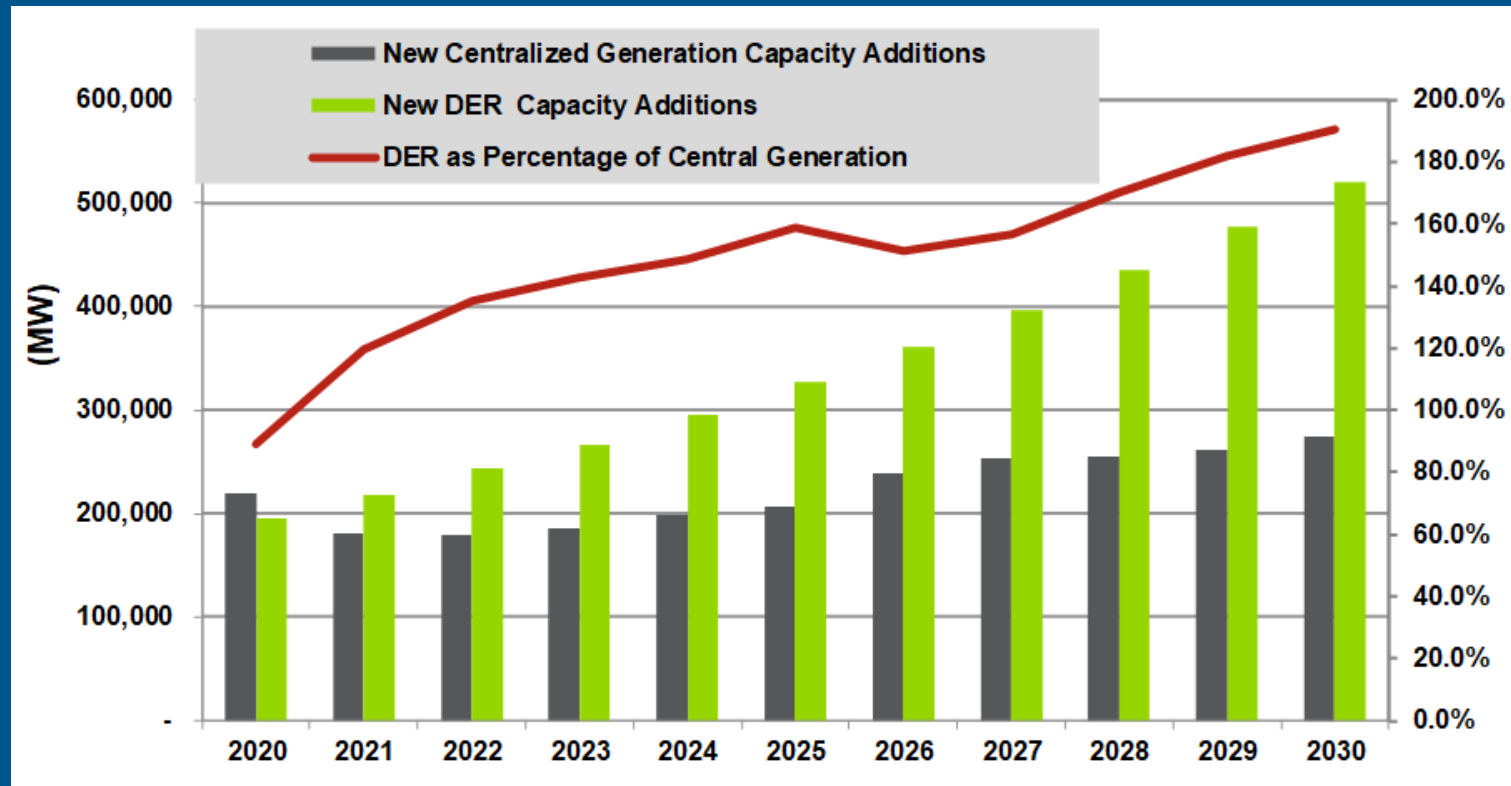


A Global View on Microgrids and Distributed Energy Strategies

Peter Asmus,
Executive Director, Alaska Microgrid Group



The Big Picture on Energy

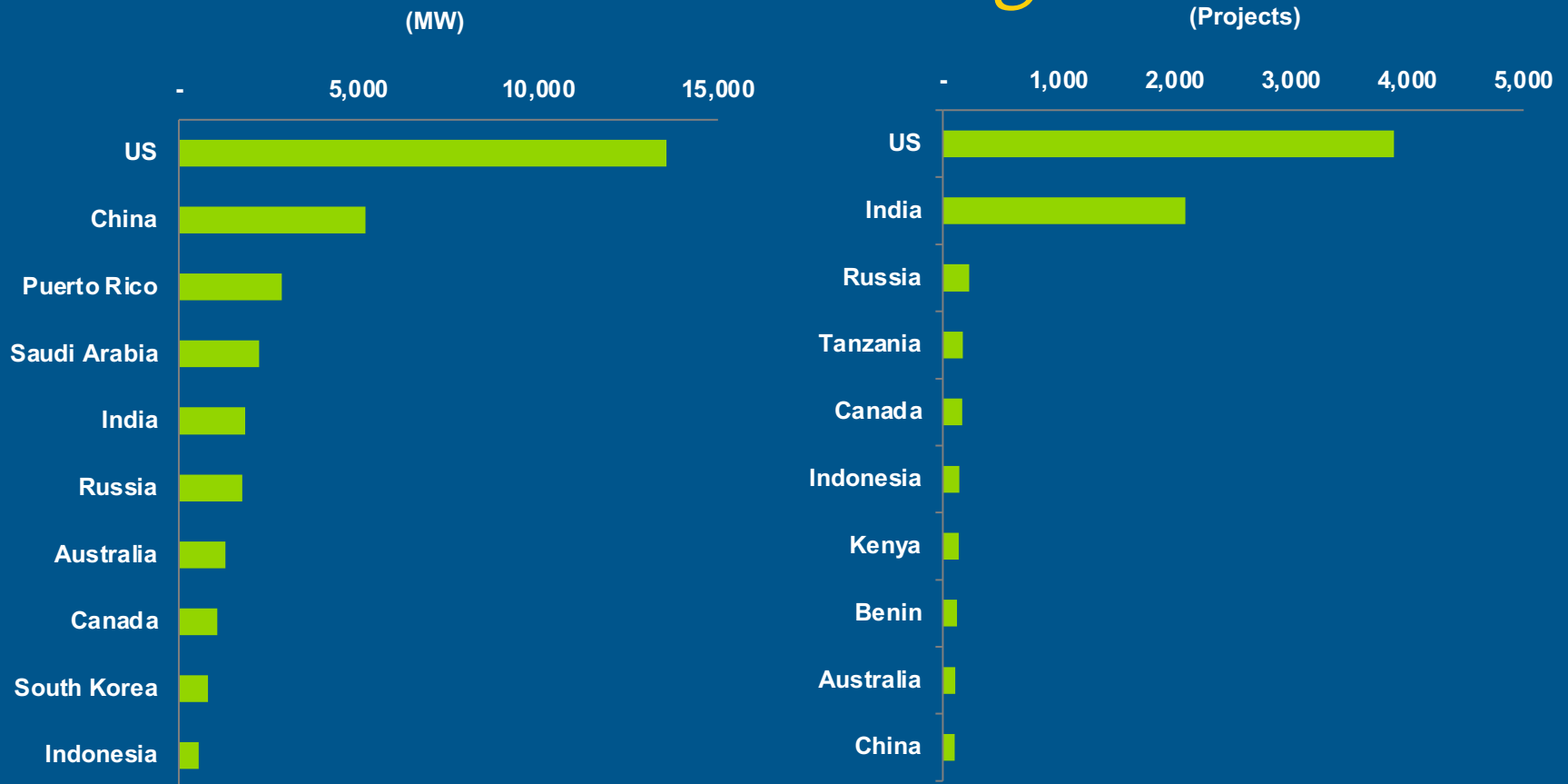


Distributed Versus Centralized Energy Resources

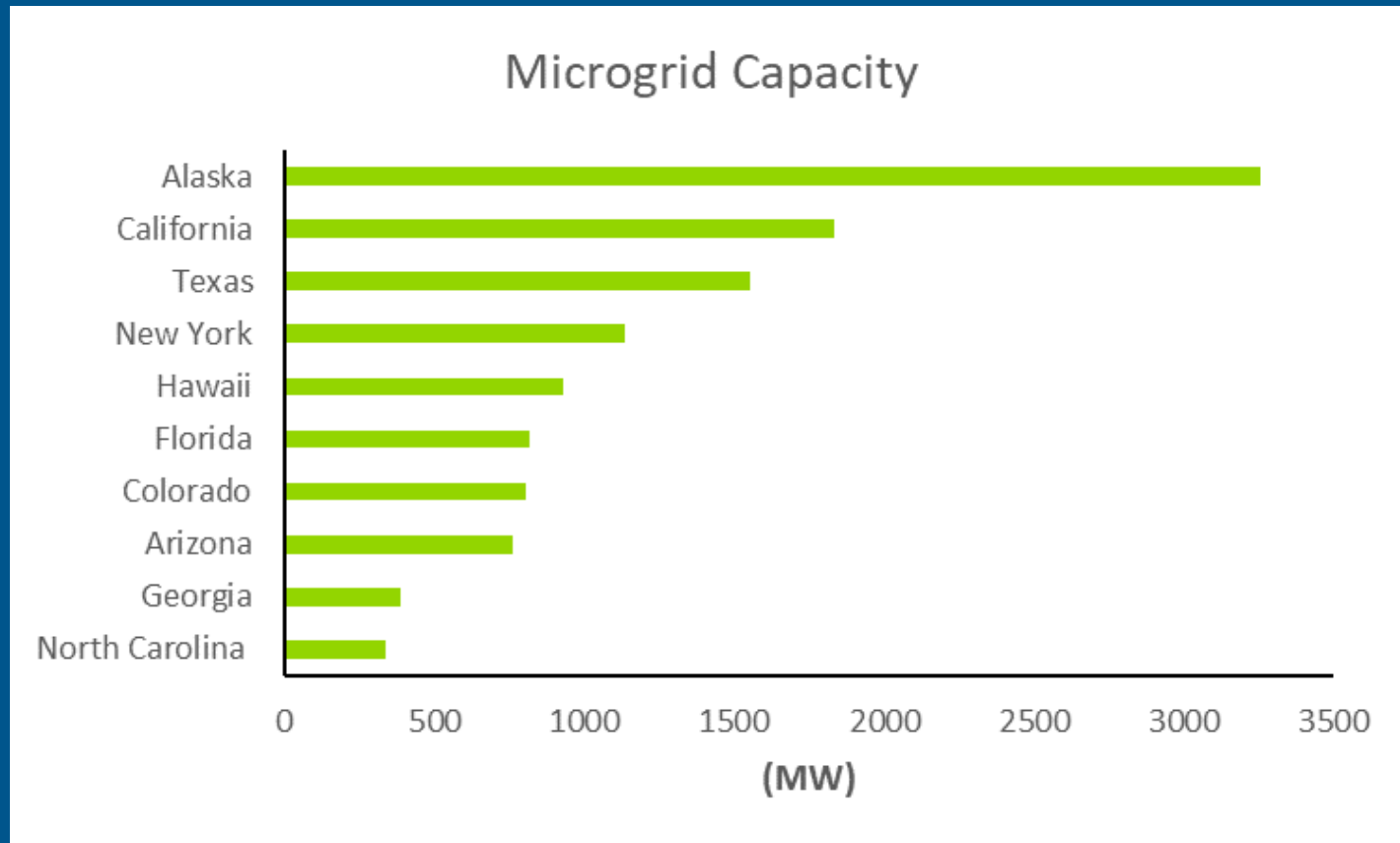


DER Growth Linked to Microgrids

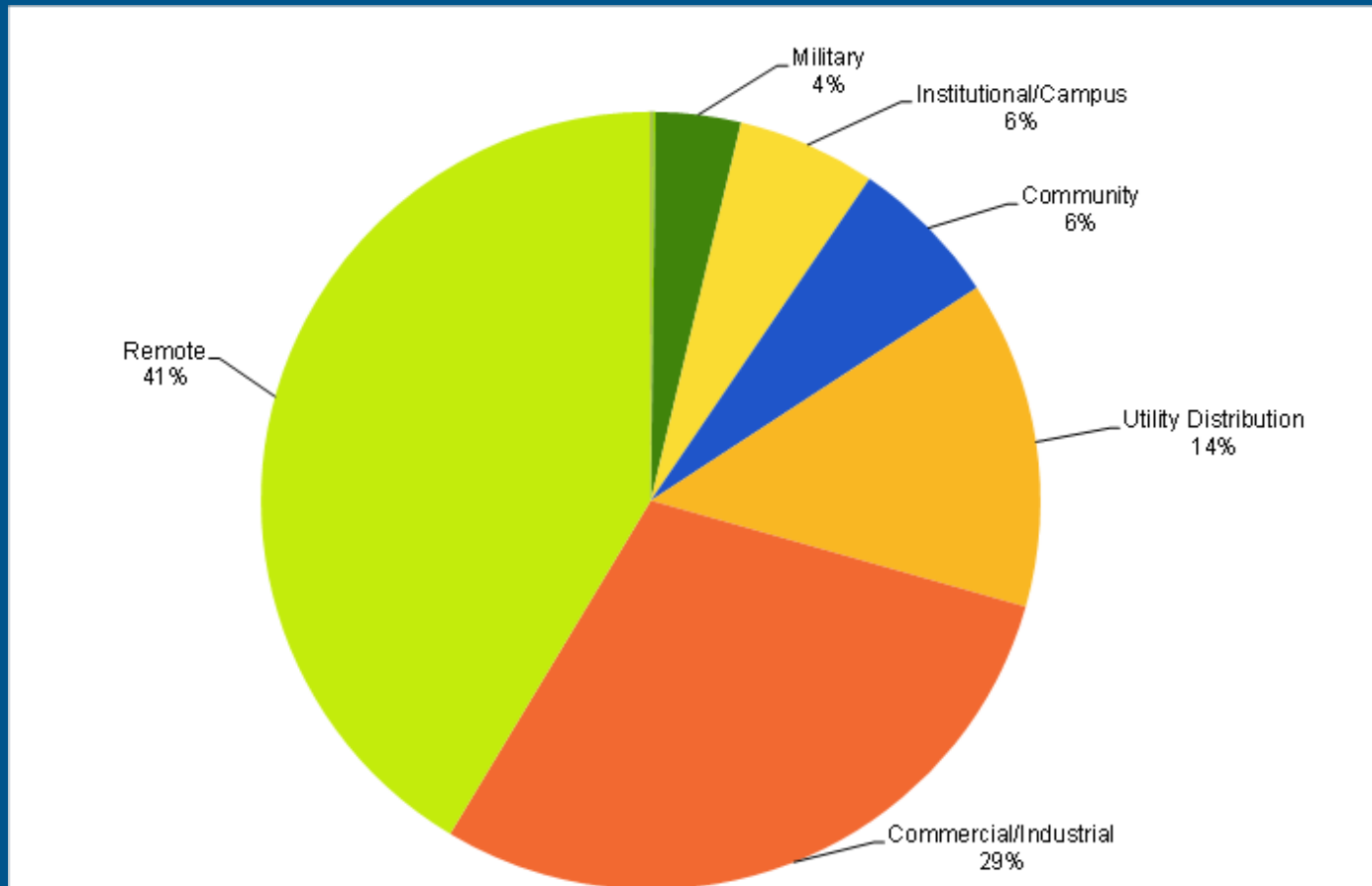
U.S. is the Global Microgrid Leader



Alaska No. 1 in US Microgrid Capacity



The Past and Future for Microgrids



Alaska's Energy System Echoes Global Microgrid Drivers

- ▶ High energy costs
- ▶ Fragmented and limited electric grid networks
- ▶ Limited road and other transportation options
- ▶ Harsh & changing climate
- ▶ Lack of traditional fossil fuel supply lines
- ▶ Dispersed and/or isolated human populations
- ▶ Logistics are challenging for installation and ongoing maintenance and operations



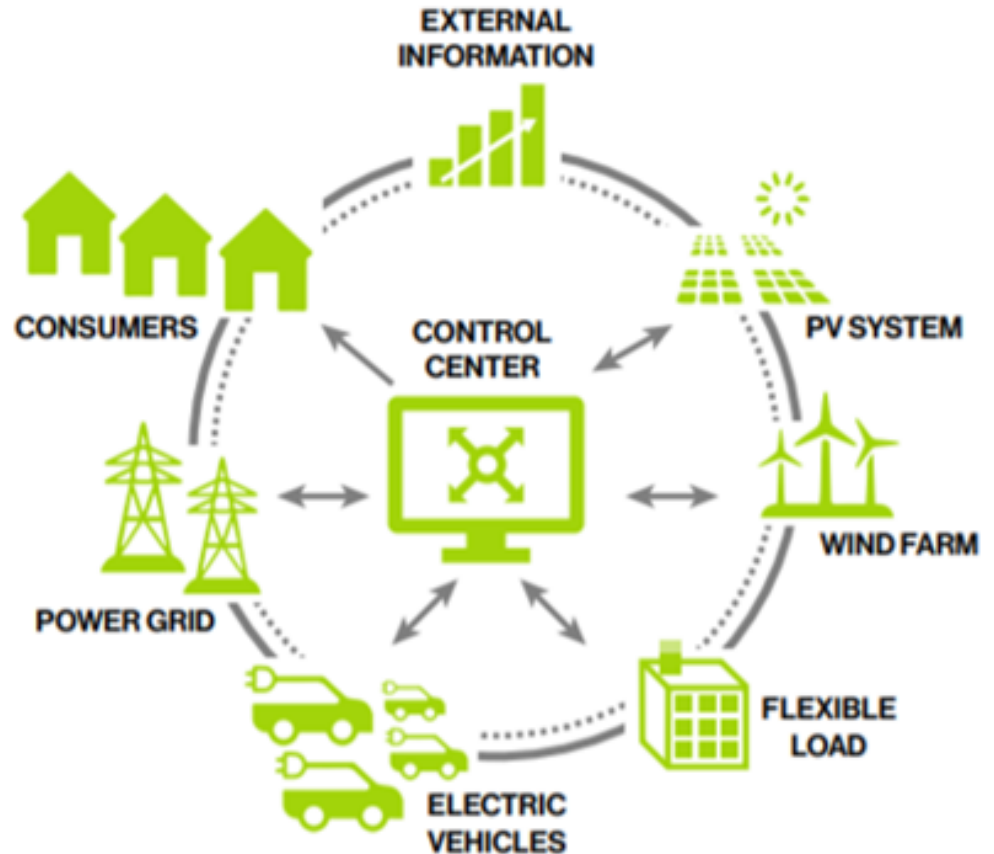
Microgrids Dominate Alaska's DER management, but in the continental U.S. and Europe, VPPs and DERMS are top of mind for utilities.

OTHER DER PLATFORMS OF NOTE



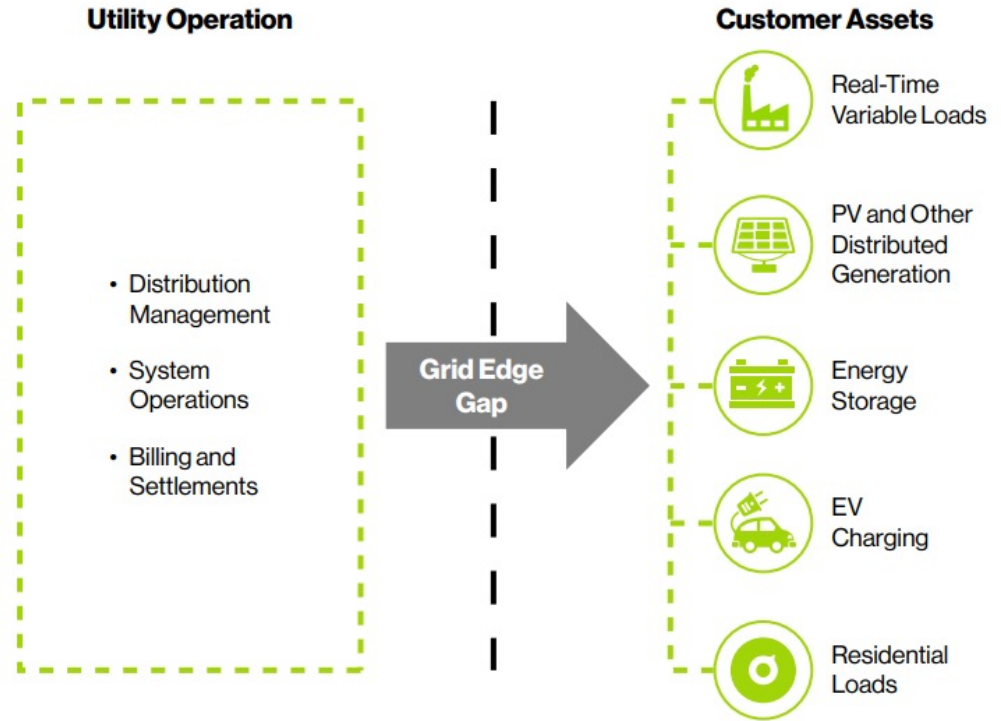
DER Growth Linked to VPPs

An aggregated system of energy assets remotely and automatically optimized by a software-based platform to dispatch services for distribution or wholesale markets.



DER Growth Also Linked to DERMS

A software control system typically deployed by utilities to optimize DER assets and maintain the reliability of the distribution system through use cases such as active power management, voltage issues and other services that support utility operational needs.



Decarbonizing Path Could Combine Microgrids, VPPs & DERMS

Resource Choices?

- Large, utility scale solar and wind
- Prosumer DER assets (rooftop solar PV, batteries and EVs)
- Tidal, hydrokinetic, hydro geothermal & biomass
- Modular nuclear
- Carbon storage & Sequestration
- Hydrogen

New Market Structures?

- More advanced market integration of self-balancing microgrids
- Demand response and DER aggregations to displace fossil peakers
- Creation of new wholesale market for resource sharing
- Maintain resiliency of existing microgrids while expanding trading/balancing opportunities



Alaska Microgrid Group

Partnership between Alaska public utility partners and other “experts” and ACEP to connect with broader global opportunities





Thank you!

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