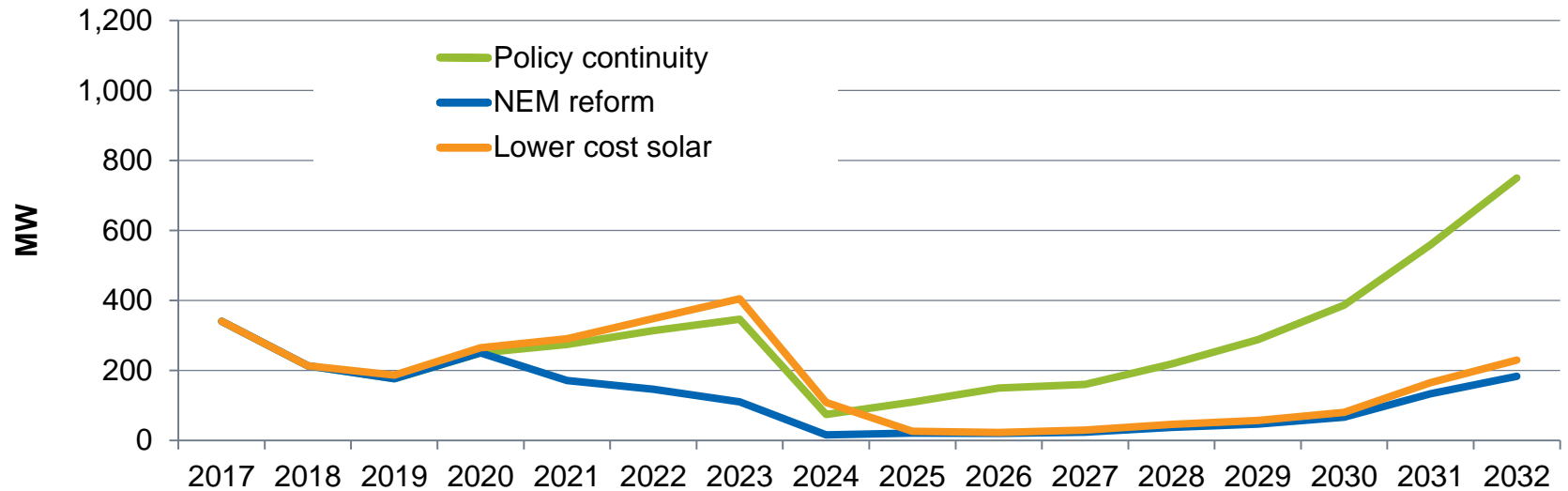
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# Maryland solar PV capacity additions by scenario and segment



# North Carolina solar PV capacity additions by scenario and segment

## Annual additions by scenario

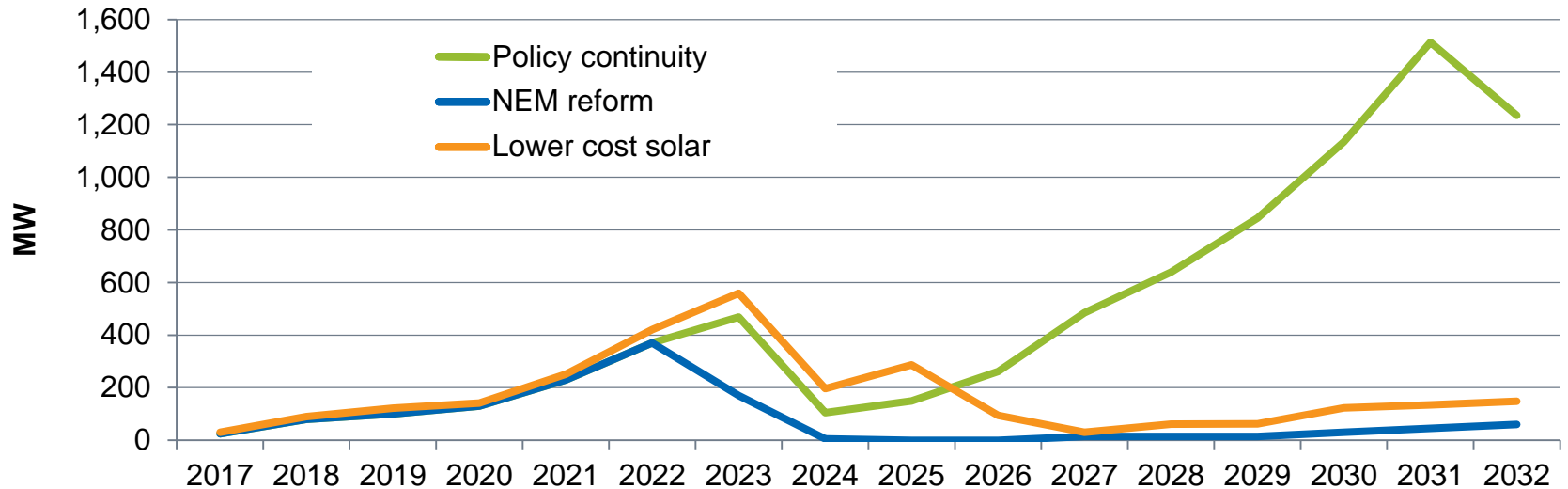


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# Pennsylvania solar PV capacity additions by scenario and segment

## Annual additions by scenario



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CustomerCare@ihs.com

Americas: +1 800 IHS CARE (+1 800 447 2273)

Europe, Middle East, and Africa: +44 (0) 1344 328 300

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