

A DEEPER DIVE ON INSURING YOUR RENEWABLE ASSETS

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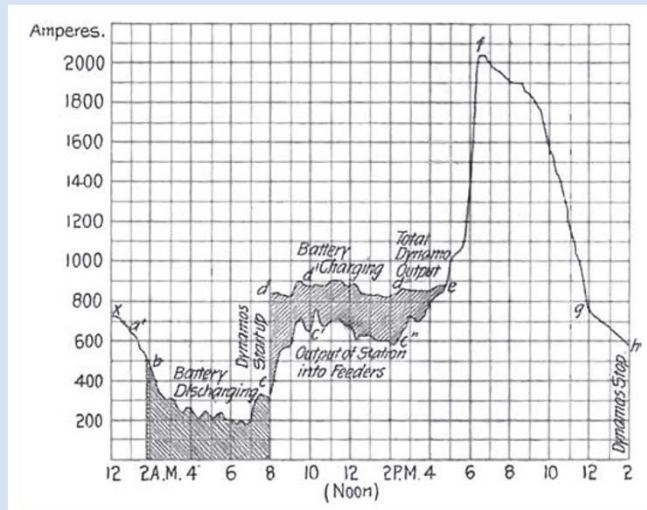
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AFTER A 120-YEAR HIATUS, BATTERIES ARE HELPING THE GRID AGAIN



Load diagram of 33rd St. Station, Edison Illuminating Co., of New York City, Sept. 30, 1893

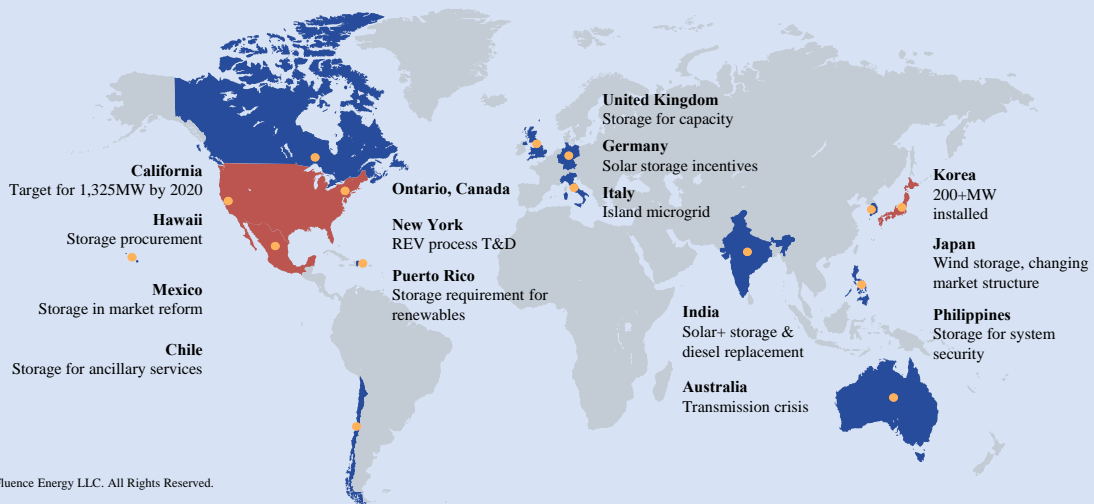
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Source: Engineering News, Vol 30, p 358, Nov. 2, 1893

ENERGY STORAGE CONTINUES TO GAIN MOMENTUM WORLDWIDE

Battery-based energy storage assets serving constrained power systems with fast, flexible power

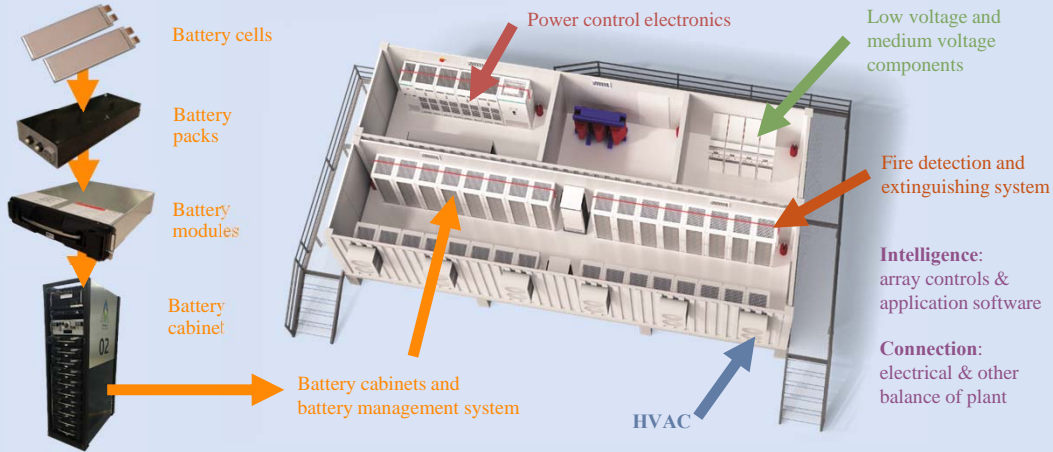


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**WHAT IS ENERGY STORAGE?
LARGE-SCALE BATTERIES FOR INDUSTRIAL APPLICATIONS**

Modular, scalable arrays of proven technologies integrated at utility and industrial scale



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SIESTORAGE PLATFORM

Lightning fast energy, trusted for critical loads



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Ultra fast

- Essential fast response for power quality, black start, frequency response, and backup applications



Grid support capability

- Can provide grid support services and be grid forming, enabling customers to operate in island mode when the network becomes unavailable



Embedded experience

- Our deep experience from years of serving customers in the power sector is embedded in the Siestorage architecture to deliver best-in-class performance

ADVANCION PLATFORM

Unmatched dependability, designed to evolve



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Unmatched dependability

- Industry-leading reliability, up-time, and years of safe operation
- Built from a massively parallel redundant architecture with safety designed into every layer of the architecture



Embedded experience

- Ten years of experience in operating storage-based power and energy services in markets worldwide is embedded in the Advancion architecture



Future-proof

- Designed with the long-term owner operator in mind
- Open architecture incorporates the best available technology now and in the future

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SUNFLEX ENERGY STORAGE PLATFORM

Maximum solar yield, delivered when you want it



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Increased solar capacity

- Sell up to 50% more solar energy per site
- Eliminates solar variability across the day and expands the delivery of solar energy into the night



Expanded capability

- Provides the ability to stack additional grid services, such as frequency regulation, capacity firming, and ramp rate control



Simplifies site design

- Add more solar panels without the cost of changing the interconnection
- In many areas, the platform simplifies the interconnection process for combined solar + storage facilities

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Energy Storage in the Field

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FREQUENCY REGULATION

Germany, Seven Projects

1 MW typical system size

50 MW being installed

Services

- Frequency regulation
- Primary reserve power
- Turnkey solution

Impact

- Improved grid reliability
- Lower costs



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MICROGRIDS & ISLANDS

Isle of Ventotene, Italy

- 0.5 MW / 0.6 MWh
- ENEL
- Impact
 - Complex control developments for stable operation with existing gensets
 - 15% fuel savings demonstration on islanded grids
 - Enable further integration of renewables



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TRANSMISSION & DISTRIBUTION ENHANCEMENT

Arizona

2 MW / 8 MWh

Arizona Public Service (APS),
Punkin Center
(under construction)

Services

- Transmission upgrade deferral
- Peak management

Impact

- Power reliability at half the cost of a transmission



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CAPACITY PEAK POWER

Long Beach, California

100 MW, 4-hour (400 MWh)
AES Alamitos, COD Jan 1, 2021

Services

- Capacity, local reliability
- Peak power / off-peak mitigation
- Ancillary services

Impact

- Competitive bid vs. thermal peaker, cost-effective
- Replaces environmental retired units
- Meets flexibility (duck curve)



World's largest contracted energy storage project

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STORAGE SOLVING REAL WORLD NEEDS - 37.5 MW, 4 HOUR DURATION



Largest energy storage project in N. America
Contract to online in 6 months
Sited on 1 acre, where a power plant could not be permitted

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Managing Director, Power and Utilities

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Energy Production in the US

- In 2017, 4.01 trillion kWh of electricity were generated at utility-scale facilities in the US
 - 63% of this electricity generation was from fossil fuels (coal, natural gas, petroleum)
 - 20% was from nuclear energy
 - 17% was from renewable energy sources

US electricity generation by source, amount, and share of total in 2017

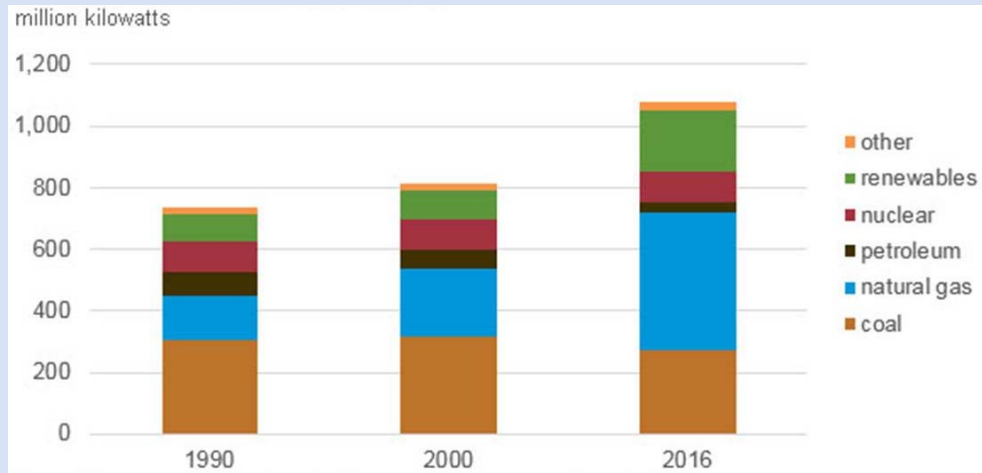
Energy source	Billion kWh	Share of total
Total – all sources	4,015	100.0%
Fossil fuels (total)	2,495	62.7%
Nuclear	805	20.0%
Renewables (total)	687	17.1%
Other sources	13	0.3%

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US Electricity Generating Capacity by Major Energy Source, 1990, 2000 and 2016



Note: Net summer capacity of utility-scale generators. Generators. *Other* includes pump storage hydro, flywheels and batteries.
Source: US Energy Information Administration, *Annual Energy Review* 2011, September 2012, and *Electric Power Monthly*, February 2017

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Renewable Energy Production in the US

US electricity generation by source, amount, and share of total in 2017

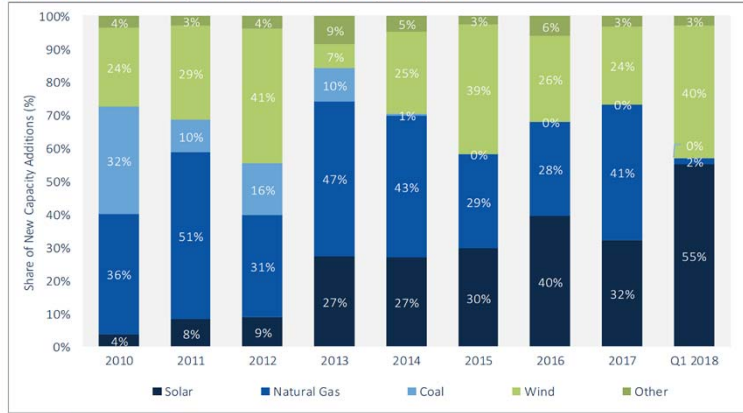
Energy source	Billion kWh	Share of total
Renewables	687	17.1%
Hydro	300	7.5%
Wind	254	6.3%
Biomass	64	1.6%
Solar	53	1.3%
Geothermal	16	0.4%

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New Electricity Generation in the US 2010 – Q1 2018

Figure 1.1 New U.S. Electricity Generating Capacity Additions, 2010-Q1 2018



Source: GTM Research (solar), FERC (All other technologies)

gtm research
It's now Wood Mackenzie

SEIA
Solar Energy
Industry
Association

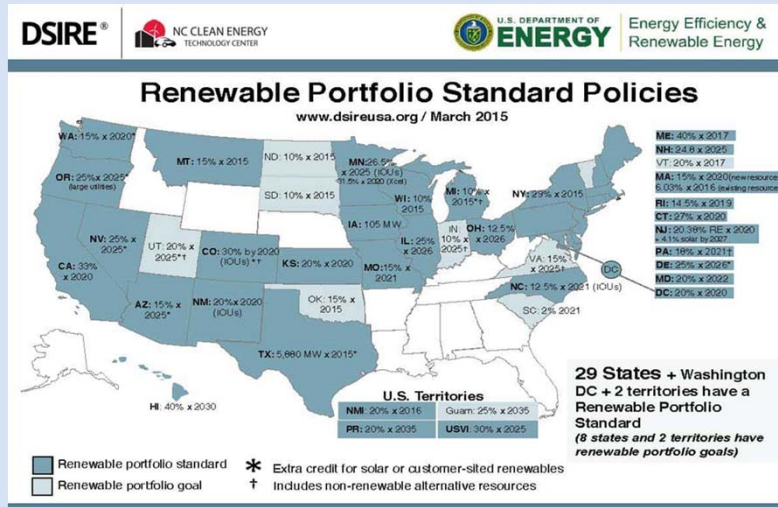
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Renewable Energy Standards Across the US



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US Onshore Wind Statistics

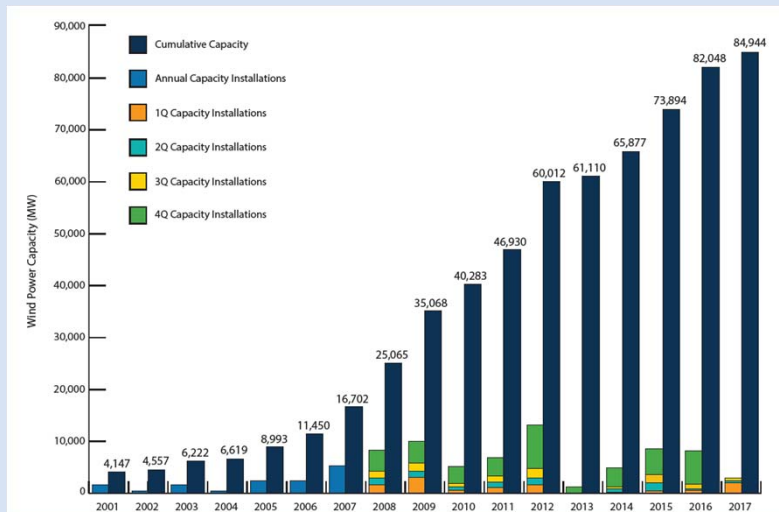
- Total US utility-scale wind power capacity, through Q4 2017: 89,077 megawatts (MW)
- US wind power capacity installed during Q4 2017: 4,133 MW
- US wind power capacity under construction or in advanced development as of Q4 2017: 28,668 MW

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US Onshore Wind 2001 – Q3 2017

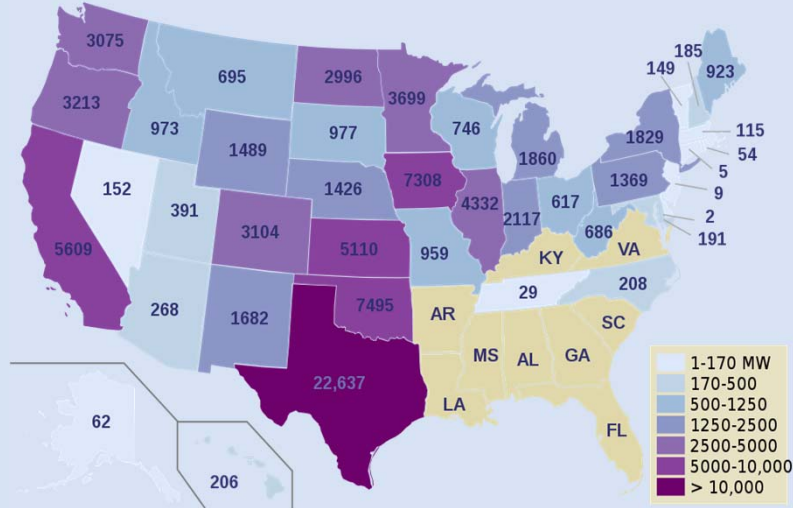


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Wind Power Generation by State (YE 2017)



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Solar Power Production in the US

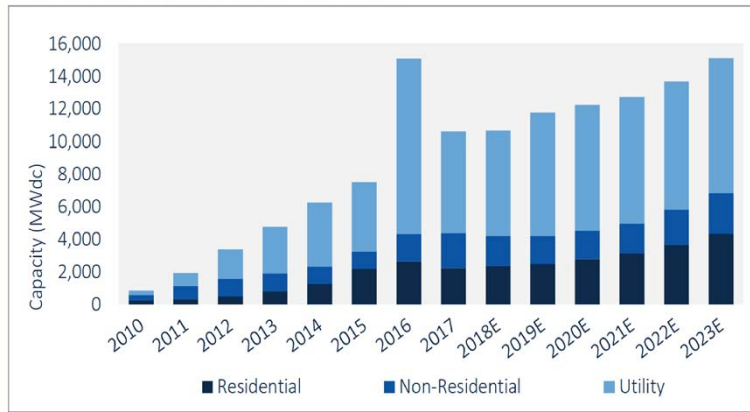
- 2.5 gigawatts (GW) of solar photovoltaic (PV) capacity was installed in Q1 2018
 - 55% of all new electricity capacity added in the US in Q1 2018 were solar installations
- Total of 55.9 GW of installed solar capacity in US through end of Q1 2018, representing a 13% year-over-year increase
- Total installed US PV capacity expected to double over the next five years, with an estimated 14 GW of capacity installed annually
 - Over 49 GW of PV and concentrated solar power (CSP) projects either under construction or under development

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Photovoltaic Installations in the US

Figure 2.6 U.S. PV Installation Forecast, 2010-2023E



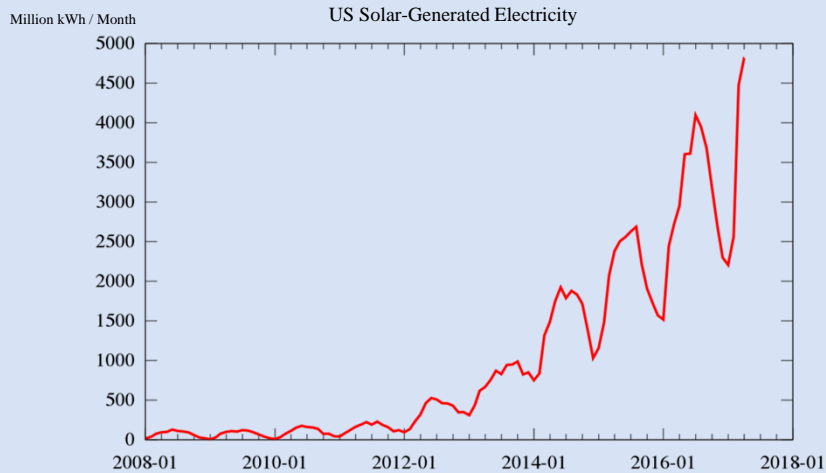
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Solar Power Production in the US



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Pat Stumbras

President and Managing Director

PERse

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WHAT IS GOING ON IN RENEWABLES?

- Aging fleet considerations
- Trending losses
- What's on the horizon?

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AGING FLEET CONSIDERATIONS

Midlife Crisis! An Underwriting Perspective

- End-of-warranty inspections
 - Critical piece of data for projects coming off warranty, if no extended warranty executed
- Projected vs. actual lifespan
 - When 20 years becomes 15
- Obsolete technology
 - 500 kW turbines
 - Manufacturers that no longer exist

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AGING FLEET CONSIDERATIONS

Midlife Crisis! An Underwriting Perspective

- Repowering
 - Entire swap-out or existing foundations adequate?
 - Phased decommissioning
- Who is doing the operations and maintenance?
 - Contract carryover on asset sales

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TRENDING LOSSES

Mitigation is Key!

- Wind
 - Turbine fires
 - Lightning
 - Gearboxes
 - Valuation on total loss events vs. schedule of values declarations

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TRENDING LOSSES

Mitigation is Key!

- Solar
 - Hail
 - Inverter fires – design / installation flaws
 - Natural catastrophe exposures during construction phase
- Offshore
 - Construction losses are going to happen
 - Undersea cable – biggest and costliest exposure

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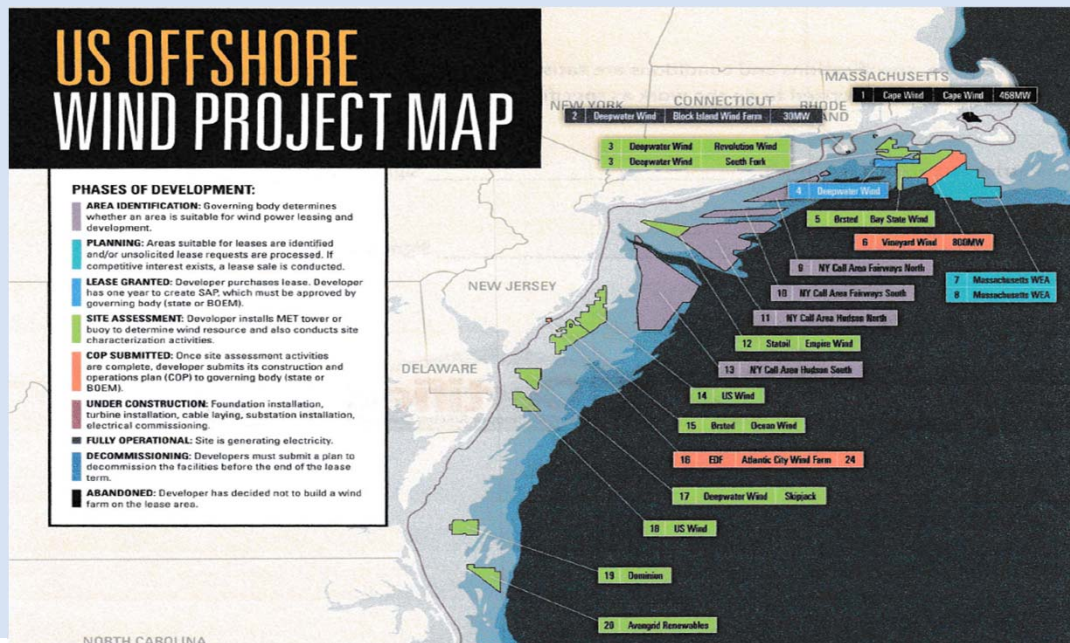
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WHAT'S ON THE HORIZON?

Current Tides and the Future of Renewables

- Larger turbines
- Solar – costs trending lower as efficiencies increase
- Continued mergers and acquisitions
- Parity with traditional power
- Power purchase agreements expiring & merchant deals
- Offshore wind
- Battery storage
- Combined facilities (wind, solar, storage)
- Effect of tariffs imposed on overseas components

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Industry Advancements

- Technological innovations improve exponentially over time
 - Not content with dormancy and status quo
- Future for renewable energy continues to expand
 - Solar, wind, hydro from sea to shining sea
- Direction of sustainable electric baseload generation in the US is mixed
 - Current administration: coal sustainment
 - Economics and efficiencies: natural gas / “rush to gas”
 - Independent nonprofits: renewables threaten to strand investments in natural gas
- Renewable energy, battery storage and other distributed energy resources will be a continuous and growing addition to the power grid

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AEGIS & PERse

- Intention to keep fresh and vibrant, avoid stagnancy
 - Alignment with PERse as exclusive renewables reinsurance partners
- Assess the footprint of AEGIS members
 - Innovate, improve and provide industry excellence
- Expand our historic expertise in thermal technology into renewable technology

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AEGIS & PERse

- Retain a streamlined process; no different than current submissions
 - Received, underwritten, negotiated through retail / wholesale broker
 - PERse Underwriters: Kristin Daur and Emelie Klehr
- North American locations for Operational and Builders' Risk
 - \$400 million capacity split evenly by AEGIS and PERse on 'AEGISized' form with AEGIS Declarations
- Premiums paid contribute to member's Property Credit

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