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Forecasting PV Installed Capacity in Japan toward FY 2030 (2022 Edition)

June 2022

RTS Corporation

Highlights of “Forecasting PV Installed Capacity in Japan toward FY 2030” (2022 Edition)

- ✓ **Forecasts of the installed capacity of PV systems toward FY 2030**
  PV installed capacity was forecasted based on analysis of policy developments related to renewable energy by the Ministry of the Environment (MoE), Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Ministry of Agriculture, Forestry and Fisheries (MAFF) and other related ministries and agencies, in addition to the Ministry of Economy, Trade and Industry (METI); new business associated with the FIP program and post-FIT; the impact of the COVID-19 pandemic; and developments on both the supply and demand side regarding electricity reform, etc.

- ✓ **Trends towards decarbonization in Japan and abroad**
  PV installed capacity was forecasted in consideration of the Sixth Strategic Energy Plan, which calls for thorough transition to renewable energy as the main power source to achieve carbon neutrality by 2050; national and local government measures to support the introduction of renewable energy based on the Plan for Global Warming Countermeasures, etc., in which a 46% reduction in greenhouse gas emissions (compared to FY 2013 level) is declared; rapidly growing demand for renewable energy-based electricity from consumer side; global trend to expand introduction of PV systems as the least expensive power source; and other factors

- ✓ **Forecasts of the trends of the PV market by output capacity range (price/ installed capacity)**
  Price and installed capacity of PV systems were forecasted by output capacity range

- ✓ **Forecasts of PV installed capacity by application and installation site**
  PV installed capacity was forecasted by application and installation site: residential, private buildings, public buildings, ground-mounted PV, Agro-PV, floating PV (FPV), infrastructure and new applications

- ✓ **Forecasts of PV installed capacity by region**
  PV installed capacity by region (by service area of electric companies) was forecasted taking into account the relationship with regional demand

- ✓ **Forecasts of installed capacity of storage system**
  Installed capacity of storage systems that will be essential for the large-volume introduction of renewable energy in the future was forecasted for residential and industrial applications related to PV power generation

Introduction

Since the declaration of carbon neutrality by 2050 by Prime Minister at the extraordinary Diet session in October 2020, Japan's energy policy started to drastically shift to making renewable energy a main power source towards decarbonization, which brought about significant waves of changes from the perspectives of policy, industry and market. The "Sixth Strategic Energy Plan" and the "Plan for Global Warming Countermeasures" were formulated to achieve the goal of "46% reduction of greenhouse gas emissions by 2030," and the target ratio of renewable energy sources in 2030 was revised significantly upward to 36-38%. In particular, for PV power generation, installed capacity target of 117.6GW was set as the "Ambitious Level" target for 2030. In order to achieve this target, efforts to promote the dissemination of PV power generation are underway not only by the Ministry of Economy, Trade and Industry (METI), but also the Ministry of the Environment (MoE), the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Ministry of Agriculture, Forestry, and Fisheries (MAFF), as the ministries responsible for expanding PV installations in Japan.

On the other hand, the impacts of the COVID-19 pandemic have prolonged, affecting the entire socioeconomic activities including the PV industry. In addition, various issues concerning the PV industry are also emerging, such as price hike of PV modules due to the shortage of raw materials, suspension of shipments of inverters due to the shortage of semiconductors, and the issues related to the polysilicon production in Xinjiang Uyghur Autonomous Region.

In this report, RTS Corporation made forecasts of PV installed capacity in Japan toward 2030 by application, capacity range, area and other segments, based on two scenarios (BAU scenario and accelerated scenario), while assuming the price outlook that is the premise for the forecasts. The PV installed capacity driven by new markets and other drivers that are expected to replace the Feed-in Tariff (FIT) program was also forecasted.

We hope that this report would contribute to promoting dissemination of PV power generation in Japan under sound market competitions, by overcoming various challenges we face.

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Osamu Ikki, CEO, RTS Corporation

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1.1 Basic directions of forecasting installed capacity (1/3)

【Two scenarios】

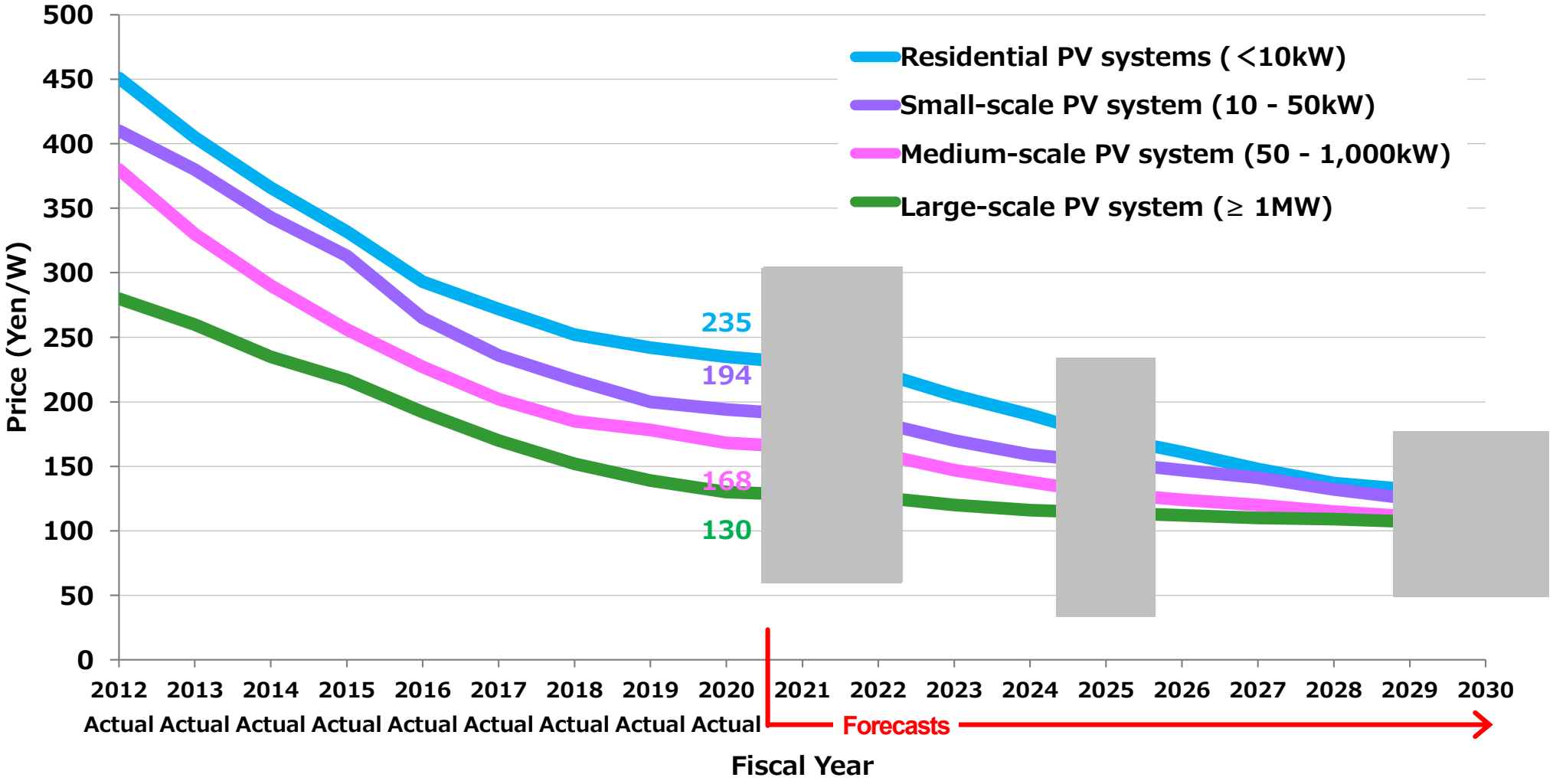
(1) “BAU scenario (BAU)”

- Energy policy, introduction measures and technology development that are currently assumed will proceed
- The "Ambitious Level" (target installed capacity of 117.6GW) in the Sixth Strategic Energy Plan will be steadily achieved
- Cost reduction of PV systems and storage batteries will progress
- No other particular accelerating or negative factors are assumed

(2) “Accelerated scenario (ACC)”

- Significant improvement and progress in the environment for introducing PV systems
- Introduction of PV systems will be accelerated as a result of more active and accelerated promotion and support measures, solutions of issues and further cost reductions through technological development, the emergence of markets with new business models, and the acceleration of the shift to green power, as well as energy security perspectives

2.3 BAU scenario : PV system price forecast



(1) PV system price is forecasted to decline to [redacted] Yen/W by FY 2030 from the current price of [redacted] Yen/W.

(2) Power generation cost (LCOE) will reach [redacted] Yen/kWh, approaches to the avoidable cost and will become lower than the electricity charge on the power receiving end

- PV power generation cost estimates are based on “NEDO PV Challenges” (September 30, 2014) by NEDO
- As for the life span of PV systems which is currently 20 years, it is assumed to be extended to 25 years by FY 2025 and 30 years by FY 2030

[BAU scenario]

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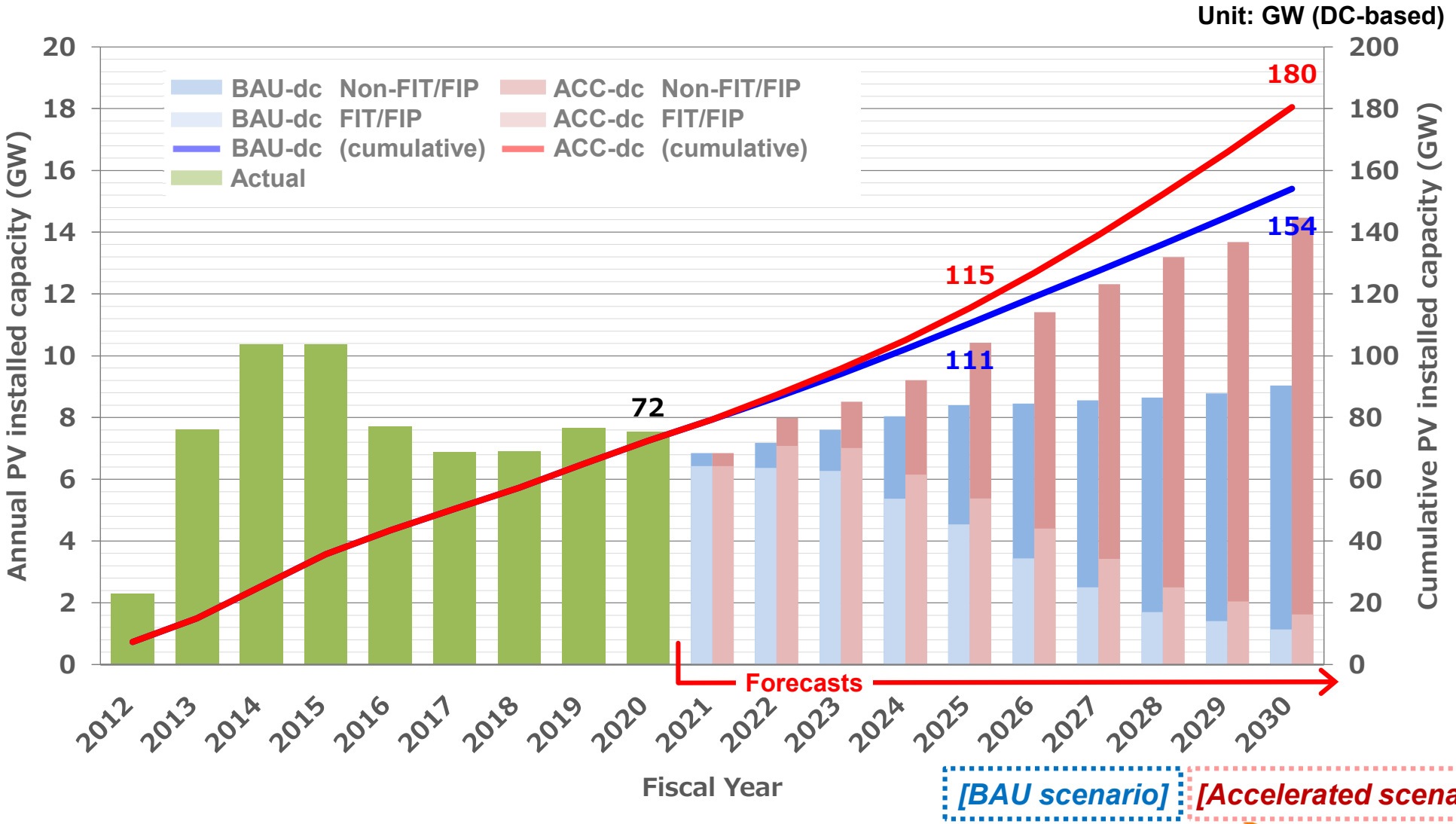
3.1 Forecast of annual and cumulative PV installed capacity in Japan (DC-based)

BAU scenario FY 2030: 154GW$_{DC}$ (＝121GW$_{AC}$), Non-FIT/FIP: 87.4%

Accelerated scenario FY 2030: 180GW$_{DC}$ (＝140GW$_{AC}$), Non-FIT/FIP: 88.8%



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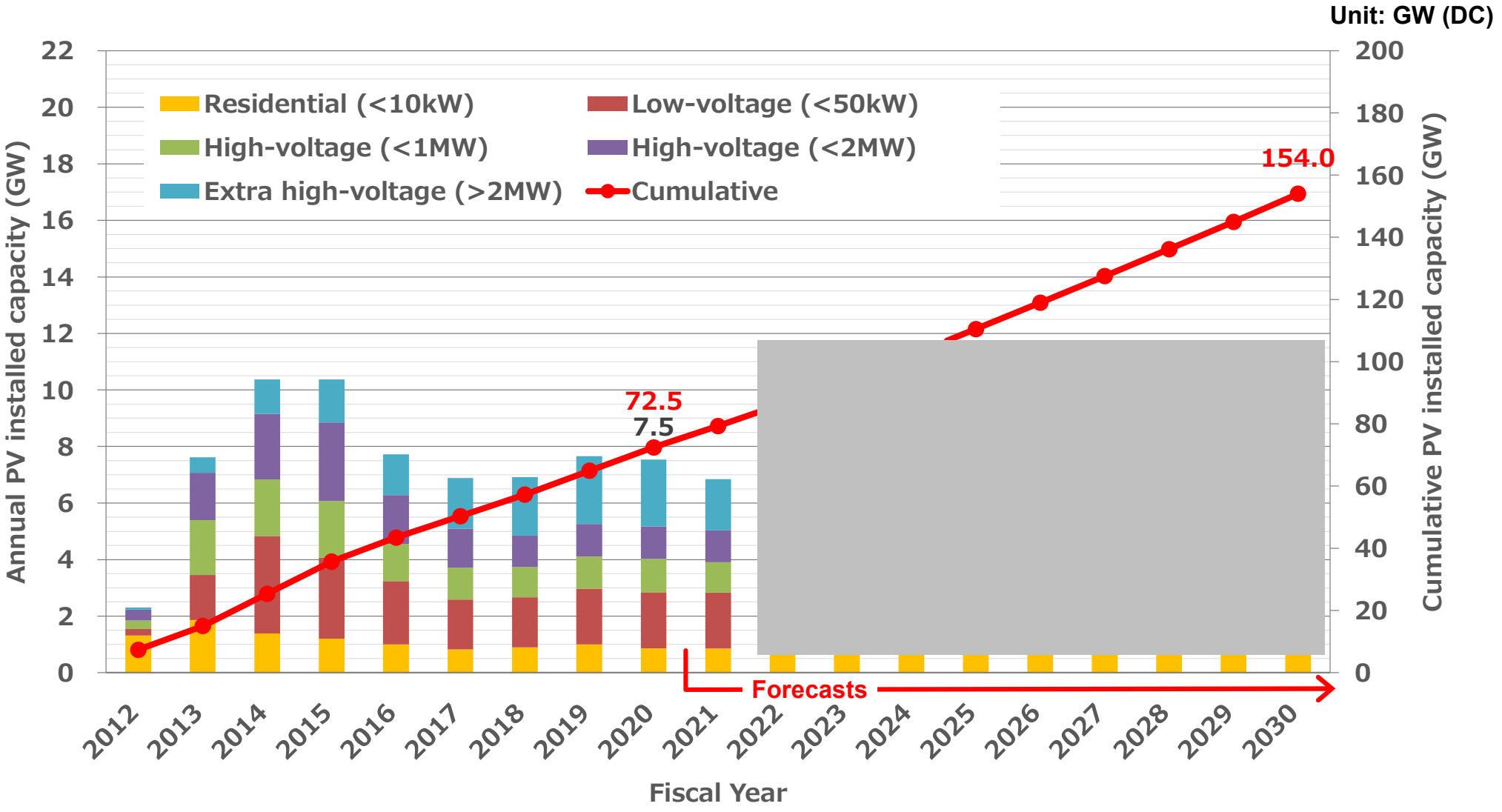
(1) By power generation output (2/2)



[BAU scenario]

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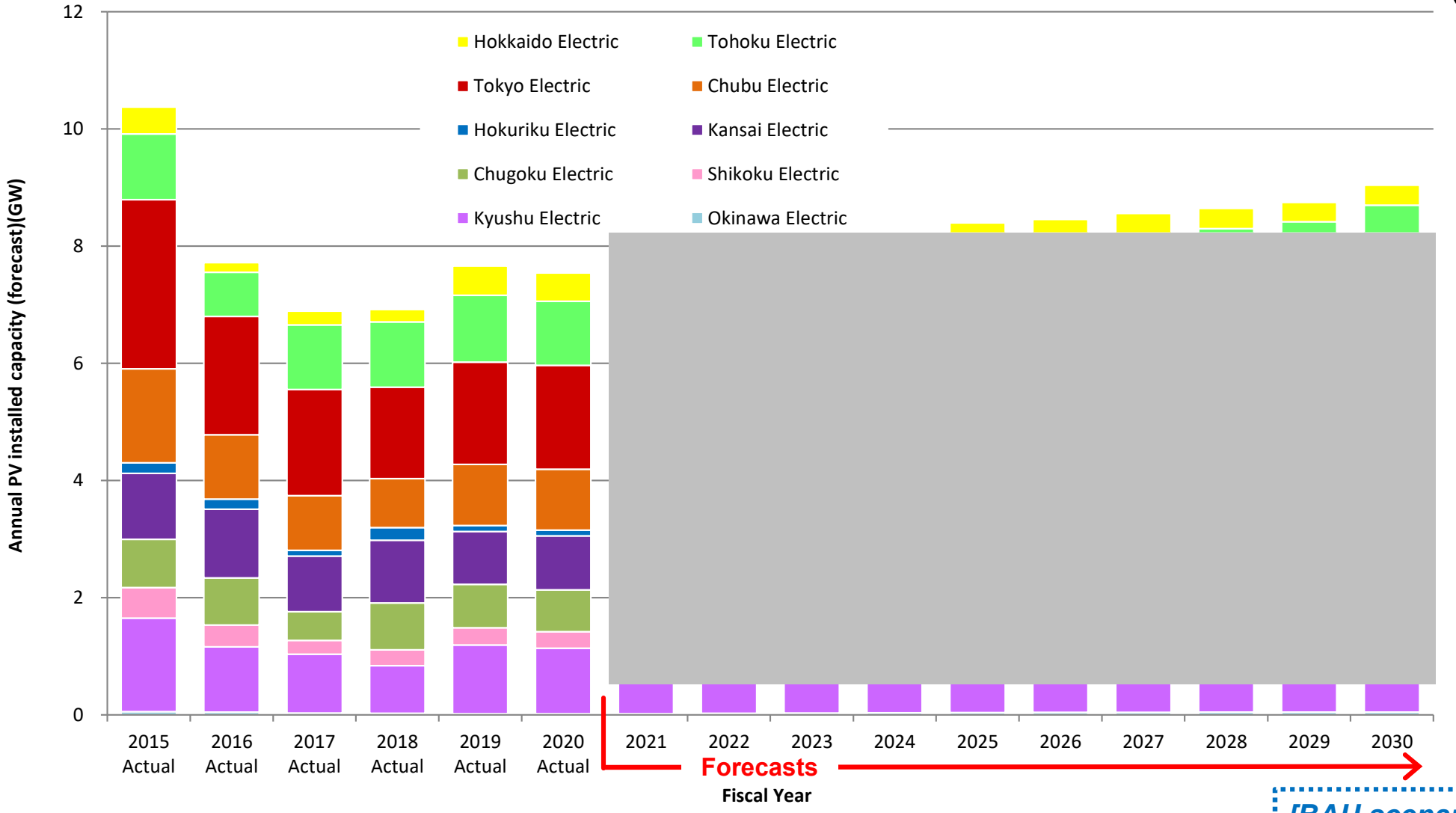
4.1.4 Forecasts of PV installed capacity by electric company (BAU scenario)

(1) Forecasts of PV installed capacity by electric company

Unit: GW (DC)



[BAU scenario]

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