



REC GROUP SOLAR MARKET INSIGHT

Q4 & Full-Year 2017 Results



SOLAR'S MOST TRUSTED

April 25, 2018

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573 kW, Dubai, UAE

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REC Highlights

Q4 2017 & Full-year 2017



- **Best-ever sales quarter** in 2017 (**Q4 /2017 @ 413MW**)
- **Record sales** in **several** of its **most important markets** including Germany, BeNeLux, India and Australia
- **Strongest ever annual growth** in the **number of customers** (**+79%** from 1H 2016 to 2H 2017)
- Successful **launch of 5 new products** in 2017
- **Global efficiency leader in multi-silicon** - highest module power in mass production for 60- and 72-cell
- REC crossed the **1GW sales threshold of its award-winning TwinPeak modules** (cumulative)
- **3 global awards** for technology, design and environment



REC has won three international awards since September 2017 for technology, design and environment



Norwegian Climate Business of the Year 2017

- The award acknowledges Elkem Solar (now known as REC Solar Norway) for its ground breaking and long-term work in the development of new production methods for solar silicon
- The company has the **lowest CO₂ footprint** of all **solar silicon production technologies** (requires 75% less production energy compared to competitors) – which gives **REC modules** one of the **lowest carbon footprints**



Made in Singapore Award 2017

- The Made in Singapore and Designed in Singapore awards program recognizes trailblazing products manufactured in the city-state and products conceptualized in Singapore
- The REC TwinPeak 2 Series won the Made in Singapore Awards under the energy & power category



Solar + Power Award 2017

- REC Group received the prestigious award in the category “Silicon Module Award” for its TwinPeak 2 solar panel
- Jury remarks: “REC’s TwinPeak 2 exemplifies efforts to increase multicrystalline silicon efficiency to the point where it rivals that of monocrystalline PV products.”





15.53 MW, Kaua'i, USA

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Global Performance

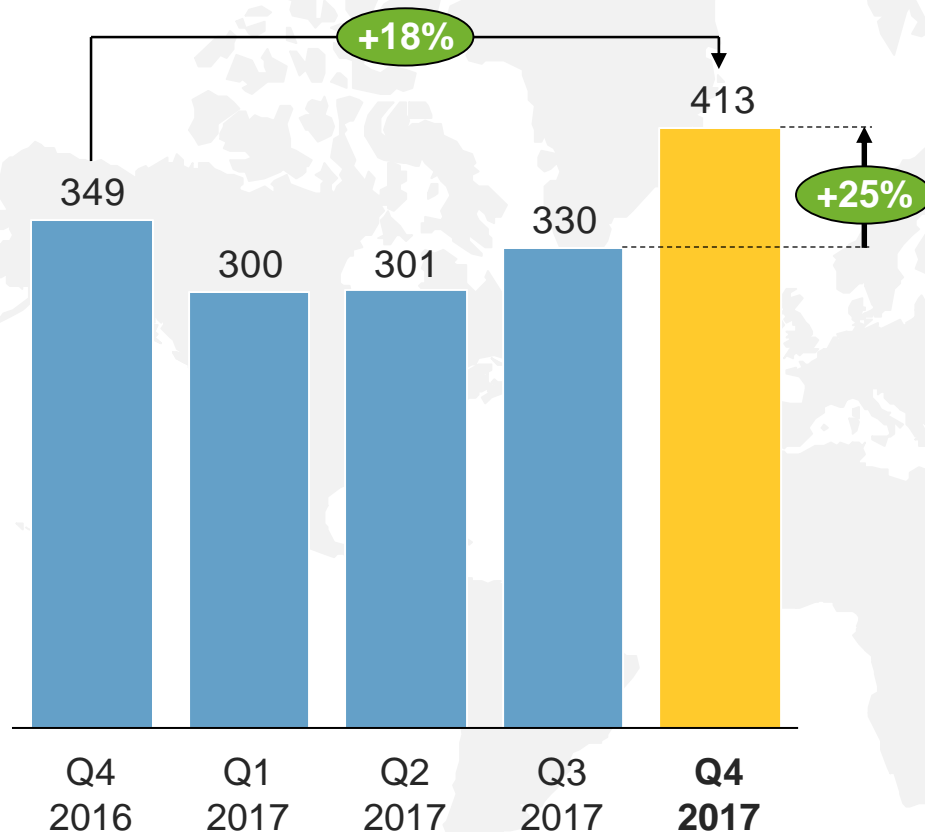
Q4 2017 & Full-year 2017



REC achieved its highest-ever quarterly sales volume in Q4 2017



Module Shipments by Quarter (in MW)

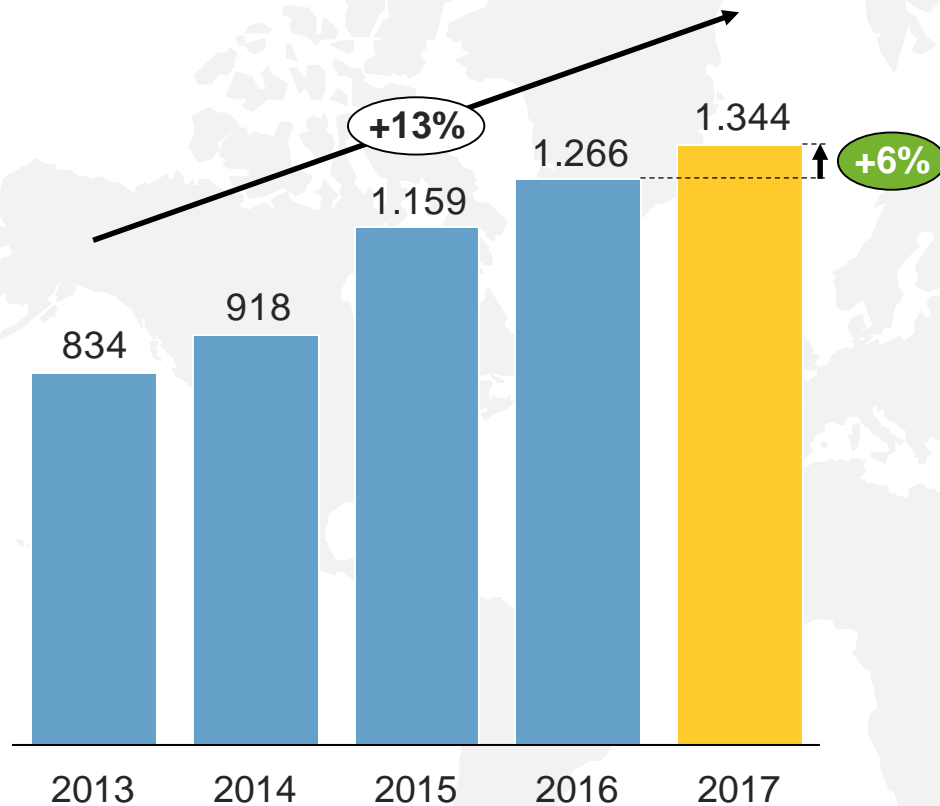


- **Global shipments** in Q4 2017 totaled **413 MW** – making it the **best shipment quarter ever** in REC history
- Shipments **increased by 25%** over the previous quarter driven by growth in all regions, including in many markets where REC **outperformed market growth**
- **Growth was up +18%** compared to the same period **last year**
- **Key drivers** for REC's sustainable growth are **high quality** products, **technology leadership & innovations** and a **balanced markets approach** with strong **global presence**


REC continues to steadily increase its shipments while focusing on quality and technology leadership



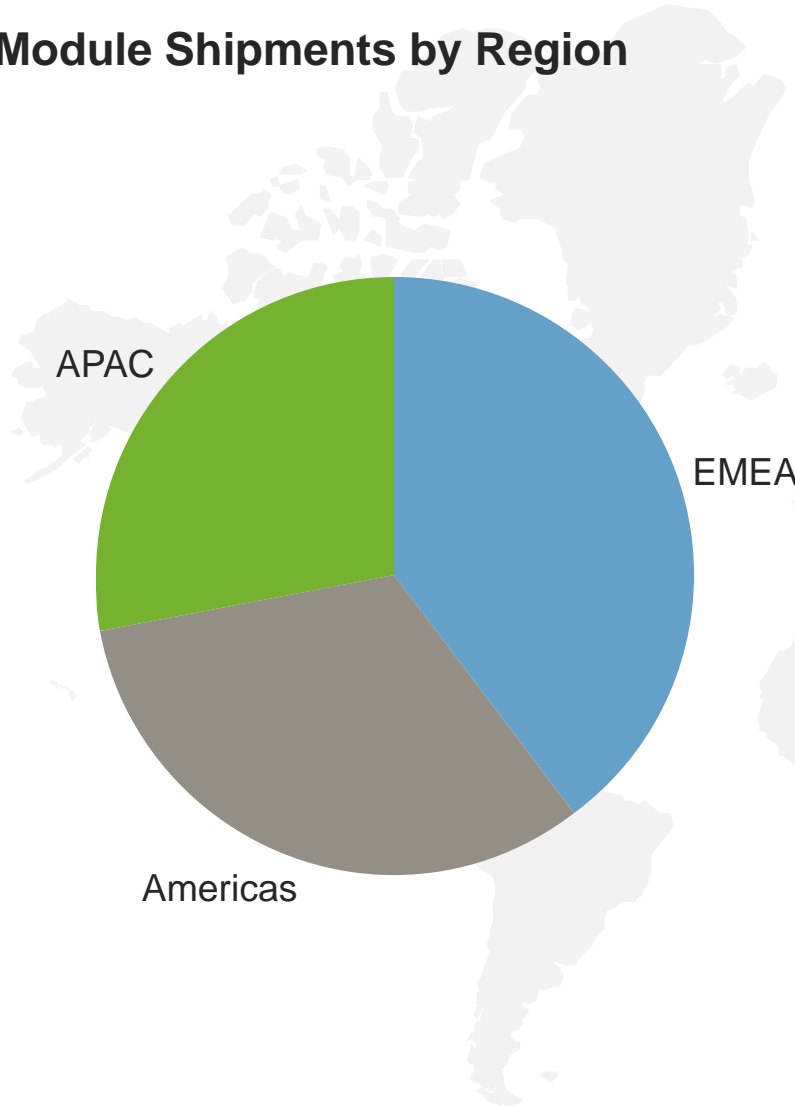
Module Shipments by Year
(in MW)



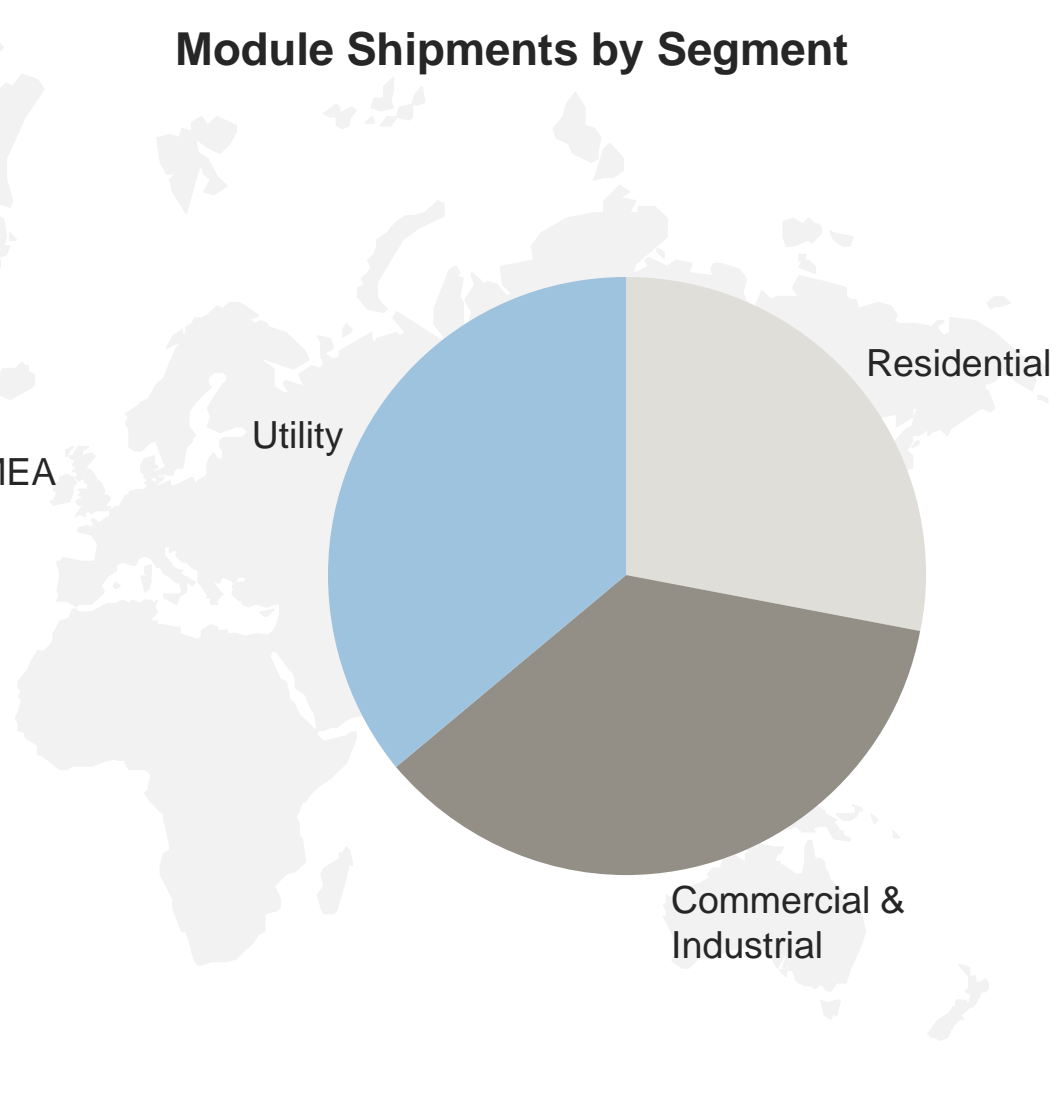
- **Y-o-Y shipment increase of ~6%**
- In 2017, the company
 - **upgraded its manufacturing lines** and
 - **launched five new products**to strengthen its **technology leadership** in multi-crystalline PERC and half cut cell technology
- REC continues to focus on **quality, geographical diversification** and **customer satisfaction**. Fruits of this approach in 2017 include:
 - New market entries: Turkey, Canada
 - +79% growth in customer base 2H 2017 compared to 1H 2016

EMEA was REC's strongest sales region in 2017 while global shipments were balanced among market segments 

Module Shipments by Region



Module Shipments by Segment





24 MW, Canino, Italy

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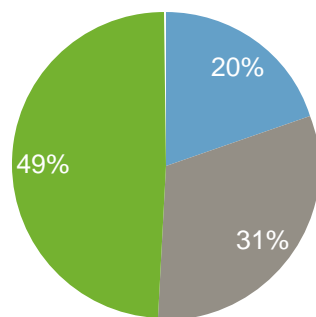
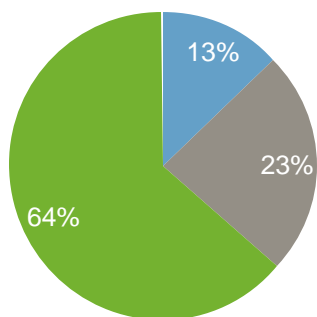
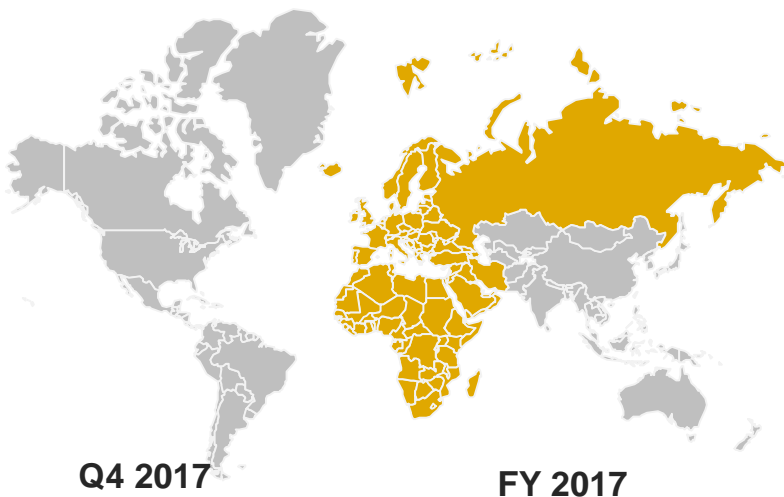
Regional Performance

Q4 2017 & Full-year 2017



Module Shipments split by Segment¹

(in %)



REC Performance Highlights

- Top 5 markets in FY 2017: **Germany, Turkey, Netherlands, France** and the **U.K.**
- In **Germany**, REC achieved total shipments of around 260 MW leading to a **market share of ~15%** in 2017
- REC saw its shipment to **France grow** by **+173% Y-o-Y** after obtaining its Certisolis certificate that confirms the low carbon footprint for REC TwinPeak 2 modules
- Shipments to the **BeNeLux** region increased by **+165% Y-o-Y**, especially driven by a strong Dutch market, thanks to demand from net-metering, self-consumption and the SDE+ program; **REC market share** in the **Netherlands reached almost 10% in 2017**
- REC sees a clear **strengthening in European demand** that spans both **core markets to emerging markets** (including former key markets like Spain and Italy)

EMEA Region Development Highlights

- The European Parliament approved the proposed EU 2030 renewable energy target of 35% (significantly up from the previous target of 27%); To achieve the new target, ~228 GW of additional PV installations are required between 2016 -2030²
- Italy announced its new 2020-2030 energy strategy, focusing on renewables and planning to phase out coal by 2025; For PV, the strategy could yield ~30 GW of new PV installations between 2020-2030 (~3 GW p.a.)

¹ REC market segment module shipment volume splits are best estimates;
² SolarPower Europe "Solar PV Jobs & Value added in Europe", November 2017

Following the Certisolis certificate for REC's TwinPeak 2 panel in 2017, shipments grew by +173% in France



- REC achieved stunning **+173% Y-o-Y shipment growth** in **France** following the **CERTISOLIS certificate** received in May 2017
- The certificate confirms the **low carbon footprint** for **REC TwinPeak 2** solar panels
- REC takes advantage of its **extremely environmentally friendly silicon production in Norway** with **almost zero emissions**
- For **2018**, REC expects **significant Y-o-Y growth** again based on a strong sales pipeline
- REC has a positive outlook for the French PV market thanks to the voiced and shown government support (i.e. increasing the volume of **solar tenders** from 1.45 GW to **2.45 GW per year**) as well as increasing demand for **self-consumption**

REC Solar Norway¹ - High purity silicon blocks

Production of this solar-grade silicon **requires only 25%** of the **energy consumption** of polysilicon produced using the Siemens process – leading to **one of the lowest carbon footprints in the industry**

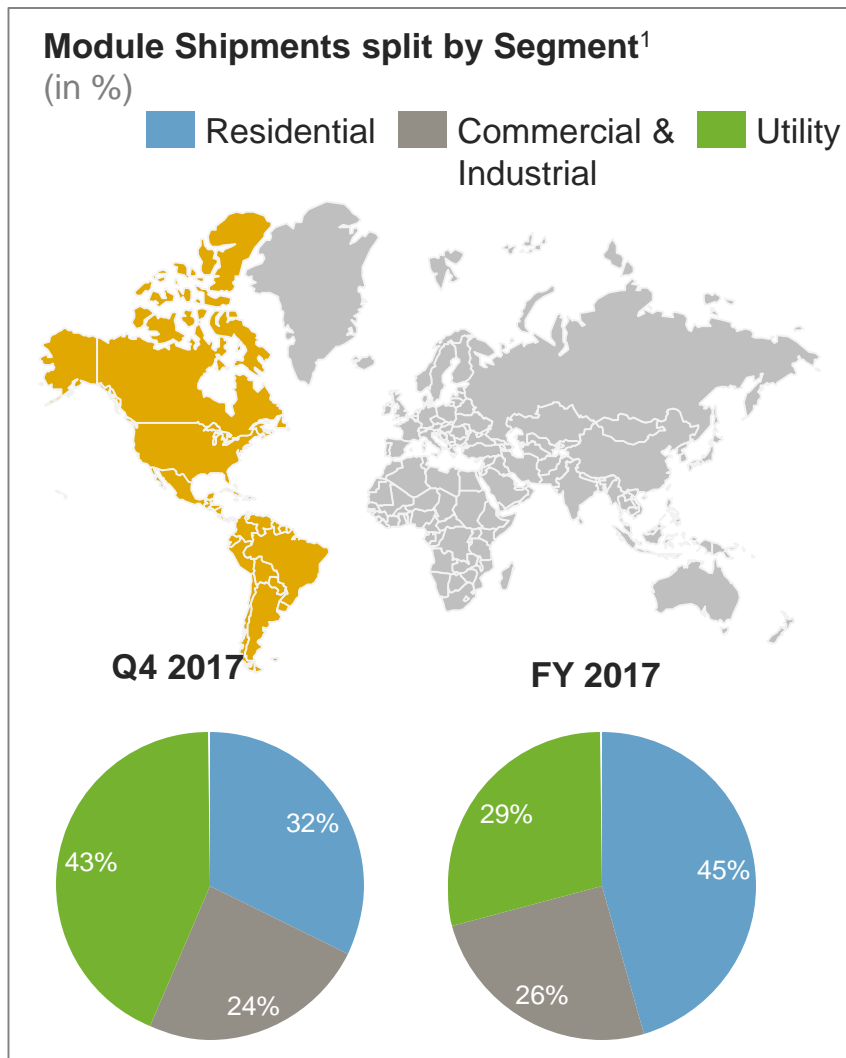


REC Reference case

- REC and Gaitasun completed in December 2017 a [12 MW solar farm](#) as part of an elite forest of tree farms in France
- The power plant features REC's **multi-award-winning REC TwinPeak 2 Series** panels
- The site is generating enough energy to power 5,600 homes



¹ REC Solar Norway formerly known as Elkem Solar



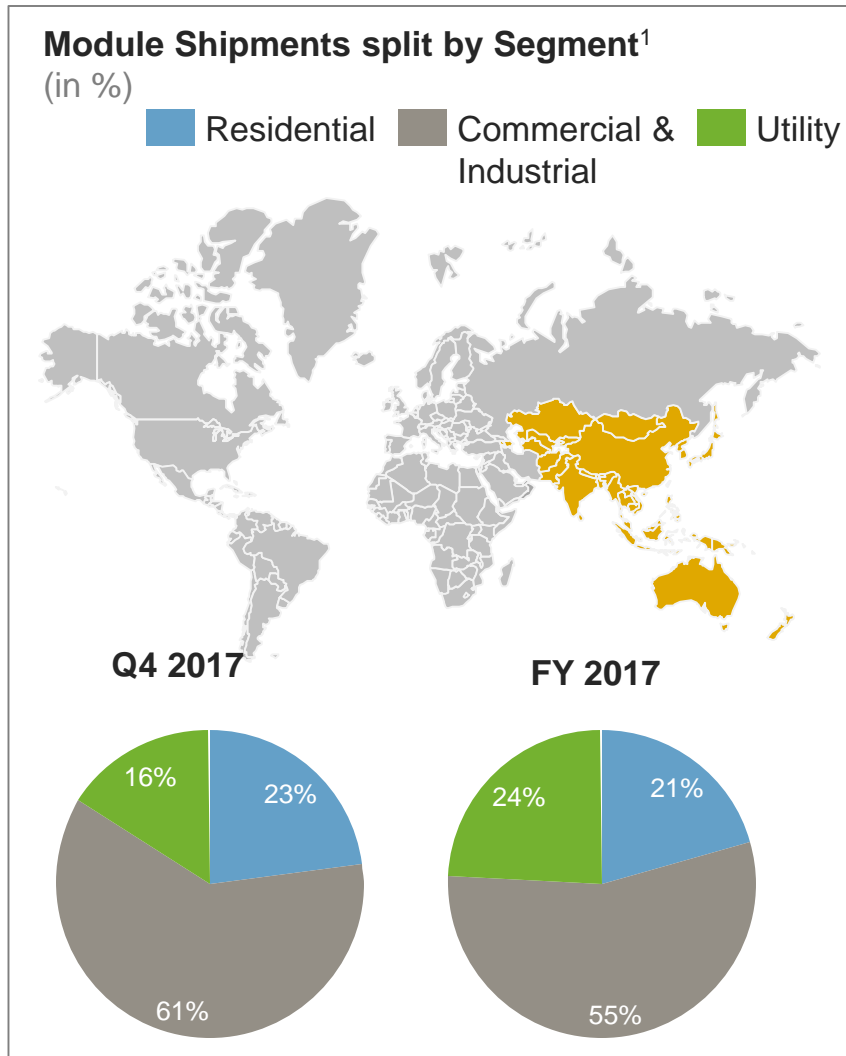
REC Performance Highlights

- REC again ranked **amongst the five most popular panel brand for residential installations** in the **entire U.S.**² – with the Top 5 players all within 2% market share of each other
- Shipments in the U.S. are **well balanced between rooftop and ground-mounted** installations

U.S. Market Development Highlights

- Thanks to strong economics, PV is reaching the tipping point at which new PV plants are as cost competitive as running existing coal-fired plants, exemplified by NextEra Energy Inc's closure of a coal-fired power whose production has been partially replaced by four new solar PV plants
- According to GTM & SEIA, commercial PV is the only segment in 2017 which is expected to have grown on a year-over-year basis in the US market; This development points to the increased competitive dynamics of solar PV and growing awareness of the value of solar PV in this important market segment

¹ REC market segment module shipment volume splits are best estimates; ² Based on Q1-Q4 2017 data by GTM, published March 2018



¹ REC market segment module shipment volume splits are best estimates

Source: REC; IHS Markit, Bloomberg; SunWiz

REC Performance Highlights

- Top markets in 2017: **India, Australia, Japan, Thailand** as well as **Taiwan** along with **Singapore**
- **Key segment was Commercial & Industrial application**
- REC was very successful in the **rooftop segment** in the region thanks to its high quality high performance products
- **Australian shipments** rose by **+280% Y-o-Y** thanks to a strong presence in the rooftop market and longstanding customer relationships
- In **India**, REC achieved over **+120% shipment growth Y-o-Y** with cumulative shipments reaching over 260 MW, making it the largest European player in the market
- **Japan sales** benefited from REC's **loyal distribution network** and the launch of its first **50cell product designed specifically** for the Japanese **residential market**; Further REC and Ciel & Terre grid connected a **973 kWp floating solar plant** on an irrigation pond in Nara prefecture

APAC Region Development Highlights

- Australia commissioned ~1 GW of PV in 2017 according to Australian solar consultants SunWiz thanks to a rebound in residential PV and a record-year for commercial installations
- India –government actions are jeopardizing its own ambitious 2022 PV targets –creating uncertainty in the industry
- Disappointing auction results – in the 1st ever auction held in Japan, only 141 MW were awarded out of the possible 500 MW



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2.2 MW, Singapore

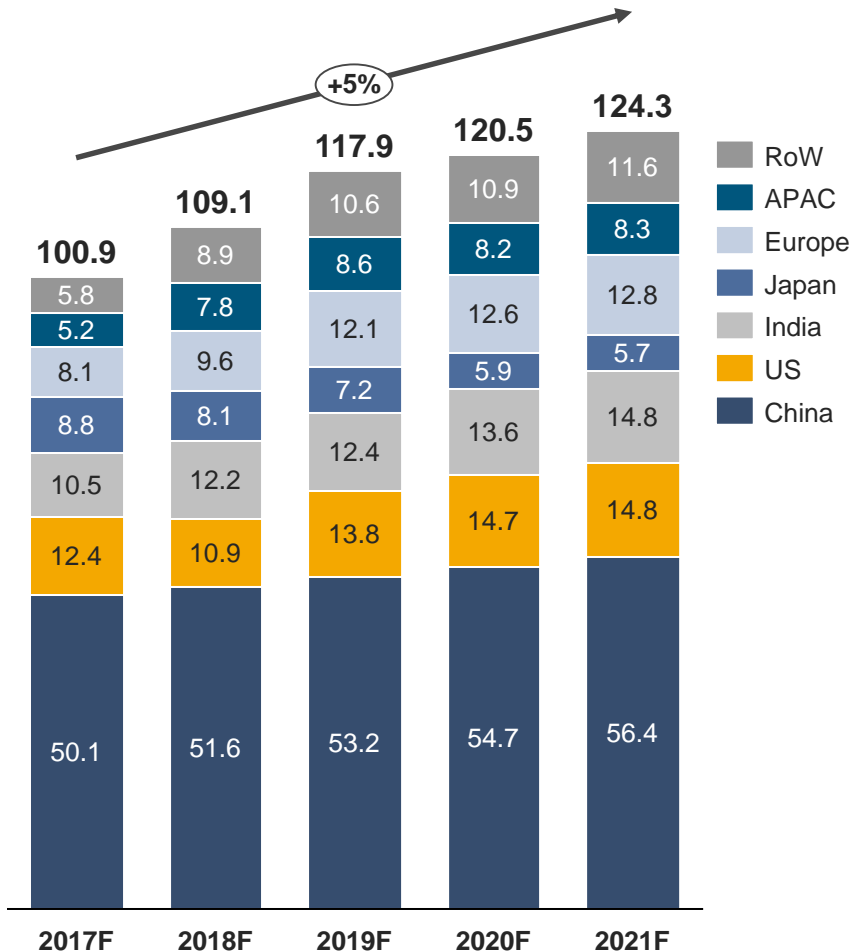
REC Global Outlook 2018 & Onwards



Analyst consensus forecasts ~5% PV demand growth between 2017 to 2021, which REC views as too conservative



Solar PV Installations¹, excl. potential Section 201 impact on the US
(in GW, Aggregate of analyst estimates)



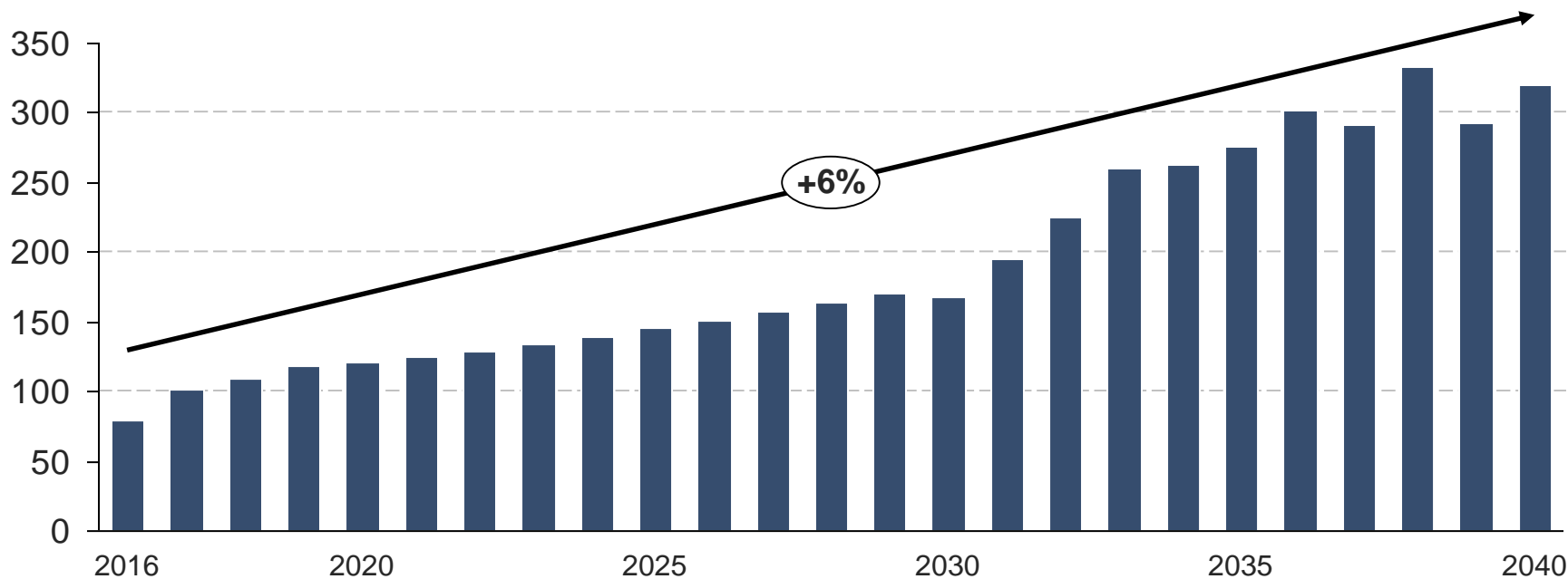
- REC believes that most analysts are **likely under-estimating annual solar PV global installation growth over the near term**
- An annual growth of **closer to 8-10%** is more realistic, for example via a stronger Chinese or European PV market
- **The drivers for stronger than forecast solar PV growth over the next few years include:**
 - Continued **declines in the LCOE** for solar PV (global weighted average **LCOE of utility-scale solar PV fell 73%** between 2010 and 2017²)
 - **China will remain the #1 PV market** by far in 2018 and likely beyond
 - From 2017-22, **solar PV will add the largest renewable capacity (~50%³)** amongst all clean energy
 - Additional **Corporate Procurement**

* Values 2017 to 2021 are estimates; ² IRENA Renewable Power Generation Cost, January 2018; ³ IEA Renewables 2017 report - Accelerated RES scenario
Source: IHS Markit, Bloomberg New Energy Finance and GTM Research (Nov 2017); Deutsche Bank (2017), IEA (2017), IRENA (2018)

Through 2040, solar PV installations are projected to grow to 3x the annual volume today

Global Solar PV Installations

GW

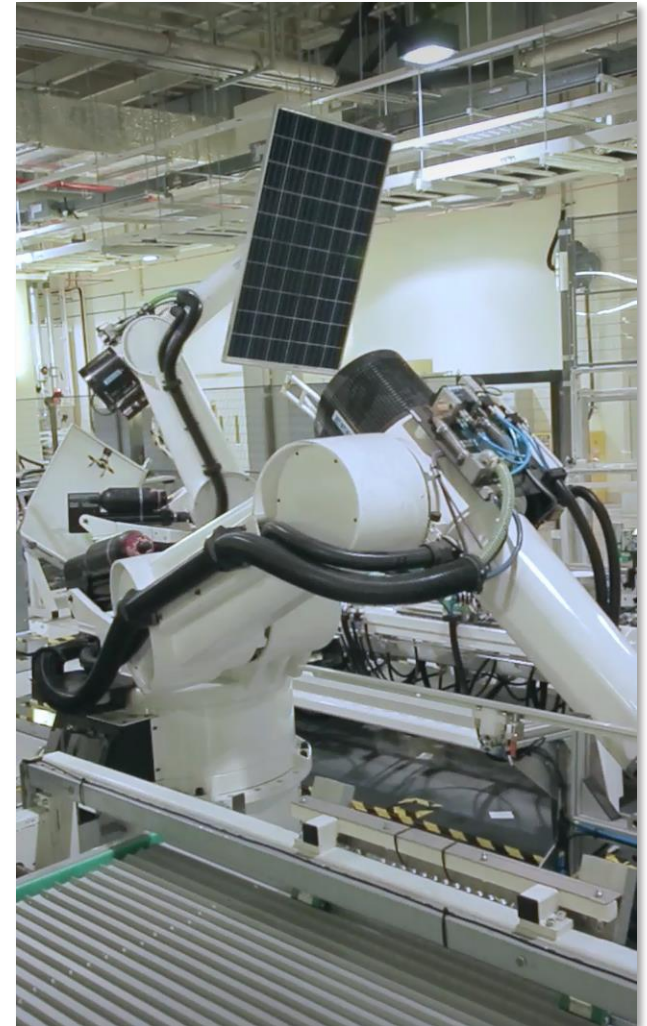


What are the long-term trends of solar PV growth?

1. **Solar PV economics** for rising electricity demand
2. **Climate change** concerns
3. **Replacement of diesel** generation and growth in distributed generation
4. **Lower water and pollution footprint** from solar PV
5. **Grid parity of PV** in most markets
6. **Increasing reliance on Blockchain technology**
7. **Speed and ease of deployment** of solar power plants
8. **Commerciality of EVs** will spur PV with energy storage

REC Full-year 2018 outlook

- Volume growth of approximately **7-9% in 2018**
- Unchanged focus on serving residential, commercial, and utility scale customers in all three main regions
- **Continuous investment in technology leadership**
 - Industrialization of **Diamond Wire slicing** and **new texturizing methods** – to be completed within the first half of 2018. This will enable REC to maintain its highly cost-competitive position in the industry
- **A new era starts at REC with N-type Mono expansion on its way**
 - REC will further **enhance its product portfolio** with the production of a new, **proprietary n-type mono panel**
 - The new product uses **monocrystalline cells in conjunction** with REC's award-winning **TwinPeak technology** to produce a **superior high-power product**



Thank you!

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