SACRS 2019 SPRING CONFERENCE

MAY 7-10

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Why Public Fund Investors Should Consider Renewable Energy

StepStone
inside private markets

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PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. ACTUAL PERFORMANCE MAY VARY.

Global Investors are Allocating

A wide variety of investors are allocating capital to infrastructure for its defensive characteristics and yield

INVESTOR RATIONALE BY GEOGRAPHY

US PENSION FUNDS

US pension funds are increasing allocations to the sector – while primarily through pooled funds to date, some of the larger funds are now developing direct, or 'assisted direct', investment mandates

ASIAN LIFE INSURANCE COMPANIES

Life insurance companies, particularly out of Asia, are having restrictions lifted that will allow them to invest in infrastructure as a means of matching their long-tail liability profile

JAPANESE PENSION FUNDS

Japanese pension funds, having historically invested primarily in fixed income and equities, have recently broadened their investment mandates to include infrastructure

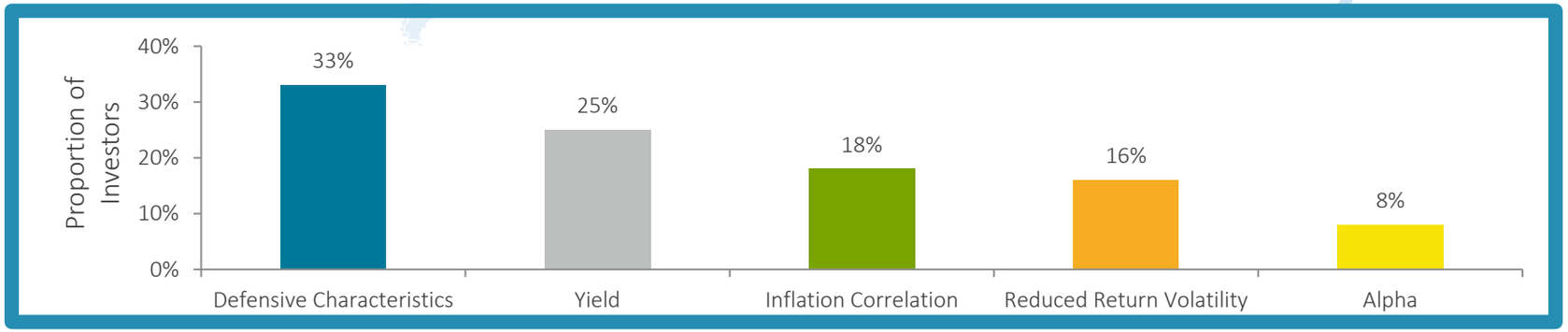
OTHER SWFS

Middle Eastern SWFs have been particularly active in recent years

ASIAN SWFS

Asian SWFs, along with Asian government Foreign Reserve funds, representing trillions of dollars of foreign reserve holdings, are one of the fastest growing pools of investors in recent years, with significant scope for further investment

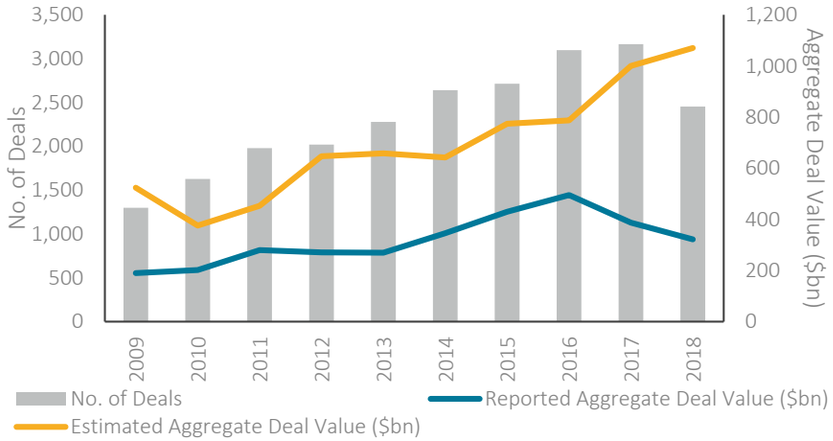
PRIMARY RATIONALE FOR INVESTING IN INFRASTRUCTURE



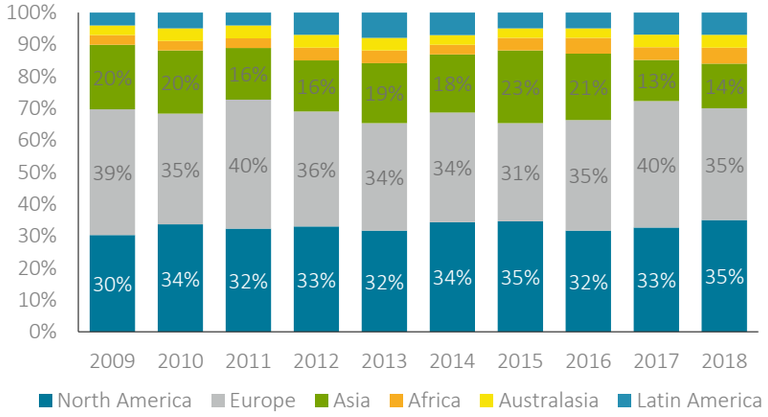
Source: StepStone Survey, 2016

Overview of Deal Activity

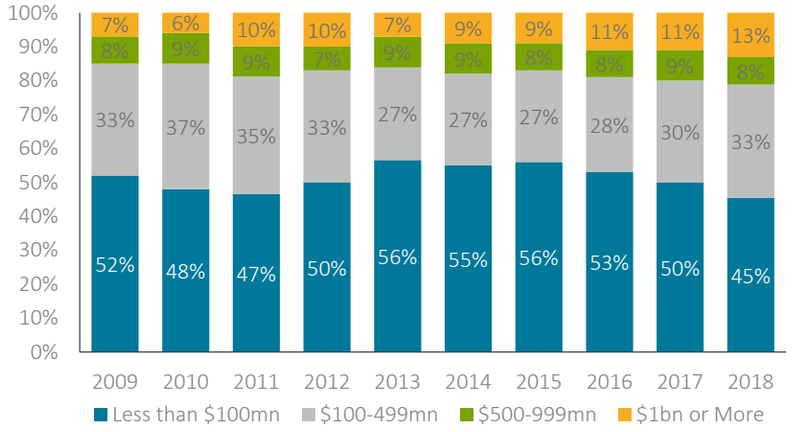
NUMBER OF DEALS COMPLETED GLOBALLY



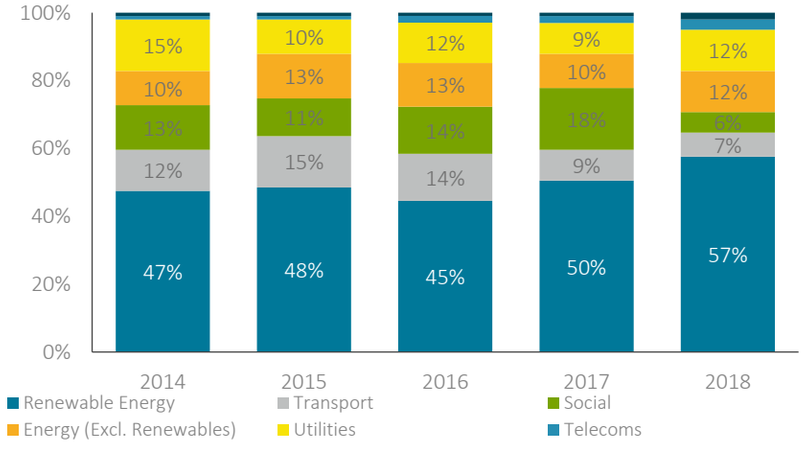
BREAKDOWN OF INFRASTRUCTURE DEALS BY REGION



PROPORTION OF DEALS BY VALUE



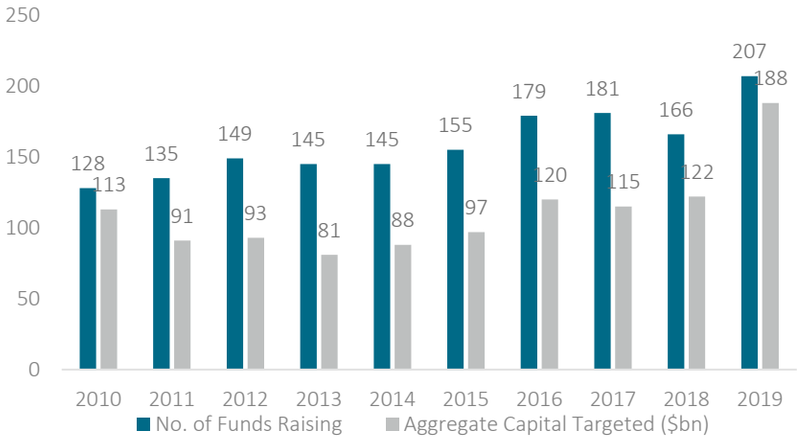
UNIVERSE OF PRIVATE SECTOR-OWNED INFRASTRUCTURE ASSETS BY INDUSTRY



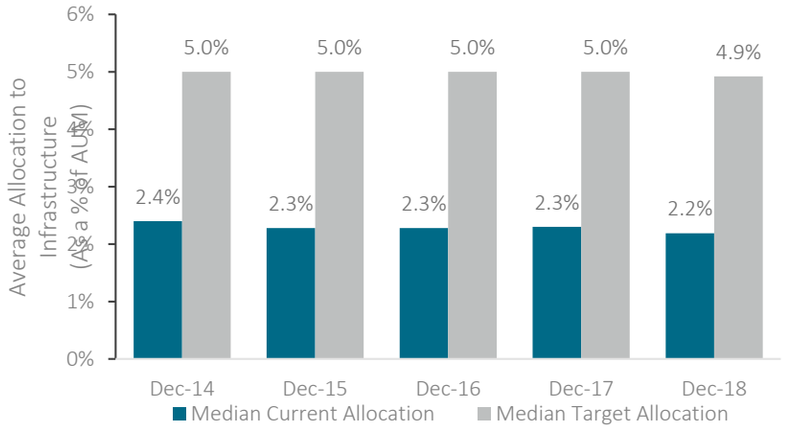
Source: 2019 Preqin Global Infrastructure Report

Investor Appetite Remains Strong

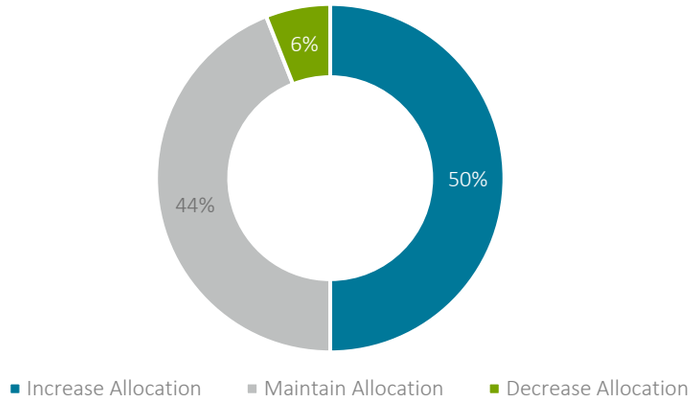
UNLISTED INFRASTRUCTURE FUNDS IN THE MARKET



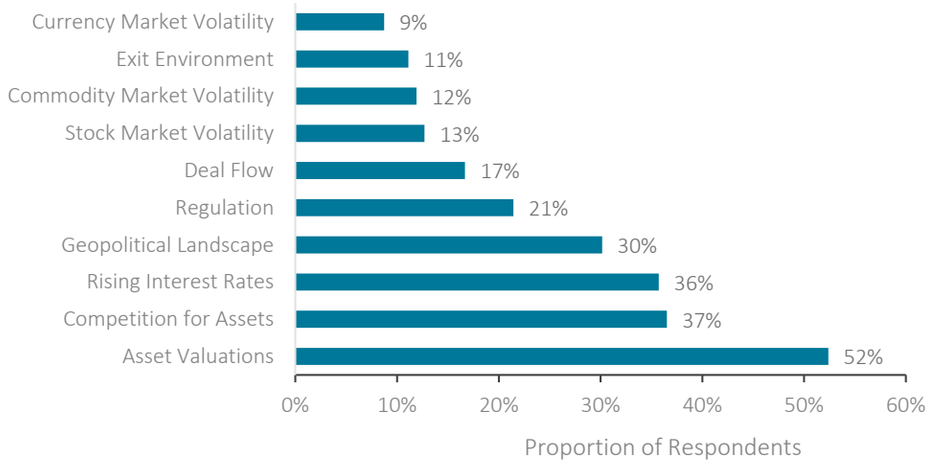
MEDIAN CURRENT & TARGET ALLOCATIONS TO INFRASTRUCTURE 2013 – 2018



INVESTORS' INTENTIONS FOR THEIR INFRASTRUCTURE ALLOCATIONS OVER THE LONGER TERM



BIGGEST CHALLENGES FACING UNLISTED GPS IN 2018



Source: 2019 Preqin Global Infrastructure Report..

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Global Outlook on Renewables

Allianz

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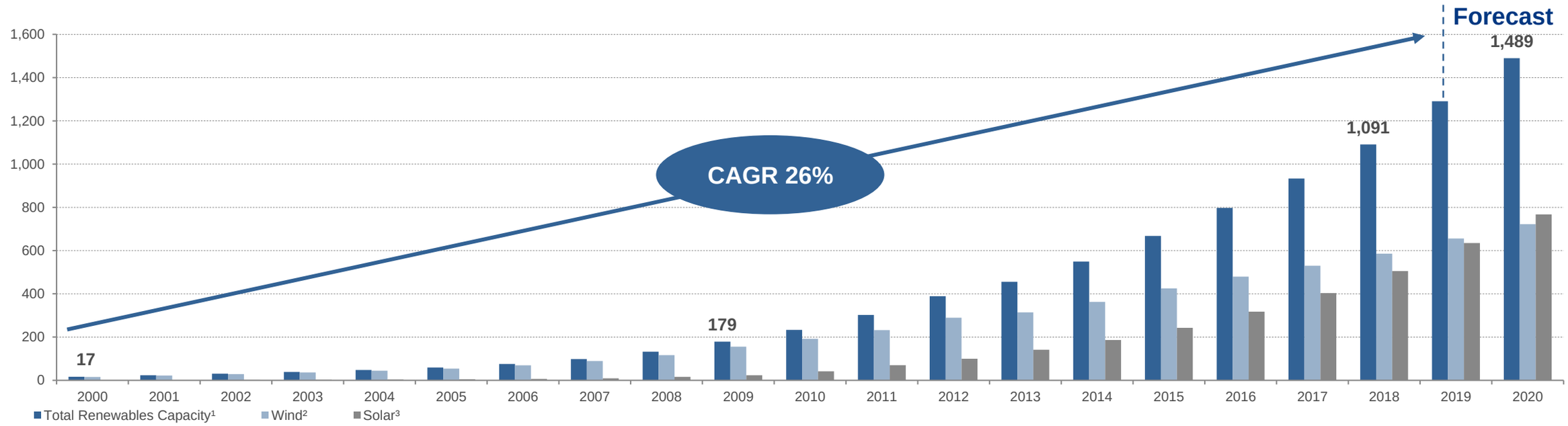
Snapshot and Outlook

The market for renewable energy (RE) is growing globally…

Cumulative renewable installed capacity – Global

In GW



USD 290bn
Estimated 2017 RE deals completed globally

52%
of the aggregate value of all RE deals in 2017 came from wind power deals

87%
of RE deals completed in 2017 were valued at less than USD 500m

1. Wind (Onshore, Offshore), Solar (PV Residential, PV Utility, PV Commercial)
2. Onshore, Offshore.
3. PV Residential, PV Utility, PV Commercial

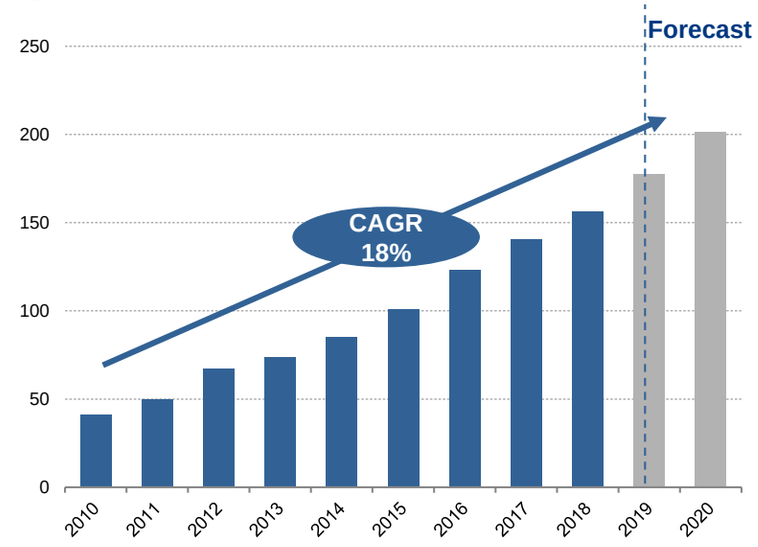
Source: Bloomberg Energy Finance, 1H 2018, Preqin Global Infrastructure Report

…with US and Asia showing the highest growth potential

Cumulative installed capacity & short term forecast: Solar and Wind (onshore & offshore)

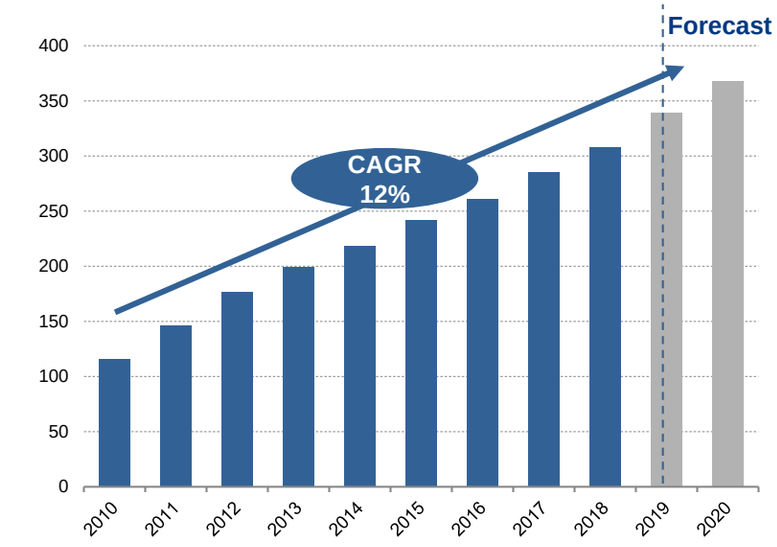
United States

In GW



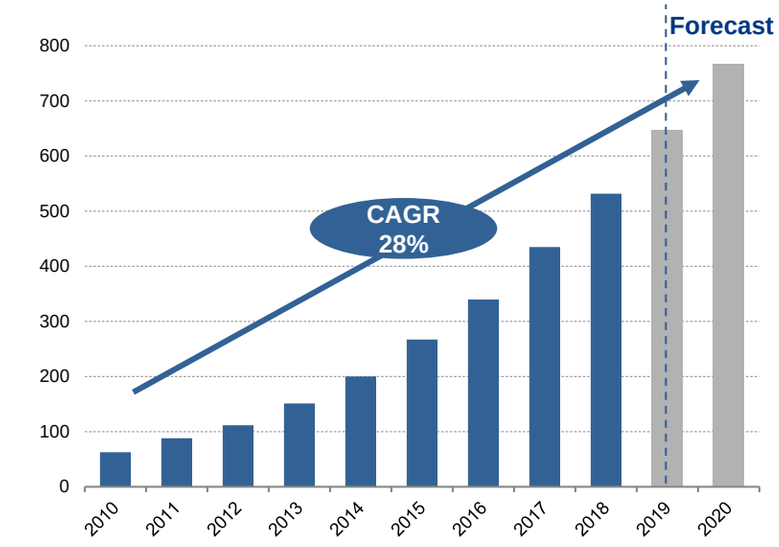
Europe

In GW



Asia[1]

In GW



Attractive & established markets that offer a balanced risk / return profile for investors globally

Challenging market entry for non – APAC investors

1. China, India, India, Indonesia, Japan, Korea (Republic), Malaysia, Philippines, Thailand

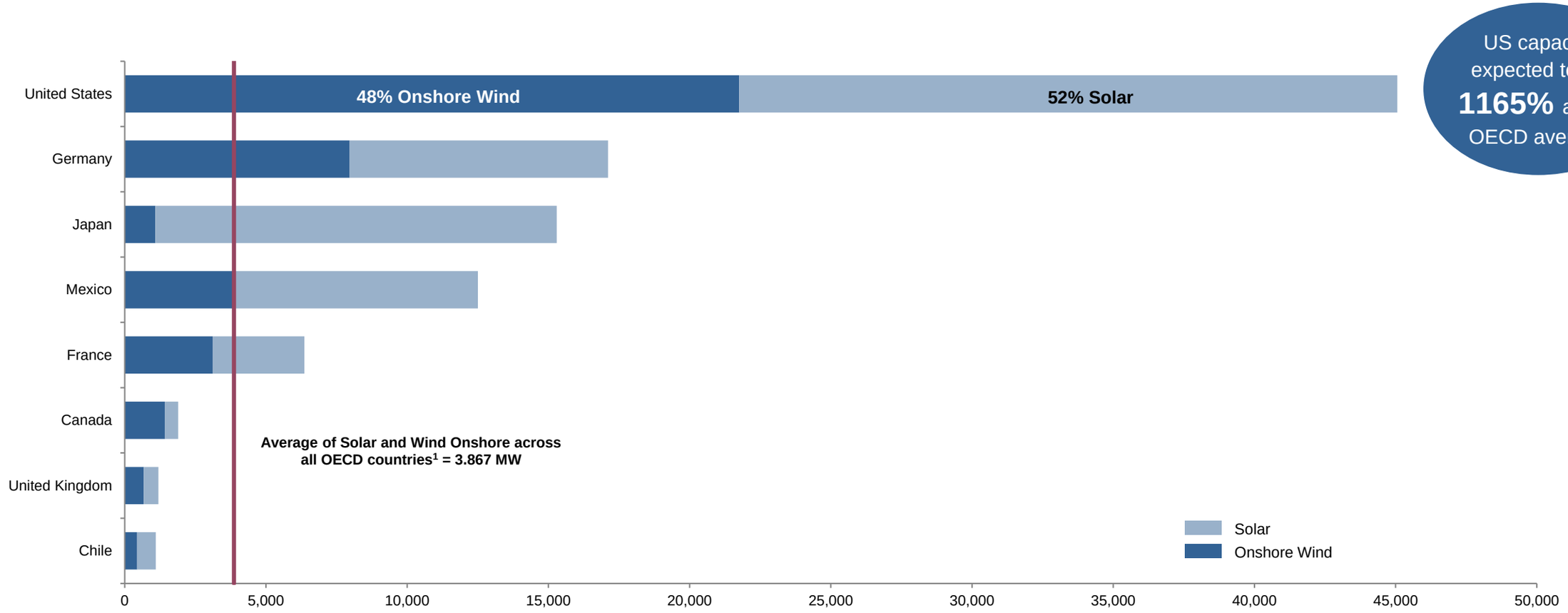
Source: Bloomberg Energy Finance, 1H18.

02

The US Market

The US is expected to lead OECD countries in RE investment and installed capacity

New installed generation capacity of wind onshore and utility solar 2018–2020 (MW)



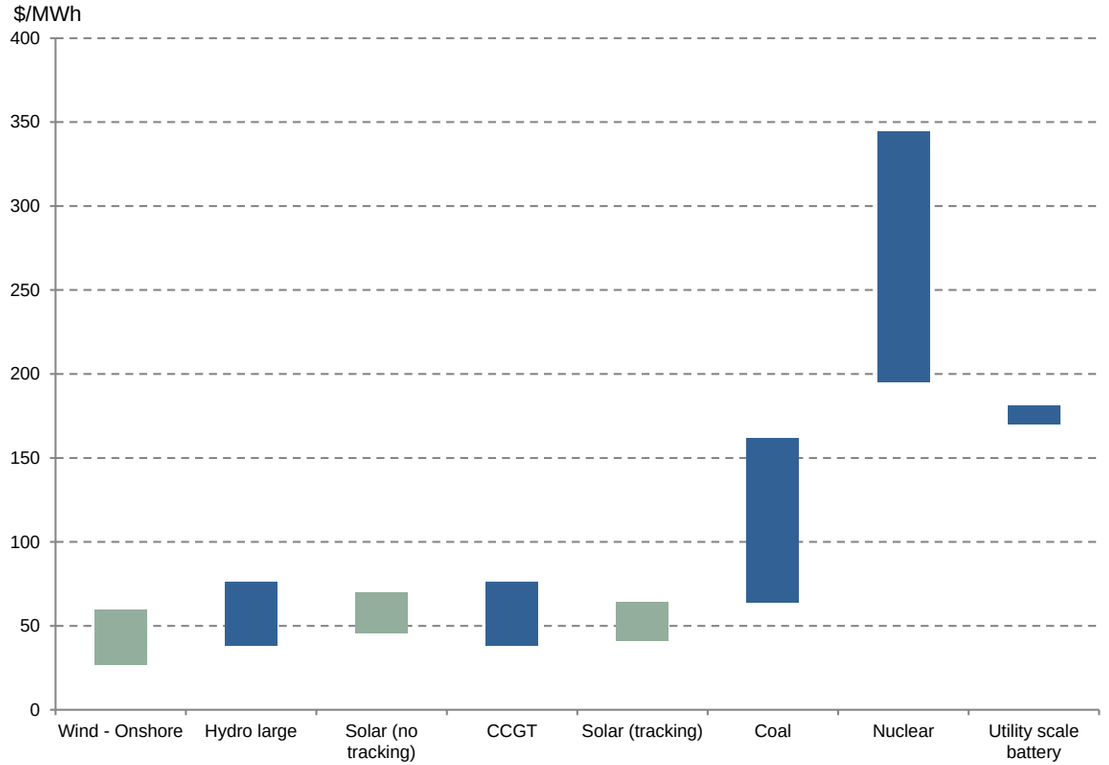
US capacity expected to be **1165%** above OECD average

1 Calculations based on available data in BNEF for 34 Organization for Economic Cooperation and Development (OECD) Countries (only country missing is Iceland due to lack of available data)
Source: BNEF as of May 22, 2018

Renewables' economic advantage translates into increased deal flow in the US…

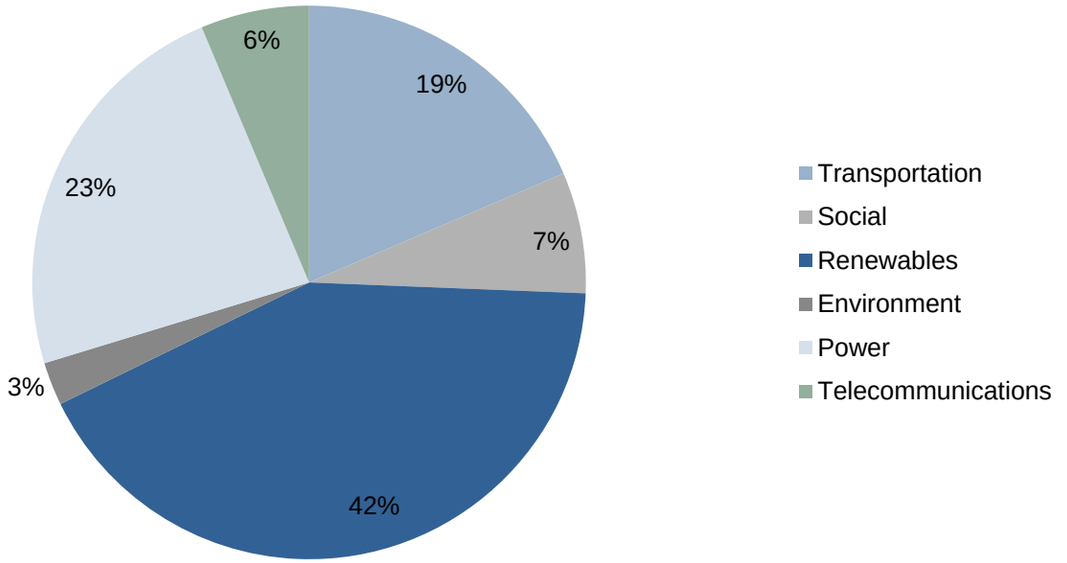
In key target regions, unsubsidized wind is cost-competitive against conventional power…

Levelized Cost of Electricity (LCOE) ranking for the United States ($/MWh)[1]



…making RE account for a significant part of overall US infrastructure investment

US infrastructure deals ($ billion)[2]

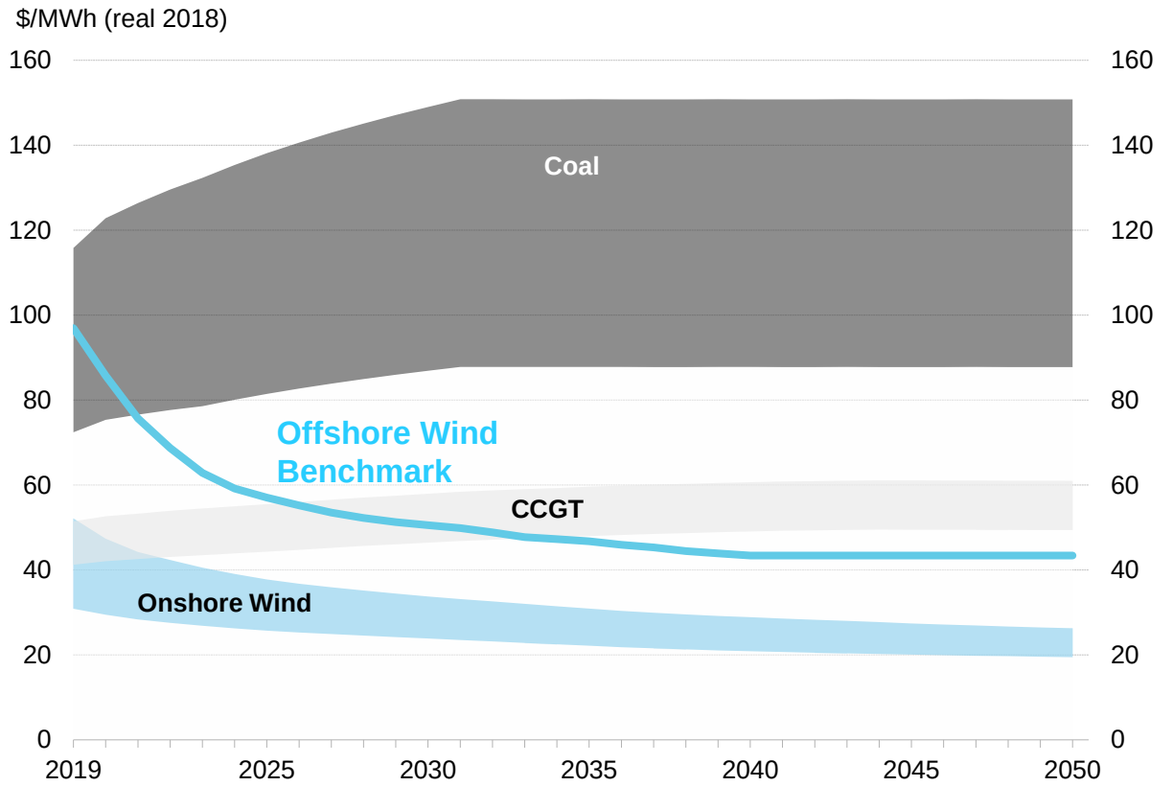


Source:
1 Bloomberg New Energy Finance. 1Q19 Current LCOE by country (ranges indicate low/high LCOE)
2 Inframation 2019.

…supported by falling renewable LCOE: renewables vs. traditional energy

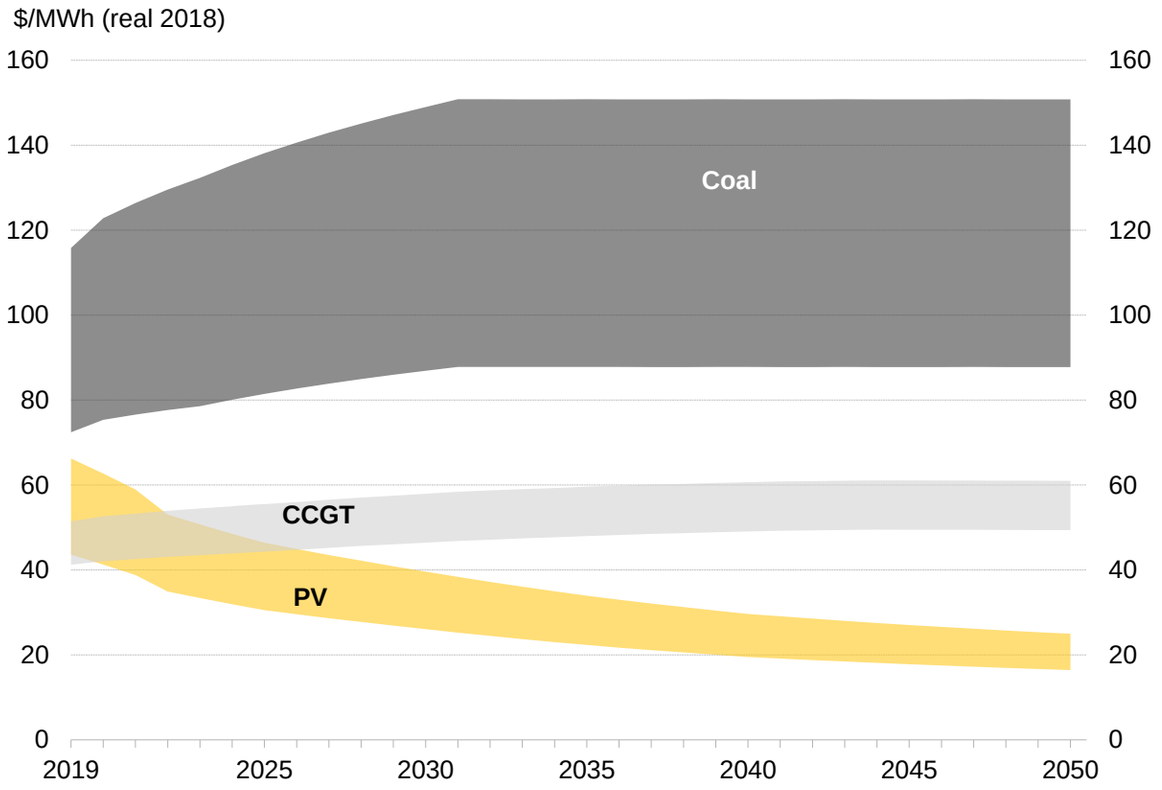
Onshore Wind vs Coal and CCGT

LCOE (USD / MWh-real 2018)



Utility – scale PV vs Coal and CCGT

LCOE (USD / MWh-real 2018)



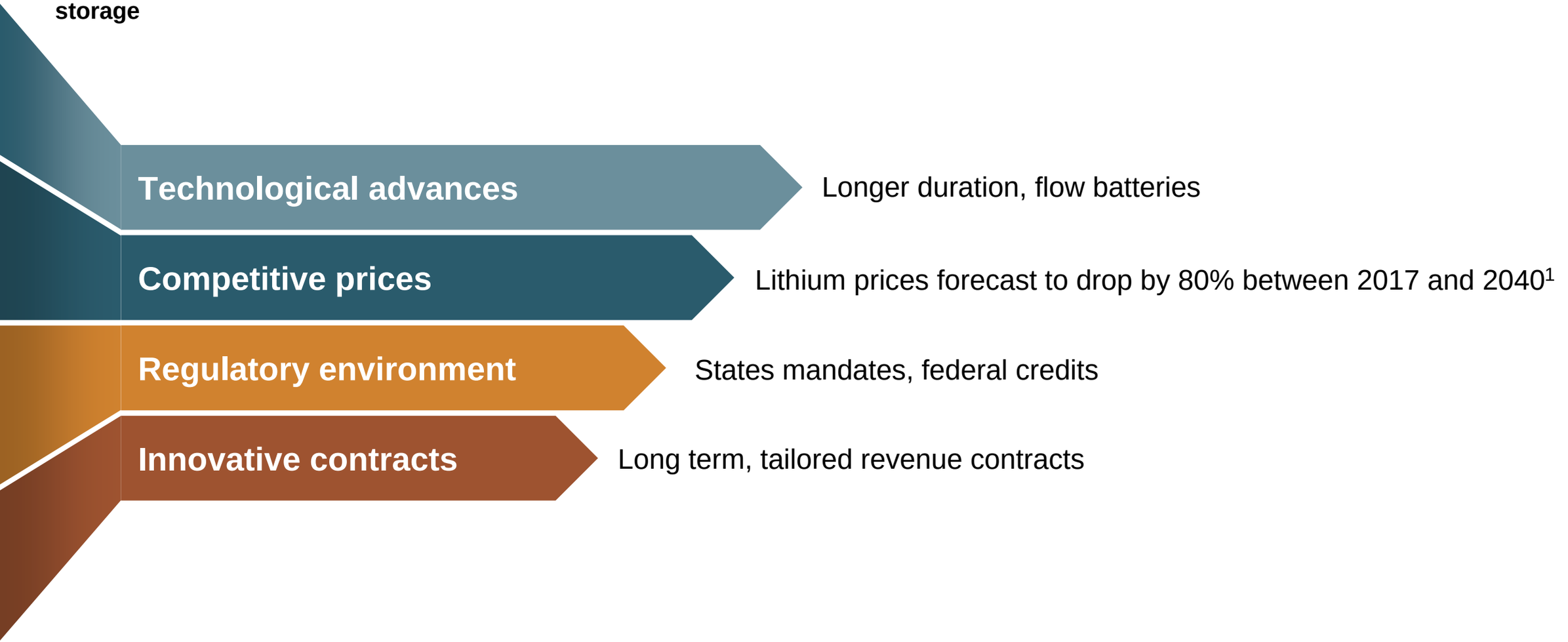
Source: Bloomberg Energy Finance, 1Q19

03

Storage

There is a constant and rapid growth of battery storage in the US market

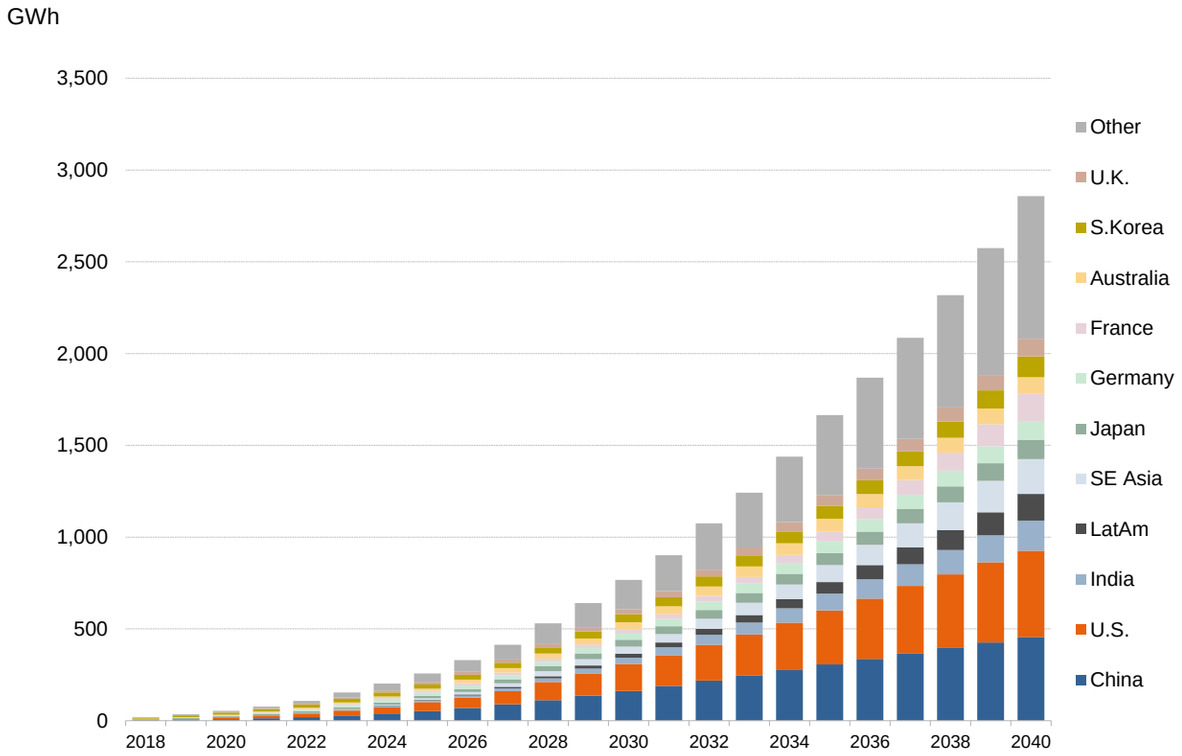
Efficient technology, competitive prices, a supportive regulatory environment and workable contracts together attract further investment into storage



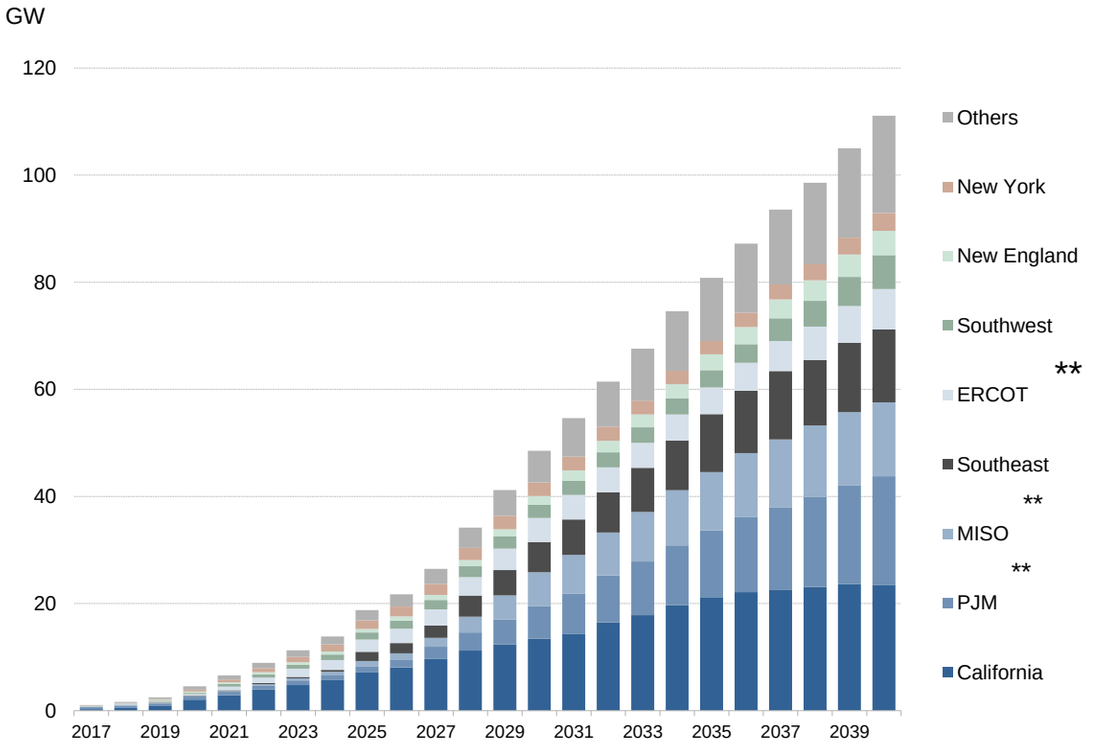
1 Wood Mackenzie Power & Renewables, 2017

US has been an early global leader in energy storage, and enhanced growth is expected

Global cumulative storage deployments



U.S. cumulative market size by region based on power output*



Source: Bloomberg Energy Finance, 2018

*The chart does not include electric vehicle charging which was modeled on a country basis and not split regionally

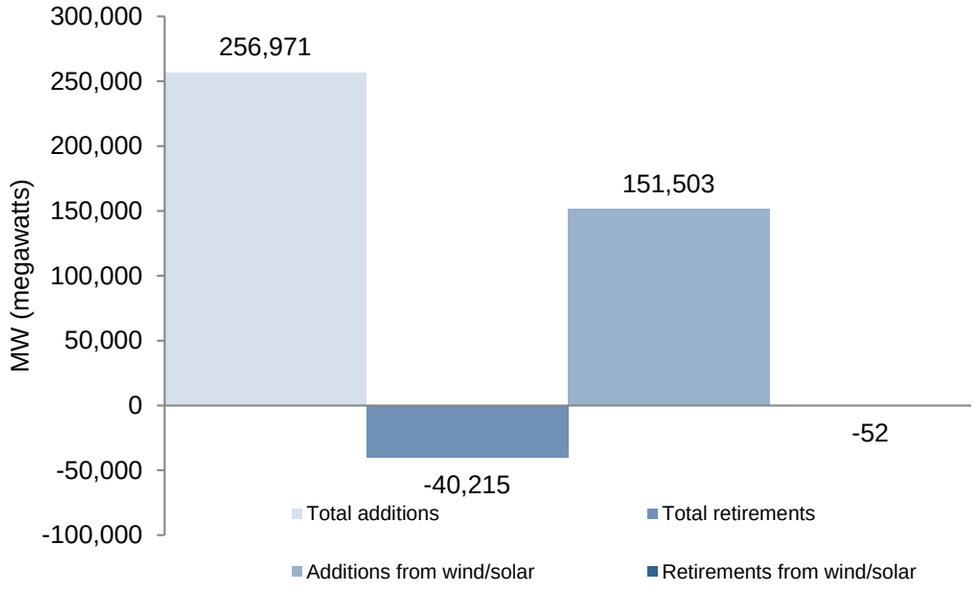
** PJM is a Regional Transmission Organization (RTO): MISO is an Independent System Operator (ISO) as well as an RTO: ERCOT is an ISO

04

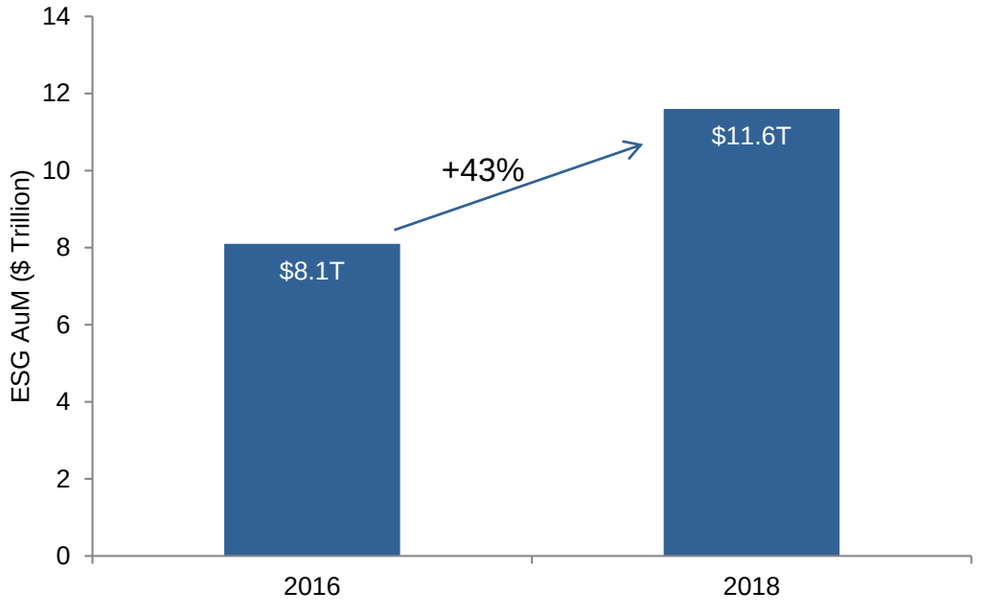
ESG

The US energy mix transition is supported by the growth of ESG investing and concerns about climate change

Solar and wind projects should account for the majority of new US power generation within three years[1]



Among US institutional investors, 26% say their top reason for pursuing ESG strategies is climate change[2]

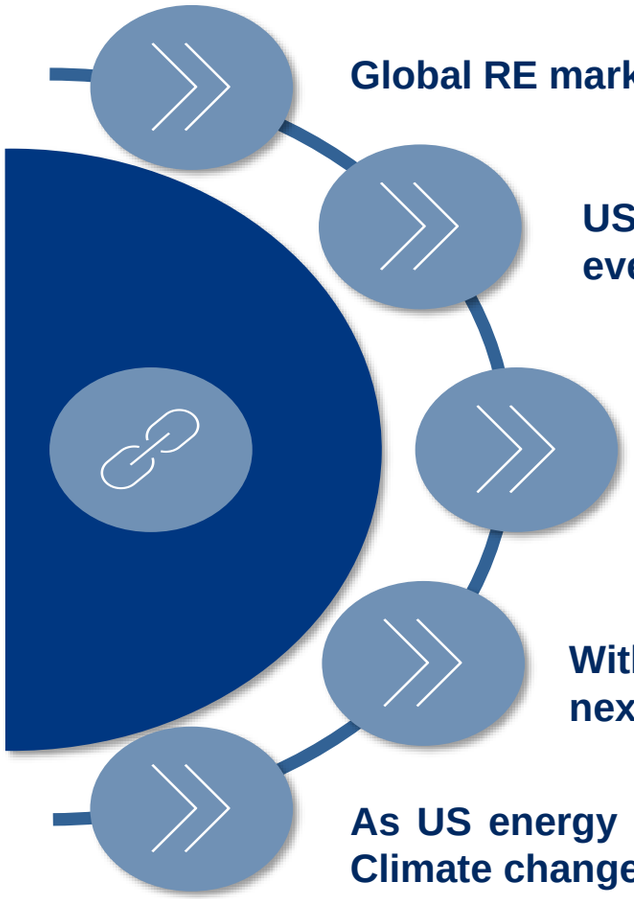


Source:
1 Federal Energy Regulatory Commission, September 2018
2 The Forum for Sustainable and Responsible Investment, December 31, 2018

05

Key takeaways

Key takeaways



Global RE market is growing significantly. The US has been leading the growth

US wind and solar industry is now thriving and competitive with traditional power generation, even without subsidies

Institutional investors can capitalize on the coming generational overhaul of the US power generation industry

With the emergence of new technologies and incentives, the US storage industry is ready for its next growth chapter

As US energy mix transitions into green energy, there is a growing appetite for ESG investing. Climate change is among the main drivers for ESG investing

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Active is:

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Technology Overview

Renewable power generation is now considered well proven; however, the sector comprises a number of different technologies with unique characteristics that span the risk/complexity spectrum. Additionally, different technologies will be more established and acceptable to investors in different geographies

SPECTRUM OF RENEWABLE GENERATION TECHNOLOGIES

Complexity ↓

	Capital Cost	Constructability	Permitting	Operating Cost	Performance	Bankability
Solar PV	+	+	+	+	+	+
Onshore Wind	+	+	±	+	+	+
Run-of-River Hydro	-	-	+	+	+	+
Offshore Wind	-	-	+	-	+	+
Storage/Pumped Hydro	-	-	-	+	+	+
Biomass	-	-	+	±	±	±
Solar Thermal	-	-	-	-	±	+
Geothermal	-	-	-	-	±	±
Landfill Gas	-	-	-	±	±	±
Wave / Tidal	-	-	-	-	-	-
Storage	±	±	±	±	±	-

Note: + indicates favourable or easier

\- Indicates challenging or less favourable, but not necessarily prohibitive

MOST COMMON TECHNOLOGIES

Hydro
- Mature technology; limited greenfield opportunities due to environmental concerns
- Base load capacity

Onshore wind
- Established technology used throughout the world and the second largest source of renewable energy after hydro
- Turbine size has increased to 8MW today
- Capacity factor typically 22%+[1]

Offshore wind
- Maturing technology with first offshore wind farm built in 1991 in Denmark
- Installation and maintenance more difficult than onshore wind and component life shorter
- Capacity factor typically 35%[2]

Biomass
- Base load generation
- Requires reliable source of feedstock
- Capacity factor typically 60%+[1]

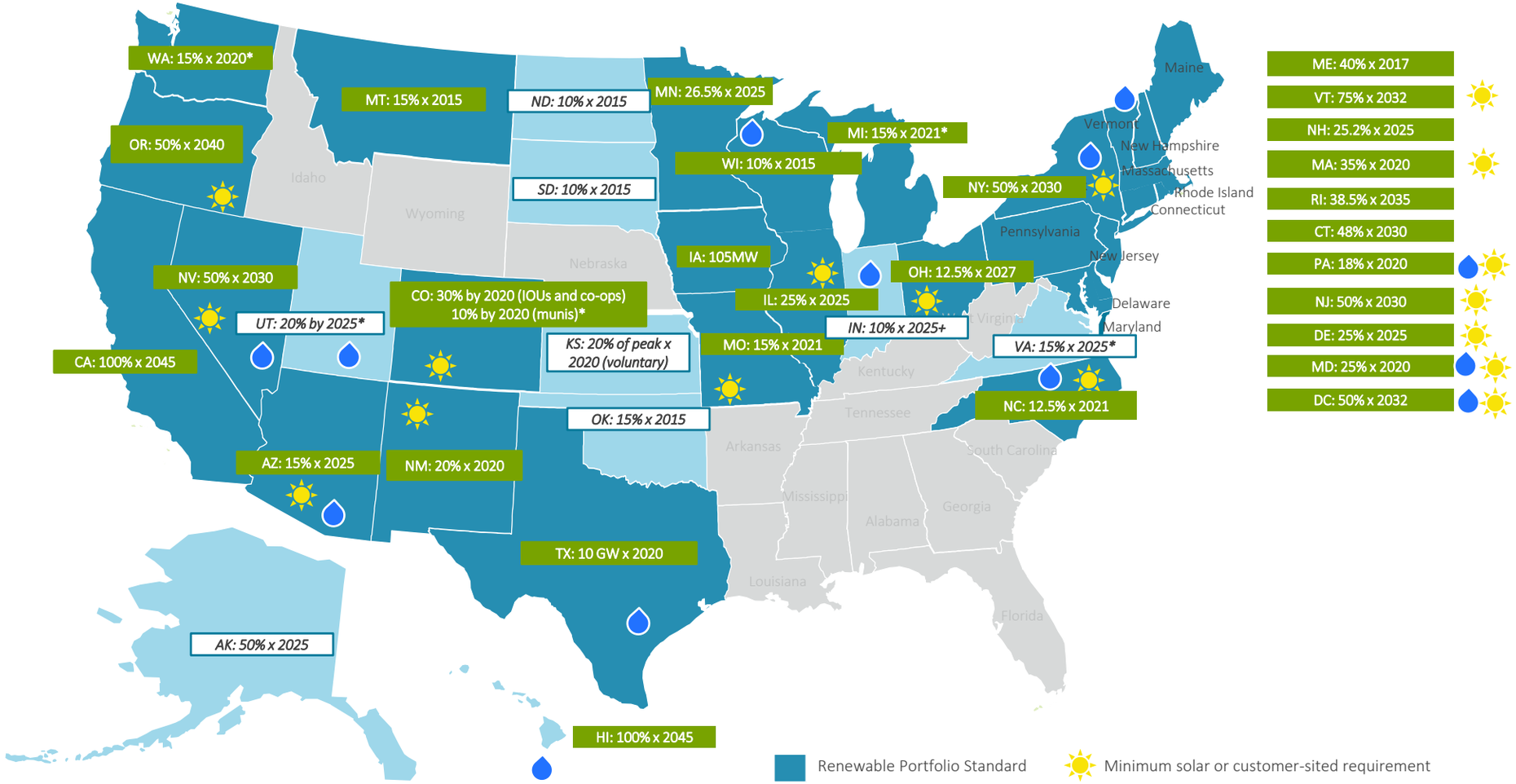
Solar PV
- Established technology with a variety of panel designs
- Low maintenance
- Capacity factor typically 11%[1]

Storage
- Emerging technologies with flexibility for domestic/commercial ("behind the meter") to grid-scale usage

1. https://www.eia.gov/todayinenergy/detail.php?id=22832
2. http://energynumbers.info/uk-offshore-wind-capacity-factors

Increasing US Renewable Portfolio Standards

States continue to increase their renewable energy production requirements through State Renewable Portfolio Standards ("RPS"). California recently announced a 100% target by 2045



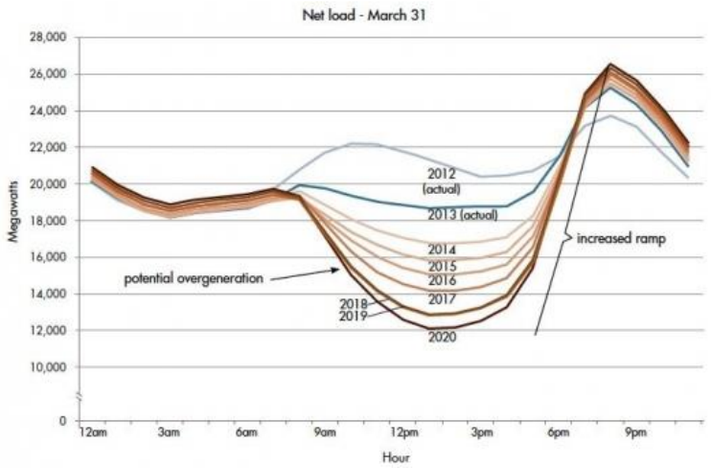
Sources: NC Clean Energy Technology Center. "Renewable Portfolio Standard Program Overview", 2018
Berkeley Lab; National Conference of State Legislatures, August 2017

On-Peak Prices Becoming Lower than Off-Peak

In markets with higher penetration of solar assets, such as California, overgeneration during on-peak hours (when the sun is shining) is becoming increasingly prevalent. As a result, off-peak pricing (during evening hours) in select markets is expected to result in a higher premium than on-peak over time

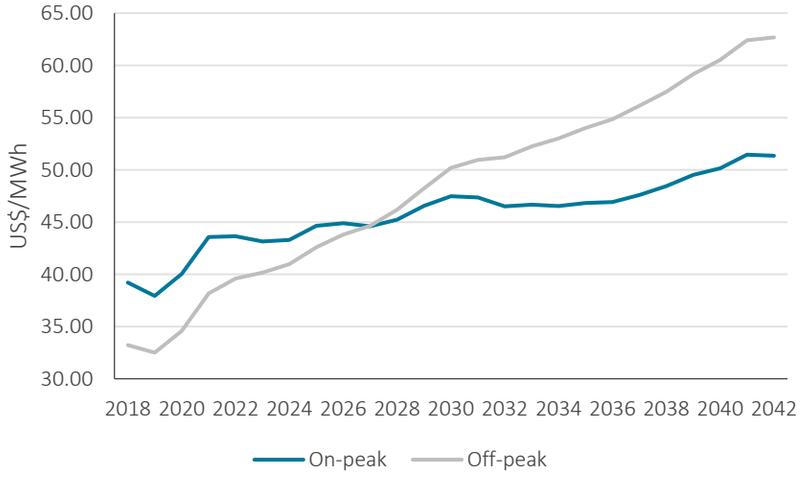
CALIFORNIA DUCK CURVE

With solar energy peaking at mid-day, and increasing solar resources coming online, certain jurisdictions such as California face over-generation during peak usage times. However, in the early evening, when electricity usage remains high but the sun has begun setting, alternate capacity or energy storage solutions are needed to meet electricity demand.



ON-PEAK VS. OFF-PEAK PRICING

As a result of increasing solar penetration, average on-peak prices (in California, from 7 am to 10 pm) are expected over time to become lower than off-peak prices, resulting in a premium placed on generators which generate on-demand or during all hours.



Sources: CAISO, Ventyx 2017 Fall Reference Case prices for California - SCE

Comparable Underwriting Analysis – Renewables

	DEALS	COMMENTS
VALUE ADD 11 – 15% TARGET GROSS IRR	▪ Early-stage development projects ▪ Distributed generation	▪ **Development projects:** Development risks can be reduced with a strong developer partner, but requires visibility over development, construction and operations ▪ **Distributed renewable generation:** Retail / residential customer profile, credit profiles difficult to assess, however can have long-term contracts
CORE+ 9 – 11% TARGET GROSS IRR	▪ Late-stage development; construction-ready renewables ▪ Renewables with medium to long term hedges	▪ **Construction ready renewables**: Requires careful management of construction risks, cash yield delayed for 1 to 3 years ▪ **Medium-to-long term hedges**: Incurs basis risk in hedges, re-hedging / re-contracting risk and counterparty risks; increasing occurrence in wind projects
CORE 6 – 8% TARGET GROSS IRR	▪ Operating, Contracted Renewables	▪ Level of contracted returns determine return profile, generally merchant revenues are assumed at the tail end of the asset's life ▪ Easy to assess counterparty risk ▪ Competition for assets is significant

Target returns are hypothetical and are neither guarantees nor predictions or projections of future performance. Future performance indications and financial market scenarios are no guarantee of current or future performance. There can be no assurance that such gross target IRRs will be achieved or that the investment will be able to implement its investment strategy, achieve its investment objectives or avoid substantial losses. Further information regarding gross target IRR calculation is available upon request. Gross IRR will ultimately be reduced by management fees, carried interest, taxes, and other fees and expenses. The opinions expressed herein reflect the current opinions of StepStone as of the date appearing in this material only. There can be no assurance that views and opinions expressed in this document will come to pass. No representation or warranty is made as to the returns which may be experienced by investors. For illustrative purposes only.

Renewable Energy Tail Risks

Investors are becoming more tolerant to tail risks as the sector matures and becomes more competitive and commoditized

Merchant pricing	• Given a combination of longer assumed asset lives, shorter term PPAs/hedges and a more aggressive investment environment, merchant pricing assumptions are an increasingly important part of investment returns • Depending on the renewable technology, investors have become increasingly willing to accept less than 100% of their capital back during a project's initial PPA/hedge agreement
Asset life	• Assumed asset lives have continued to lengthen in the US with 'design life' plus 10 years being very common (30 year for wind and 35 year for solar assets) • Independent engineers have supported longer useful lives (35 for wind, 40 for solar) albeit with the assumption of deteriorating performance and operating costs increases for assets as they near the end of their useful lives
Weather / Generation variability	• The precision by which independent engineers forecast energy production in both solar and wind has continued to improve with estimation errors declining significantly • Energy storage is likely to reduce day to day volatility and expand productive hours
Curtailment / Basis Risk	• Grid congestion can result in 'curtailment risk', where energy producers are unable to sell power due to congestion in the transmission system - the means by which that risk is shared is on a customer by customer basis • Curtailment risk (and basis risk) is likely to be higher where the counterparty is a hedge provider or corporate counterparty
Plant availability	• Equipment failure and other business interruptions, such as high wind speeds forcing turbines to shut down for safety, can reduce output of a project • Where an OEM is involved the risk is typically minimized by an availability guarantee. In larger platforms, owners are reducing the economic impact of downtime but enabling self performance
Counterparty risk	• Counterparties are generally investment-grade utilities, or financial institutions in the cases of hedge agreements • Increasingly, projects are signing corporate PPAs which often have a more variable credit rating profile where the ongoing viability of the company and its business model are important considerations, e.g. data center offtakes

Sources: SIRA analysis, 2018 IE reports (B&V, Sargent & Lundy) & reference calls

Risks and Other Considerations

Risks Associated with Investments. Identifying attractive investment opportunities and the right underlying fund managers is difficult and involves a high degree of uncertainty. There is no assurance that the investments will be profitable and there is a substantial risk that losses and expenses will exceed income and gains.

Restrictions on Transfer and Withdrawal; Illiquidity of Interests; Interests Not Registered. The investment is highly illiquid and subject to transfer restrictions and should only be acquired by an investor able to commit its funds for a significant period of time and to bear the risk inherent in such investment, with no certainty of return. Interests in the investment have not been and will not be registered under the laws of any jurisdiction. Investment has not been recommended by any securities commission or regulatory authority. Furthermore, the aforementioned authorities have not confirmed the accuracy or determined the adequacy of this document.

Limited Diversification of Investments. The investment opportunity does not have fixed guidelines for diversification and may make a limited number of investments.

Reliance on Third Parties. StepStone will require, and rely upon, the services of a variety of third parties, including but not limited to attorneys, accountants, brokers, custodians, consultants and other agents and failure by any of these third parties to perform their duties could have a material adverse effect on the investment.

Reliance on Managers. The investment will be highly dependent on the capabilities of the managers.

Risk Associated with Portfolio Companies. The environment in which the investors directly or indirectly invest will sometimes involve a high degree of business and financial risk. StepStone generally will not seek control over the management of the portfolio companies in which investments are made, and the success of each investment generally will depend on the ability and success of the management of the portfolio company.

Taxation. An investment involves numerous tax risks. Please consult with your independent tax advisor.

Conflicts of Interest. Conflicts of interest may arise between StepStone and investors. Certain potential conflicts of interest are described below; however, they are by no means exhaustive. There can be no assurance that any particular conflict of interest will be resolved in favor of an investor.

Allocation of Investment Opportunities. StepStone currently makes investments, and in the future will make investments, for separate accounts having overlapping investment objectives. In making investments for separate accounts, these accounts may be in competition for investment opportunities.

Existing Relationships. StepStone and its principals have long-term relationships with many private equity managers. StepStone clients may seek to invest in the pooled investment vehicles and/or the portfolio companies managed by those managers.

Carried Interest. In those instances where StepStone and/or the underlying portfolio fund managers receive carried interest over and above their basic management fees, receipt of carried interest could create an incentive for StepStone and the portfolio fund managers to make investments that are riskier or more speculative than would otherwise be the case. StepStone does not receive any carried interest with respect to advice provided to, or investments made on behalf, of its advisory clients.

Other Activities. Employees of StepStone are not required to devote all of their time to the investment and may spend a substantial portion of their time on matters other than the investment.

Material, Non-Public Information. From time to time, StepStone may come into possession of material, non-public information that would limit their ability to buy and sell investments.