

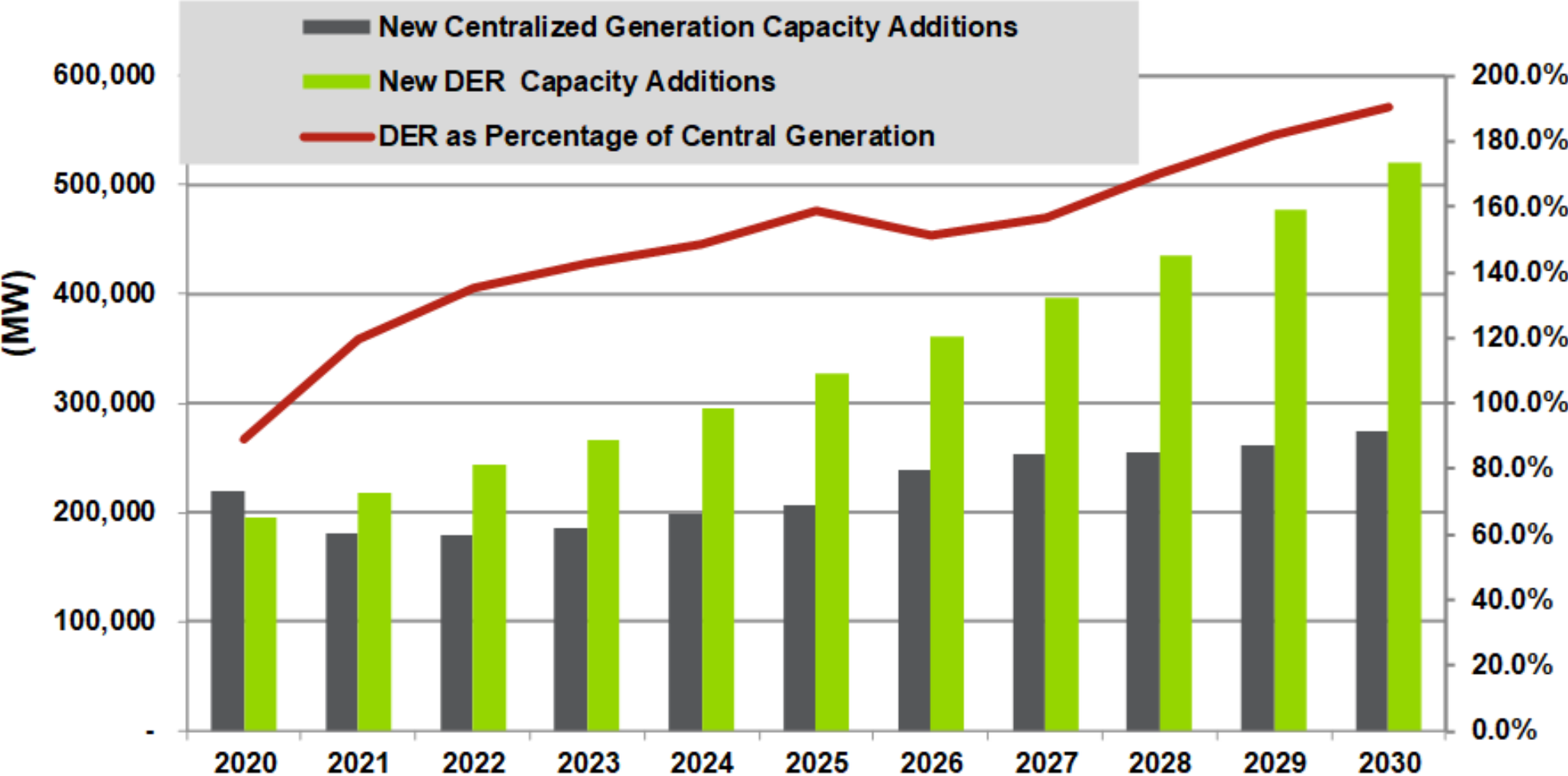


Global Microgrids Market Status Report

Peter Asmus, Research Director
Guidehouse Insights

October 12, 2020

Global Shift In Energy Sources Already Underway



(Source: Guidehouse Insights)

DER Growth is Key Driver for Microgrids, *but so are the following:*

•Reliability

*Power Outages
Increasing in U.S.,
Japan and even
Europe*

•Cost Declines

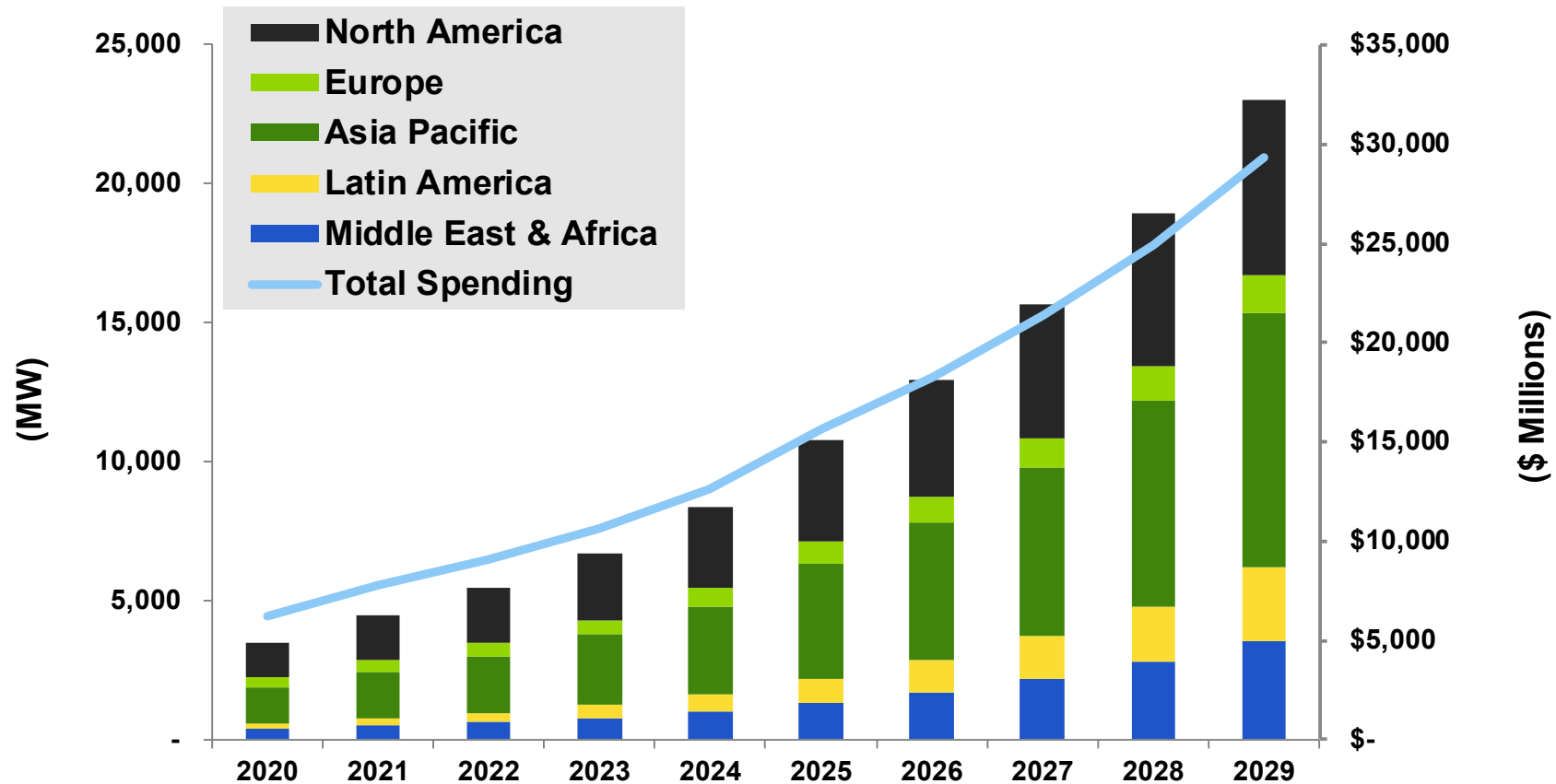
*Costs of distributed
Solar PV and Energy
Storage Decreasing
Rapidly and Soon Will
be Cost Competitive
with the Big Grid in
Key Major Markets*

•Disasters

*Climate Change,
Terrorists, Wildfires,
Earthquakes,
Pandemics such as
COVID-19...the list
keeps growing.*

What does the future hold?

Microgrid DER Capacity and Revenue by Region, World Markets: 2020-2029



(Source: Guidehouse Insights)

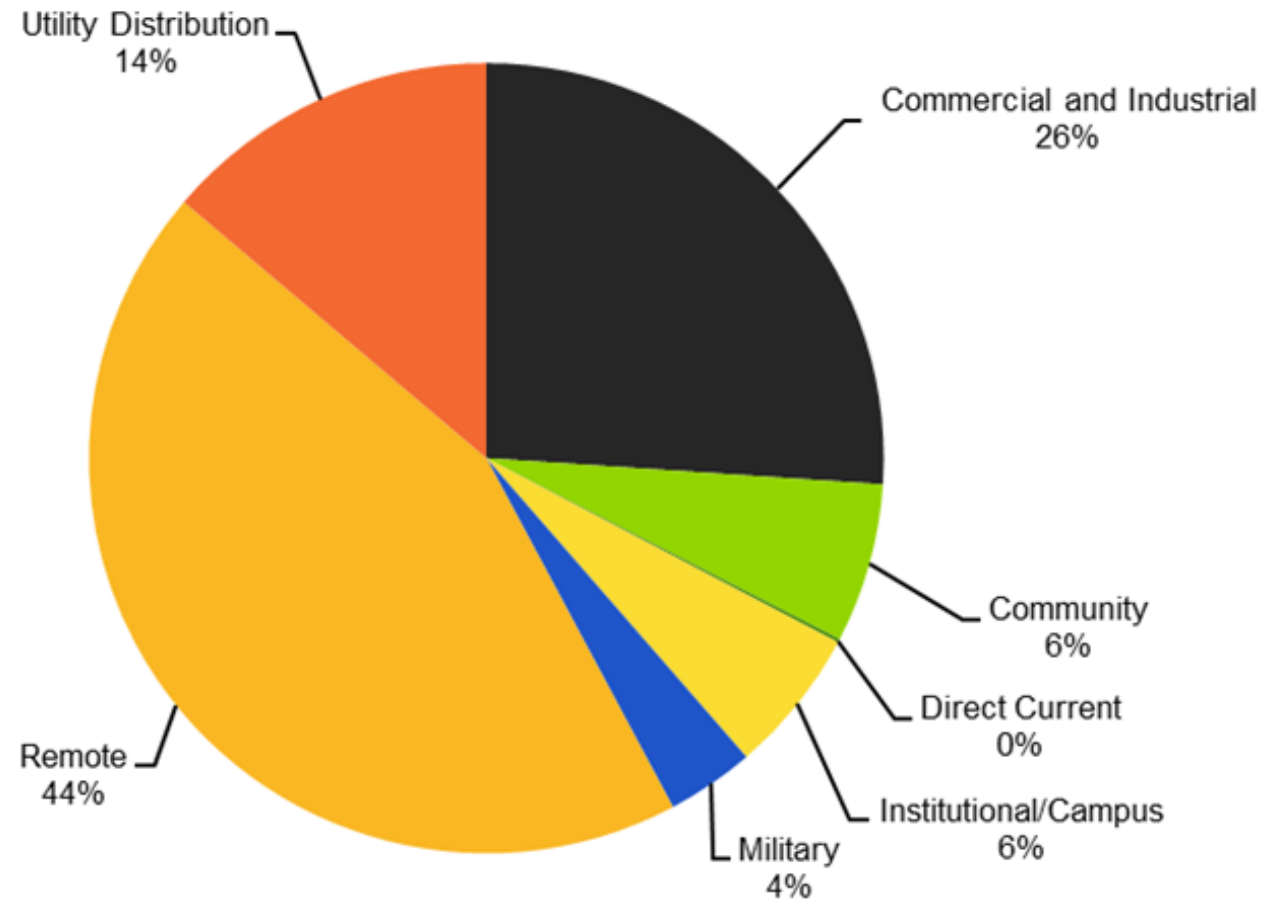
How much value is embedded in microgrids?

*DER assets deployed in microgrids
will reach \$29.3 billion in CAPEX
annually by 2029.*



Which microgrid market segments are the biggest?

Microgrid Capacity by Market Segment, World Markets: 3Q 2020



(Source: Guidehouse Insights)

Energy-as-a-Service Microgrids

New Trend #1



Montgomery County, Maryland Public Safety Center

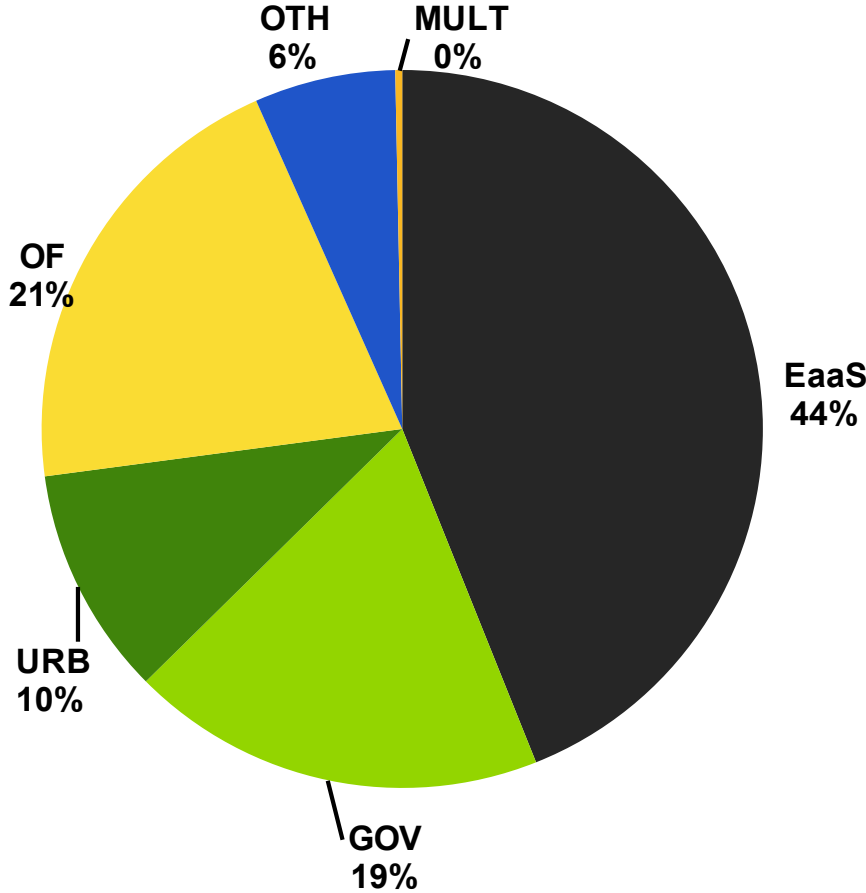
EaaS Microgrids Gaining Traction

Developing world remote microgrids led the way

- **EaaS is the leading way to finance microgrids by project number**
 - Power Purchase Agreements common in third-party microgrids – both grid-tied and remote applications
 - Leading innovators were pay-as-you-go/pay-as-you grow programs for energy access leveraging mobile phone payments
- **5D, a new company spin-off of Schneider Electric, is a collaboration with Huck Capital to deploy EaaS microgrids specifically focusing on C&I customers in the U.S.**
- **Government funding of microgrids is now increasing after lull**
 - Utility rate-basing struggles in U.S. and extreme weather events have combined to stimulate increased government funding in U.S. from both federal and state governments
 - Governments globally are also recognizing the value of microgrids to reduce costs, fuel vulnerabilities and may be a better bet than traditional grid upgrades

Microgrid Business Models

EaaS captures 44% market share by project number count



(Source: Guidehouse Insights)

Modular Microgrids

New Trend #2



Fremont, California Fire Station

Modular Microgrids

Another trend started in developing world for remote power applications

- **Microgrids are customized energy solutions – or so went the story (a key selling point)**
 - Customization adds costs and complexity, however
 - “Microgrids in a Box” concept turned microgrid premise upside down
 - Pre-configured systems reduce engineering and integration costs – especially important at remote sites
 - Customization can be done via software in the cloud as key components – solar PV and energy storage – become increasingly commoditized
- **Though a subset of the larger microgrid market if measured by capacity, modular microgrids will become the market leader if tally is focused on number of projects**
 - Modular microgrids tend to be small – usually kW scale
 - Ideal fit for rural electrification
 - C&I customers also a good fit since microgrid sites tend to share similar sized buildings
 - Much of the innovation started in mobile military applications in Iraq and Afghanistan

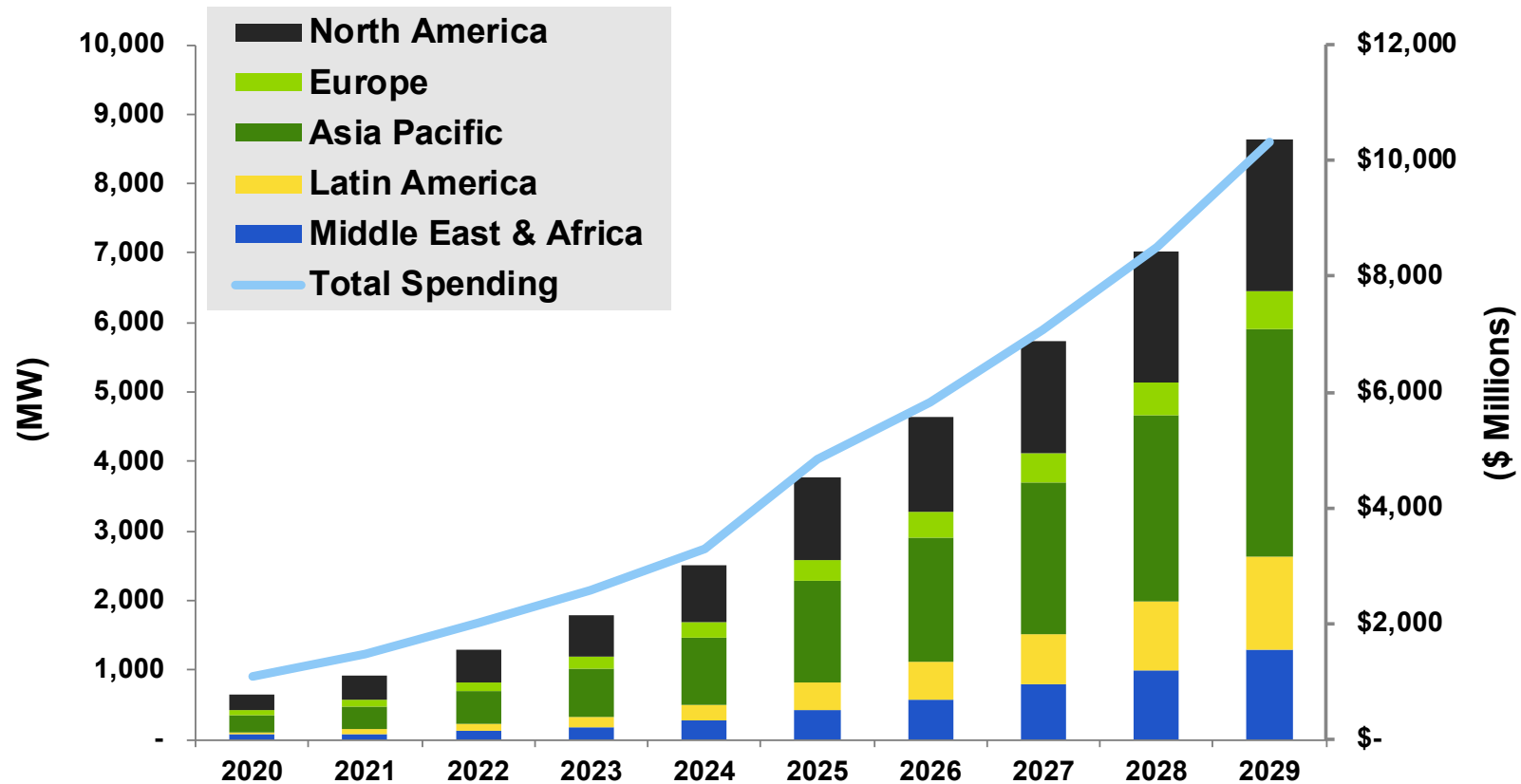
Energy storage increases market share over time

Global energy storage DER market share for microgrids grows from 18.7% today to 37.5% by 2029.



Energy storage is enabling technology for microgrids...

Annual Energy Storage Microgrid Capacity and Revenue, World Markets: 2020-2029



(Source: Guidehouse Insights)

Contact

Peter Asmus
Research Director
peter.asmus@guidehouse.com
(415) 399-2137



©2020 Guidehouse Inc. All rights reserved. This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.