Energy System Security under Extreme Adversity

June 2026

Asia Clean Energy Forum

Teneo

All Dimensions of Energy Security and Resilience Risks Must Now be Addressed

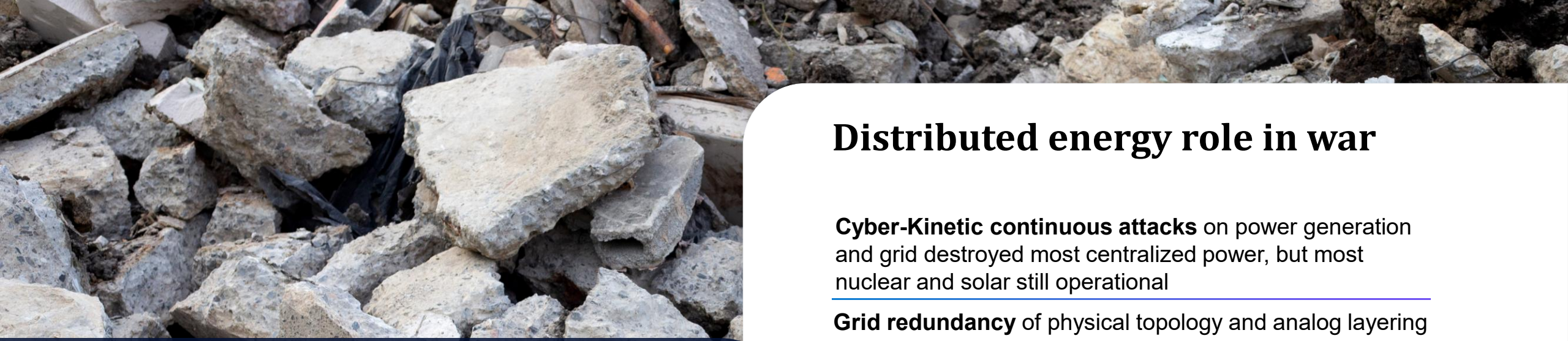
Physical Risk of attack to critical energy infrastructure via conventional and asymmetric warfare

Physical Disruption of energy complex supply chains from transit or manufacturing bottlenecks

Cyber security risks to the grid, solar, wind and batteries, consumer DERs and appliances

Geopolitical risk from dependence on concentrated **fuels, critical minerals** subject to tolls, tariffs, force majeure or denial

Climate Change and disaster vulnerability of energy infrastructure architecture



Energy System Resilience and Security in Modern Warfare

Why are the Lights still on in Ukraine?

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Distributed energy role in war

Cyber-Kinetic continuous attacks on power generation and grid destroyed most centralized power, but most nuclear and solar still operational

Grid redundancy of physical topology and analog layering

2 GW of DERs added to grid by business and consumers using private finance to ensure business and personal power continuity

Rebuilding with DERs could cost $15-23BN more resilient and lower cost (-6%) than hardening ($1-2BN/yr) and rebuilding centralized systems

DER storm resilience for grid and power generation

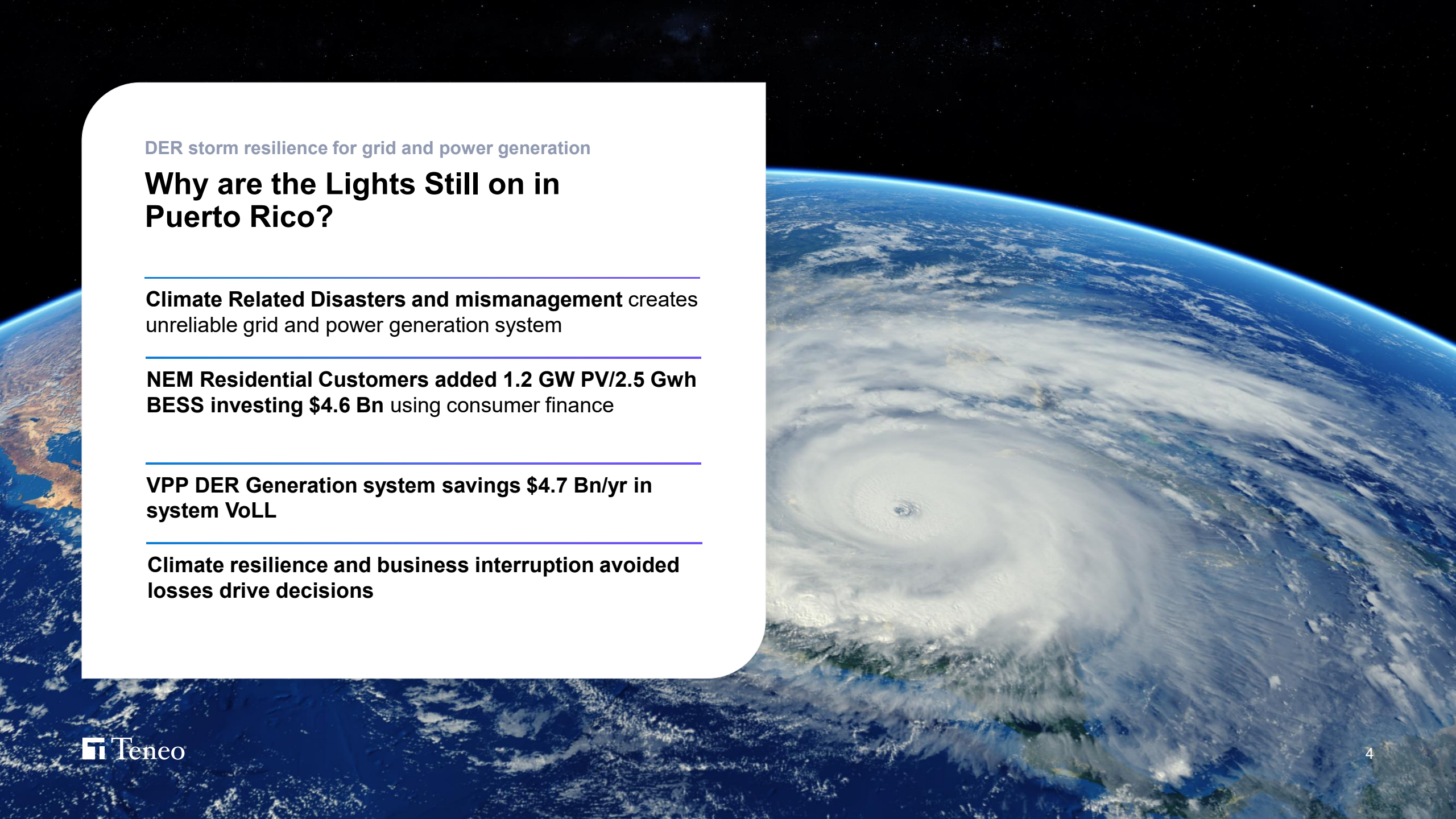
Why are the Lights Still on in Puerto Rico?

Climate Related Disasters and mismanagement creates unreliable grid and power generation system

NEM Residential Customers added 1.2 GW PV/2.5 Gwh BESS investing $4.6 Bn using consumer finance

VPP DER Generation system savings $4.7 Bn/yr in system VoLL

Climate resilience and business interruption avoided losses drive decisions



Lessons for Asia

The Future of Our Choosing

Focus on Energy Security and Resilience

Energy System Architecture matters more than choice of primary energy

DERs have proved resilient to war or severe weather

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