AQPER Colloque 2020

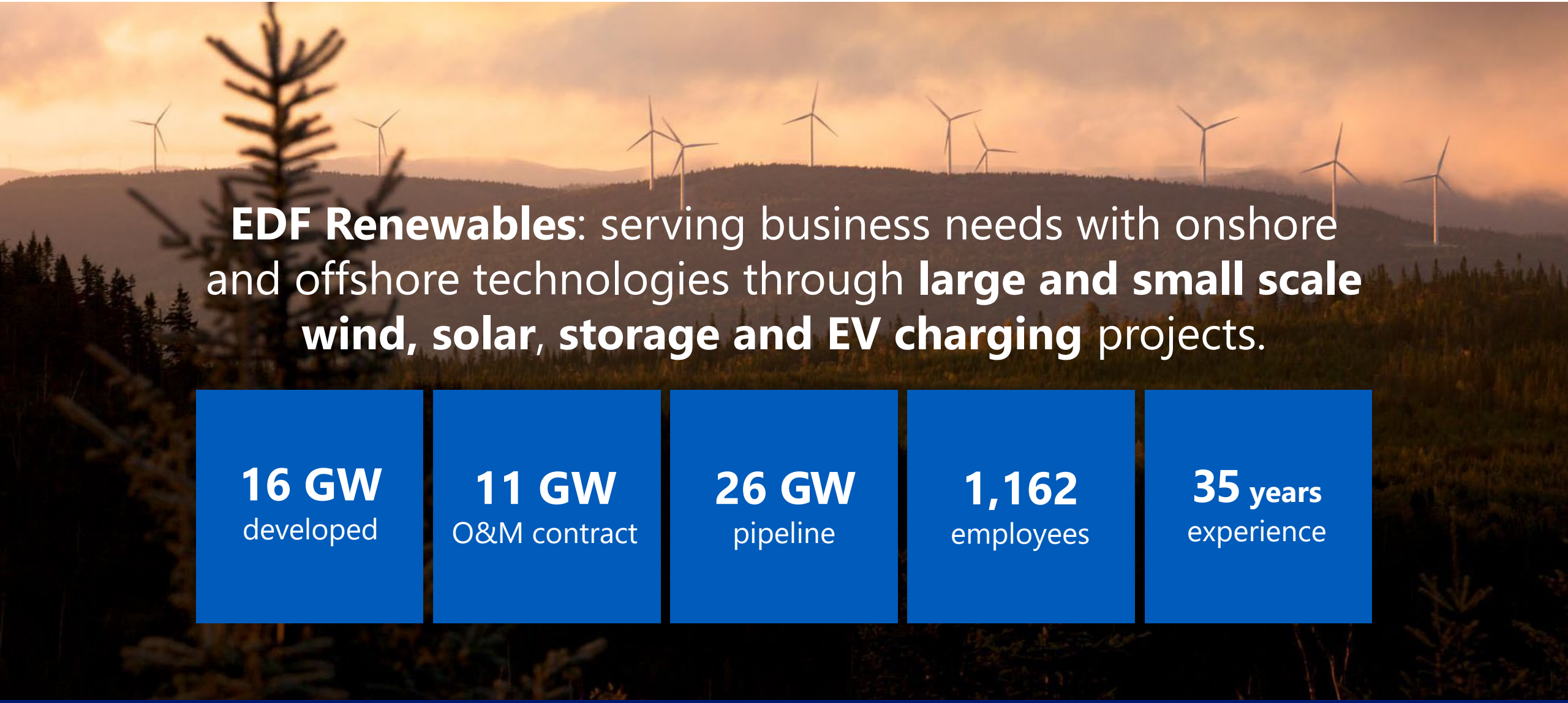
February 2020

A Global Leader in Low-Carbon Energy

EDF Group, through its subsidiaries in North America delivers results to **utilities, commercial & industrial, and corporate purchasers** through the procurement of renewable energy.

EDF Renewables North America is one of the largest renewable energy developers in North America with 16 GW of **wind, solar, storage and electric vehicle charging projects** developed throughout the U.S., Canada, and Mexico.

EDF Renouvelables is the global renewable energy affiliate of the Group. Present in **20+ countries**, under the brand EDF Renewables, the company develops, builds and operates renewable power plants.



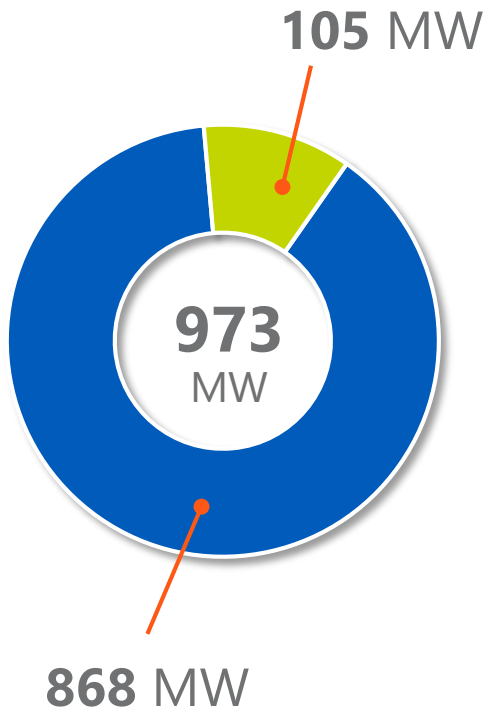
EDF Renewables: serving business needs with onshore and offshore technologies through **large and small scale wind, solar**, **storage and EV charging** projects.

16 GW developed	**11 GW** O&M contract	**26 GW** pipeline	**1,162** employees	**35 years** experience

973 MW Placed in Service in 2019

Grid-Scale Power

PROJECT	STATE	MWp	OFFTAKER	TECHNOLOGY
Stoneray	MN	65	SMMPA	Wind
Bobcat Bluff Repower	TX	162	ERCOT	Wind
Glaciers Edge	IA	203	Google	Wind
Golden Plains	IA	124	Alliant Energy	Wind
Romney	ON	60	IESO	Wind
Valentine	CA	135	SCE	Solar
Gutenberg	NC	118	Sold to Dominion Energy	Solar



Distributed Solutions

PROJECT	STATE	MWp	TECHNOLOGY
Entersolar Projects	Various	48	Solar
MN Com Solar	MN	17	Solar
Novel	MN	14	Solar
Milton	VT	7	Solar
Ferrisburgh	VT	6.5	Solar
STEC Portfolio	TX	5	Solar
Runway Solar (Santee Cooper)	SC	2.7	Solar
Sysco – Ventura	CA	1.1	Solar
Sysco – Lancaster	CA	1.1	Solar
San Diego Zoo	CA	1	Storage
Weathersfield	VT	0.8	Solar
Innovation Dr	CA	0.4	Solar+Storage+EV

as of /12/31/2019

238,047
equivalent homes powered

1,831,500
Avoided metric tons of
Carbon dioxide annually

CO2 reduction equivalent to taking
387,500
cars off the road

According to Greenhouse Gases Equivalencies Calculator
https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

We take pride of the impact the **973 MW** we put in service made in **2019.**

robust pipeline / continuous

GROWTH

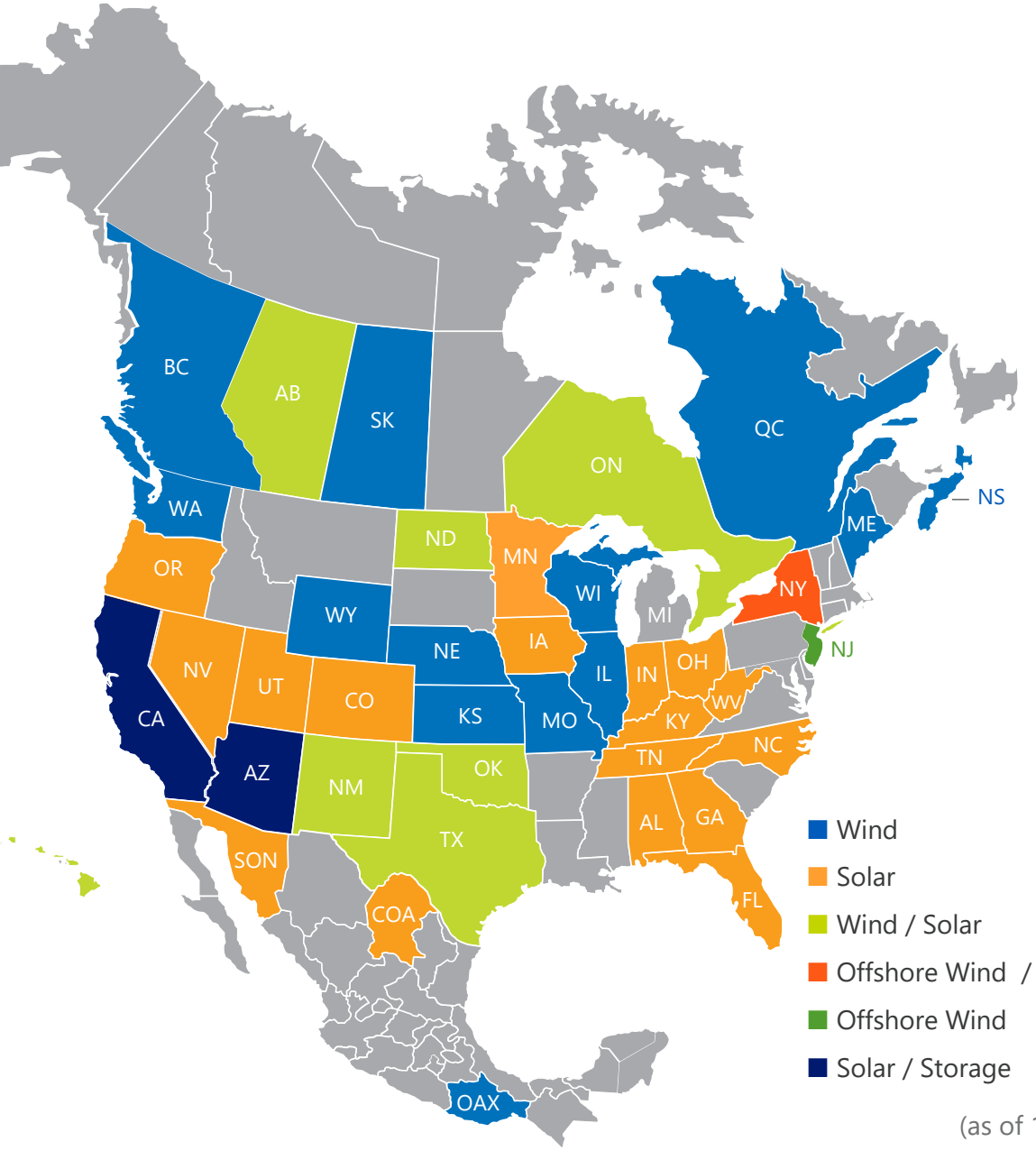
26 GW

of development across North America

CANADA
3 GW

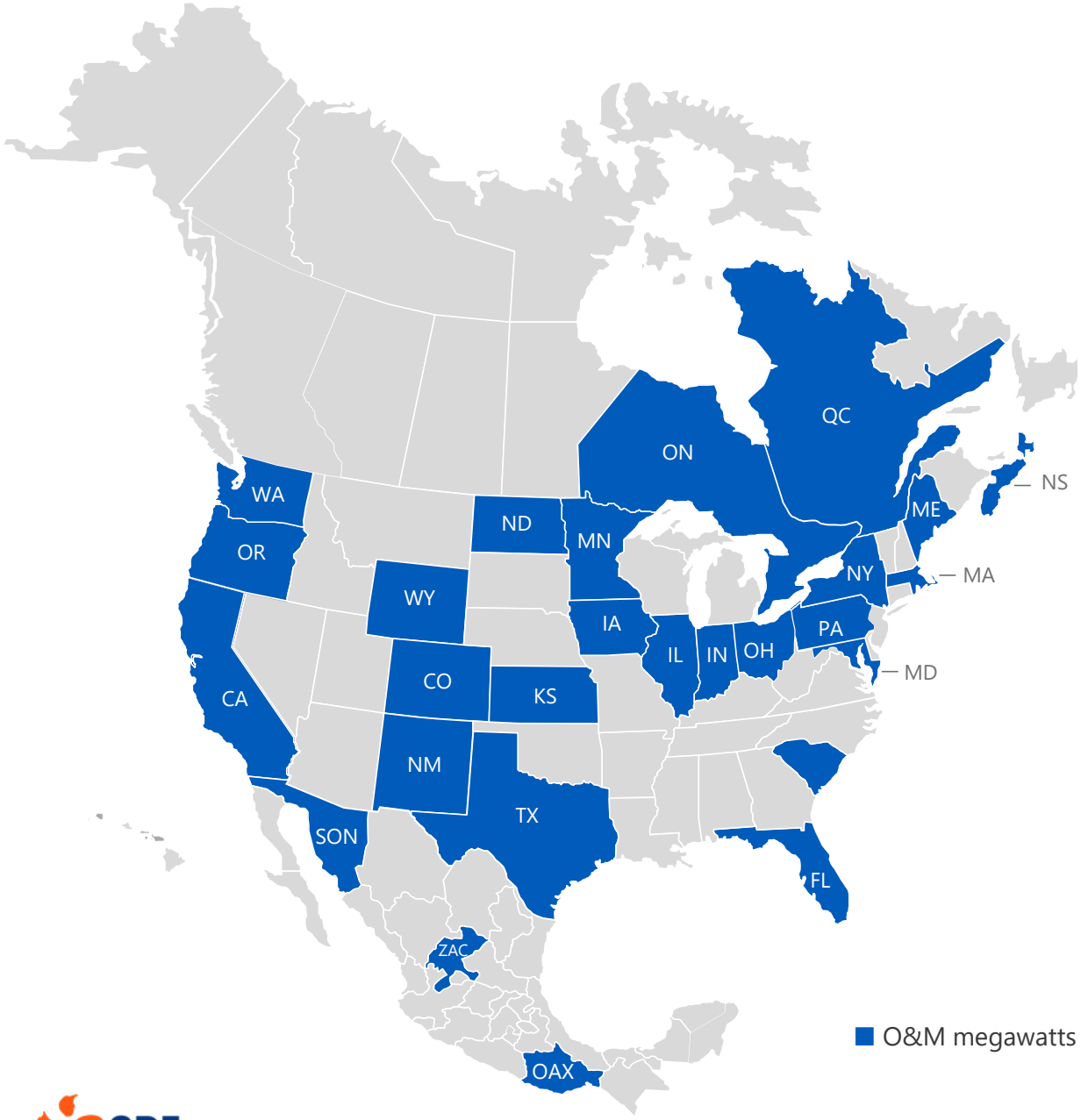
U.S.
21 GW

MEXICO
2 GW



(as of 12/2019)

We Help Companies Achieve Their Sustainability Goals



CANADA
1,533 GW Wind
473 MW Solar

U.S.
7,526 MW Wind
312 MW Solar
20 MW Storage

MEXICO
521 MW Wind
495 MW Solar

■ O&M megawatts under contract
(as of 12/2019)

A leading provider of third-party **Asset Optimization Services**

11 GW
Operations & Maintenance contract

8.6 GW
Remote Monitoring

6.7 GW
Asset Management

ATLANTIC SHORES offshore wind

50/50 Joint Venture between EDF Renewables and Shell New Energies

EDF renewables

30+
years experience in the US including in PJM, NYISO markets

4.8 GW
Offshore wind projects developed and/or in operation in France, Belgium, UK, Germany and the US

$17.3 B
EBITDA EDF Group

40+
years experience in the US oil & gas offshore industry, 15 years in wind

4.9 GW
Offshore wind projects developed and/or in operation in The Netherlands, Belgium and the US

$61.5 B
EBITDA Royal Dutch Shell

Combined Offshore Wind Experience

Our Mission is to Deliver Safe Sustainable Energy to Our Atlantic Shores

Strategically positioned to meet the growing demands of renewable energy targets in New Jersey and New York

SAFETY

JOBS & SUPPLY CHAIN

STAKEHOLDER ENGAGEMENT

LOW COST OF ENERGY

INTEGRATED APPROACH

ATLANTIC SHORES offshore wind

Respect for the Environment

Atlantic Shores Offshore Wind aims to find a balance in the shared use of our ocean by seeking to understand and mitigate any potential affects our projects may have on the environment, wildlife and industries that fuel our local economies.

This includes site-specific studies and evaluations, working closely with experts, collecting data and more.

ATLANTIC SHORES offshore wind

Collaboration with the Local Stakeholders

Atlantic Shores Offshore Wind is actively working with the fishing community – both commercial and recreational – to understand their concerns
and create a development plan with as little impact to fishing as possible.

ATLANTIC SHORES offshore wind

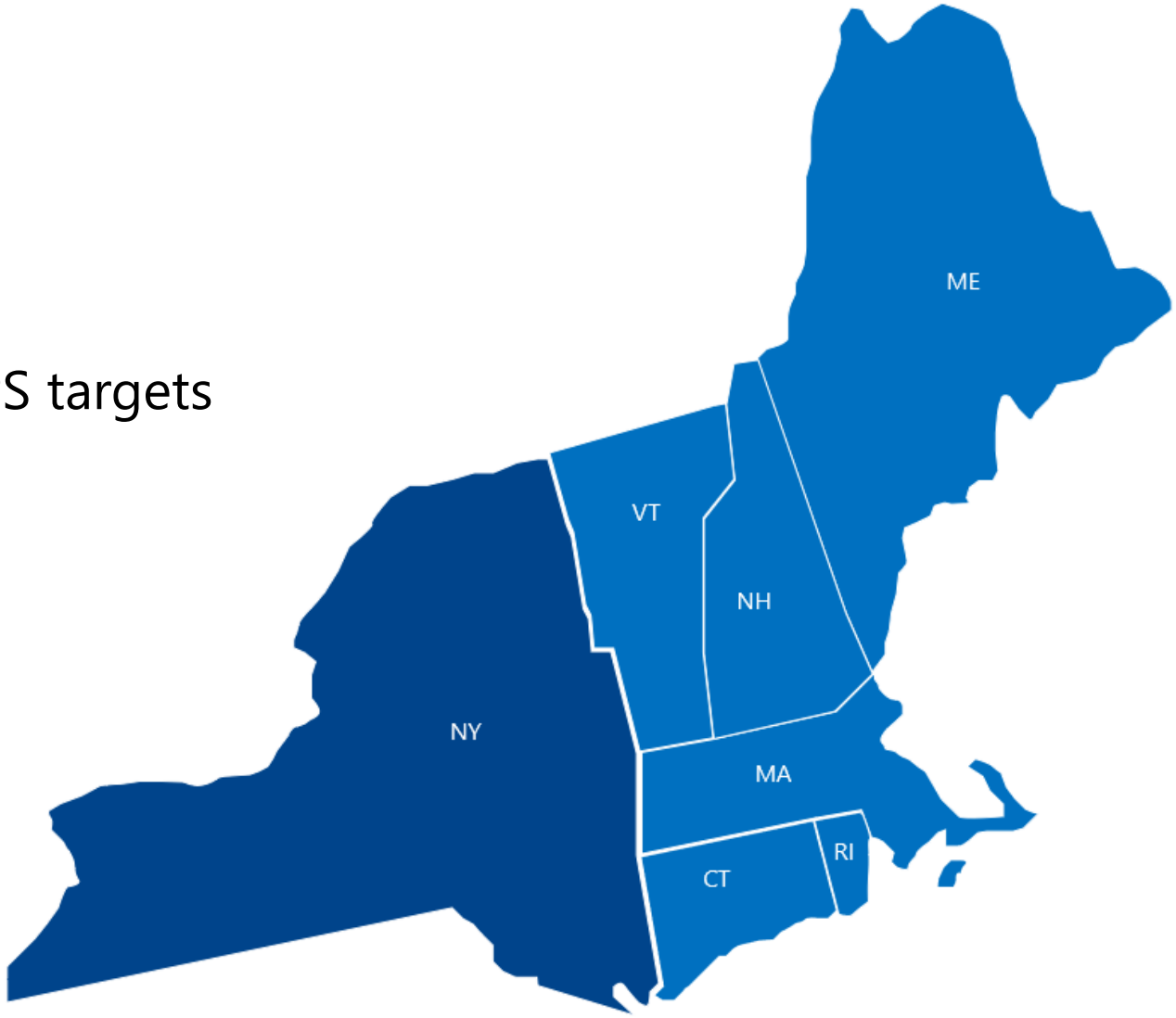
Link **Energy Transition** to **Economic** Development.

EDF Renewables and Shell New Energies have almost a century and a half of combined technical, operational and commercial energy expertise, essential to optimizing future development of the Atlantic Shores lease area to the maximum benefit of New York, New Jersey and beyond.

ATLANTIC SHORES offshore wind

New England/New York – RPS Targets

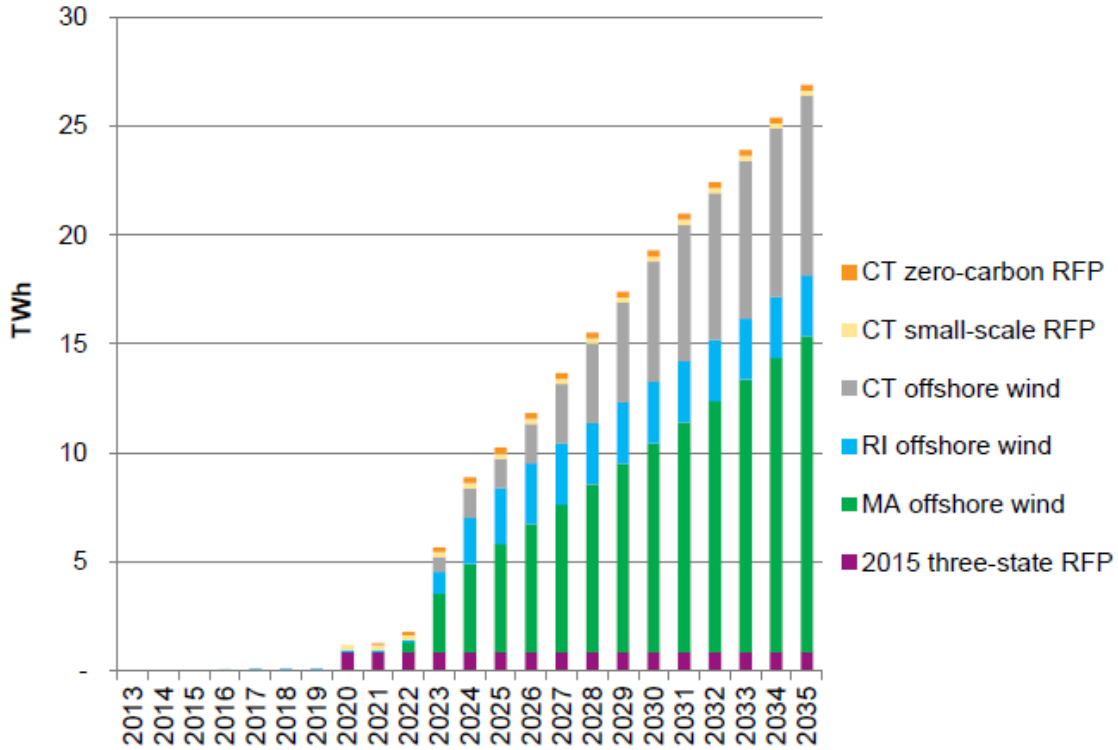
- **New York:** 70% by 2030 / 100% by 2040
  - 9000 MW Offshore Wind by 2035
  - 6000 MW Distributed Solar by 2025
  - 3000 MW Storage by 2030
- **New England:** Home to new or expanded RPS targets
  - **Vermont:** 25% by 2025 / 100% by 2050
  - **Massachusetts:** 35% by 2030 / 100% by 2035
  - **Connecticut:** 40% by 2030 / 100% by 2040
  - **Maine:** 40% by 2030 / 100% by 2050
  - **New Hampshire:** 15.7% by 2025 / 50% by 2040
  - **Rhode Island:** Current 38.5% by 2035



New England/New York – Offshore Opportunities

- **Offshore wind will take center stage in the US Northeast.** Spurred by ambitious state policies, offshore wind is projected to grow dramatically in New England and New York.
- Over the next three decades, we expect nearly **20 GW of offshore wind to be developed in the US Northeast.***
- With stable policy in place, the Department of Energy found that the **U.S. could install a total of 22,000 megawatts (MW) of offshore wind projects by 2030 and 86,000 MW by 2050.**
- By the early 2030s, wind will become the second-leading source of generation in both New England and New York. By the early 2040s, it will assume the top spot—displacing natural gas.

Tier 1 RPS eligible supply expected from New England states' long-term procurements



Note: The outlook reflects a delay in the online date of Vineyard Wind (Massachusetts) from 2022 to 2023, a deviation from the IHS Markit November 2019 outlook.
Source: IHS Markit

EDF renewable energy

* Source: IHS December 2019 report

Offshore - Economic & Job Opportunities

Solar

- In 2018, the solar industry generated a $17 billion investment in the American economy
- Average annual growth rate of 50% over the last 10 years

Wind

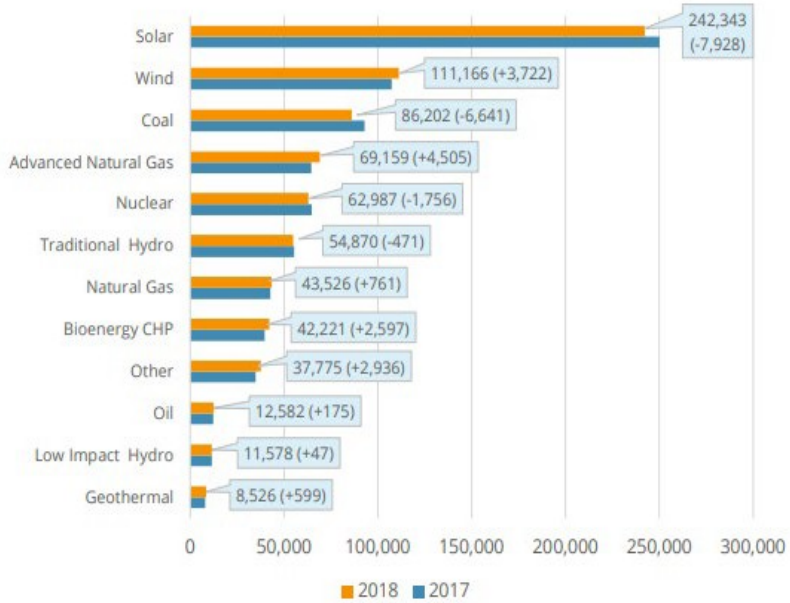
- In 2018, the wind projects built generated a $12 billion investment in the American economy
- U.S. wind power has more that tripled over the last 10 years

Offshore Wind (OSW)

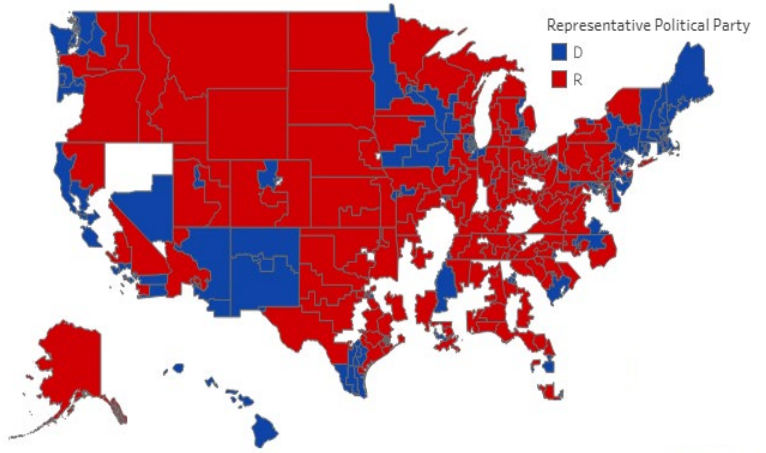
- OSW could create up to 46,000 new jobs according to the U.S. Department of Energy. U.S. wind power has more that tripled over the last 10 years
- OSW is drawing new investments to the US & OSW resources will revitalize ports and coastal communities, improve national security, and deliver vast amounts of reliable energy to America's biggest population centers

Solar employment grew about six times faster than the overall U.S. economy from 2013-2018

Solar – The #1 Employer in Energy



In 2018, the U.S. wind industry supported 114,000 jobs across all 50 states. The wind industry is present in 69% of all U.S. Congressional districts.



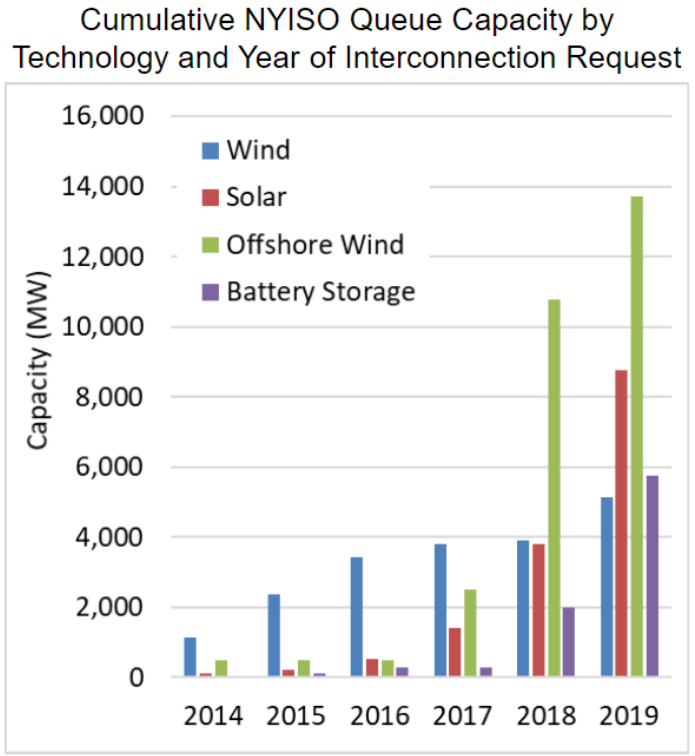
Offshore vs RPS

Le Offshore est-il la solution au RPS et au développement économique du Nord-Est?

- Les objectifs des états du nord-est en matière d'offshore, notamment le NJ (augmenté à 7.5GW) et NY (9GW) sont très ambitieux et la taille de chaque phase d'approvisionnement permet en effet de penser que l'offshore va fortement contribuer au RPS.
- Les États et l'industrie souhaitent aussi que ces objectifs supportent le développement d'une filière économique importante mais les États devront avancer avec une approche régionale plutôt que par État pour favoriser ce développement économique .

Calendrier des Appels d'offres (offshore) prévu à New York et en Nouvelle-Angleterre

- NY se prépare à lancer un AO en 2020 avec un objectif de plus de 1000 MW.
- NJ travaille sur un calendrier approximativement identique.



Offshore Wind Energy Development

Current Lease Status

LESSEE	STATE	ACREAGE	LEASE #, *YEAR*	NEXT STEP
Garden State Offshore Energy I	DE	70,098	OCS-A 0482, *2012*	SAP
Deepwater Wind New England	RI/MA	97,498	OCS-A 0486, *2013*	COP
Deepwater Wind New England	RI/MA	67,252	OCS-A 0487, *2013*	COP
Virginia Electric and Power Company	VA	112,799	OCS-A 0483, *2013*	COP
US Wind	MD	79,707	OCS-A 0490, *2014*	COP
Vineyard Wind	MA	166,886	OCS-A 0501, *2015*	COP
Bay State Wind	MA	187,523	OCS-A 0500, *2015*	COP
Ocean Wind	NJ	160,480	OCS-A 0498, *2016*	COP
Atlantic Shores Offshore Wind	NJ	183,353	OCS-A 0499, *2016*	SAP
Equinor	NY	79,350	OCS-A 0512, *2017*	COP
Avangrid Renewables	NC	122,405	OCS-A 0508, *2017*	SAP
Skipjack	DE	26,332	OCS-A 0519, *2018*	COP
Equinor	MA	128,811	OCS-A 0520, *2018*	SAP
Mayflower Wind	MA	127,388	OCS-A 0521, *2018*	SAP
Vineyard Wind	MA	132,370	OCS-A 0522, *2018*	SAP

* COP: Construction and Operations Plan, SAP: Site Assessment Plan

Source: Bureau of Ocean Energy Management (BOEM)

Les joueurs du Offshore

- Principalement : Ørsted (leader mondial et seul à opérer une ferme offshore aux US – Blocke Island, via le rachat de Deepwater Wind), Equinor, Mayflower Wind (JV entre Shell et EDR), Atlantic Shores Offshore Wind (JV entre Shell et EDFR), Vineyard Wind (CIP & Avangrid).
- Les autres acteurs sont (i) plus petits ou (ii) limités à un marché.

Qui mène la course du Offshore dans le Nord-Est?

- Ørsted est définitivement le chef de file de l'industrie. Possède plusieurs leases et plusieurs PPA.

EDF renewable energy

THANK YOU.

At EDFR, we attribute much of our success to the opportunities we encounter in the confluence of economic, environmental, and social forces.

Approaching these opportunities responsibly is the lifeblood of our corporate culture.

connect

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Canada and US NorthEast

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