Forecasting PV Installed Capacity in Japan 2023 to 2035

February 2024

RTS Corporation

Introduction

With the enactment of the Acts for Establishing Resilient and Sustainable Electricity Supply Systems and the revised Act on Promotion of Global Warming Countermeasures, the national government, ministries and agencies are accelerating their initiatives on energy and environmental policies to achieve a 46% reduction of greenhouse gas (GHG) emissions by 2030. The government has established the Basic Policy for the Realization of Green Transformation (GX), which outlines GX initiatives based on the basic premise of securing stable energy supply. Regarding the initiative of making renewable energy a mainstream power source, the basic policy stipulates that the renewable energy ratio of 36-38% by 2030 must be achieved, making the ambitious target in the Strategic Energy Plan a must-achieve goal. On the other hand, on the electricity consumer side, the demand for electricity is increasing as the economy begins to recover from the stagnation caused by the pandemic of COVID-19, while the appetite for introducing PV power generation is increasing as a countermeasure to the soaring energy and electricity prices triggered by Russia's invasion to Ukraine. In addition, the use of renewable energy to achieve SDGs and enhance corporate values, which started with international companies, is spreading mainly to major domestic companies as well as to their supply chains as a whole. In terms of introduction schemes, the use of self-consumption type, PPA models and FIP programs have been increasing in place of the FIT program and their share is expected to grow significantly in the future.

In this report, we, RTS Corporation, provide a forecast of PV installed capacity in Japan, considering the changes in society, economy, policies, markets, products, technologies, prices, etc. over the next decade or so. We analyzed the price outlook, changes in the social environment, market changes and prospects for technological improvements and forecasted the PV installed capacity by application and size, assuming two scenarios: the Business As Usual (BAU) scenario which assumes the achievement of the 2030 introduction target of the Sixth Strategic Energy Plan and the Accelerated scenario which assumes significant improvement and progress in the introduction environment. We hope you will find this report useful in considering your future projects, business development, and strategies.

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RTS Corporation
RTS Team on Forecasting PV Installed Capacity

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Table of Contents

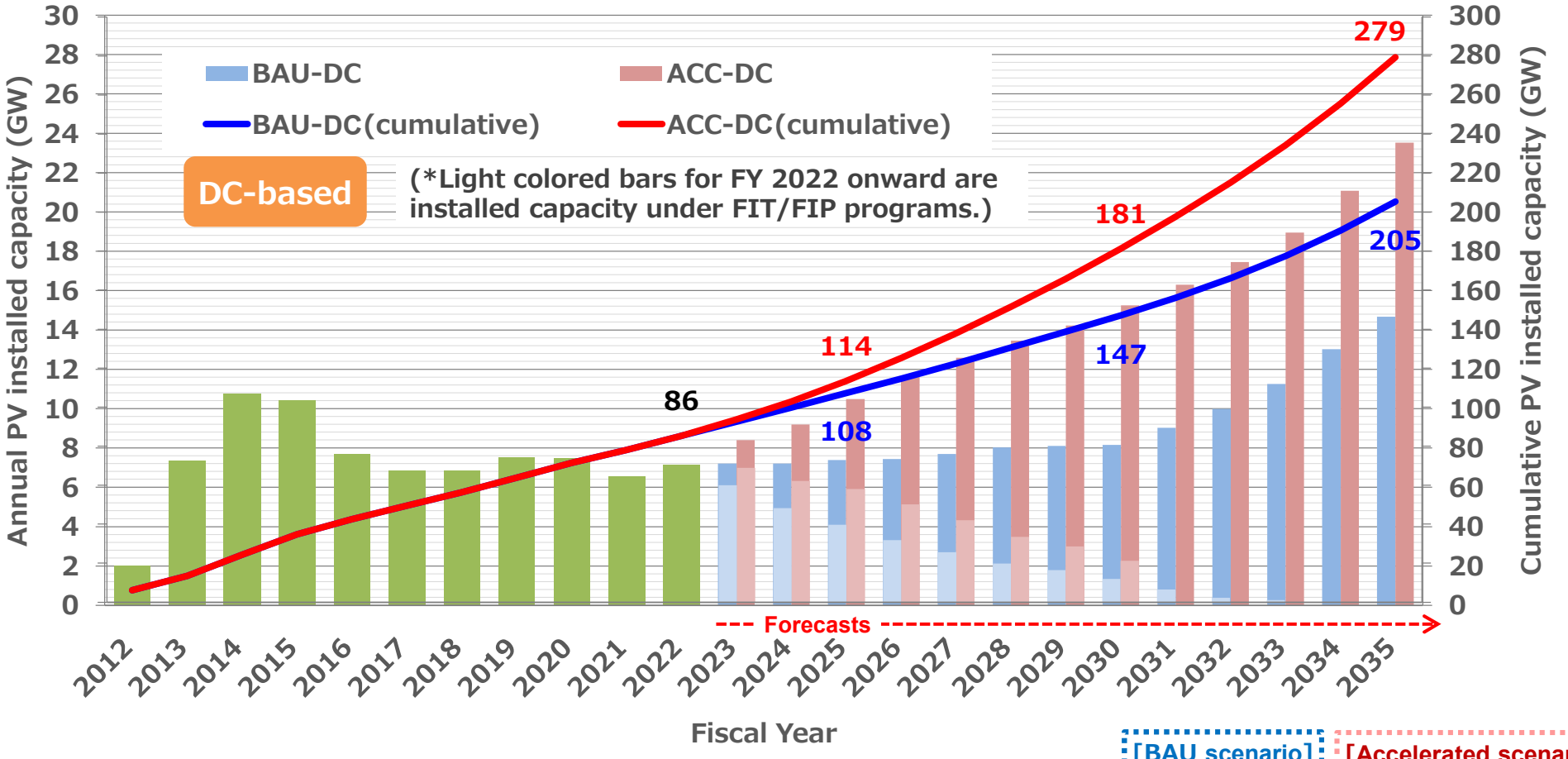
1.3 Two scenarios of the forecast

The "BAU (Business As Usual) scenario," based on a scenario in which the "ambitious level" (installed capacity target: 117.6 GW) in the Sixth Strategic Energy Plan will be steadily achieved, and the "ACC (Accelerated) scenario", that further takes into account acceleration factors such as policy enhancement, progress in technological development, widespread dissemination of new business models, expansion of electrification such as EVs, as well as the rise in the energy (electricity) prices, improvement of energy self-sufficiency rate from the perspective of energy security

	BAU scenario BAU = Business As Usual	**ACC scenario** ACC = Accelerated
National policies	✓ Sixth Strategic Energy Plan ✓ 2050 Carbon Neutrality ✓ Basic Policy for the Realization of GX (GX Promotion Strategy) ✓ Acts for Establishing Resilient and Sustainable Electricity Supply Systems ✓ GX Promotion Act ✓ GX Decarbonization Power Supply Act ✓ Act on Promotion of Global Warming Countermeasures	✓ Upward revision of the renewable energy ratio in the energy mix ✓ Acceleration of energy self-sufficiency rate improvement ✓ Rapid progress in regulatory reform ✓ Acceleration of climate change countermeasures by achieving carbon neutrality ahead of schedule
National installation target	✓ 117 GW (The Sixth Strategic Energy Plan)	-
Society/ needs	✓ Continued soaring of electricity rates ✓ Use of green power in corporate activities ✓ RE100 focusing on international companies ✓ Investment in ESG becomes advantageous	✓ Increase in demand for use of green power in supply chain leading to expansion of green power use among small and medium-sized enterprises (SMEs) ✓ Investment in ESG becomes mandatory
Technology / industry	✓ Performance improvement, diversification, and lifetime extension of PV systems ✓ Advancements in the PV business ✓ Formation of industries by diverse players ✓ Expansion of industries utilizing PV power	✓ Performance improvement of PV cells and modules ✓ Expansion of social implementation of next-generation PV cells and modules ✓ Growth and development of the aggregation business ✓ Grid-forming inverters ✓ Price decrease and dissemination of energy storage technology
Market	✓ Introduction shifts from FIT/ FIP to onsite/ offsite PPAs ✓ Growth of the supply-demand integrated market	✓ Introduction through corporate PPA for most cases ✓ Growth of new markets such as AgroPV and floating PV (FPV)

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

Annual and Cumulative	FY 2022	FY 2030	FY 2035
BAU scenario	7.1 GW, 86 GW	8.1 GW, 147 GW	14.7 GW, 205 GW
Accelerated scenario		15.2 GW, 181 GW	23.5 GW, 279 GW



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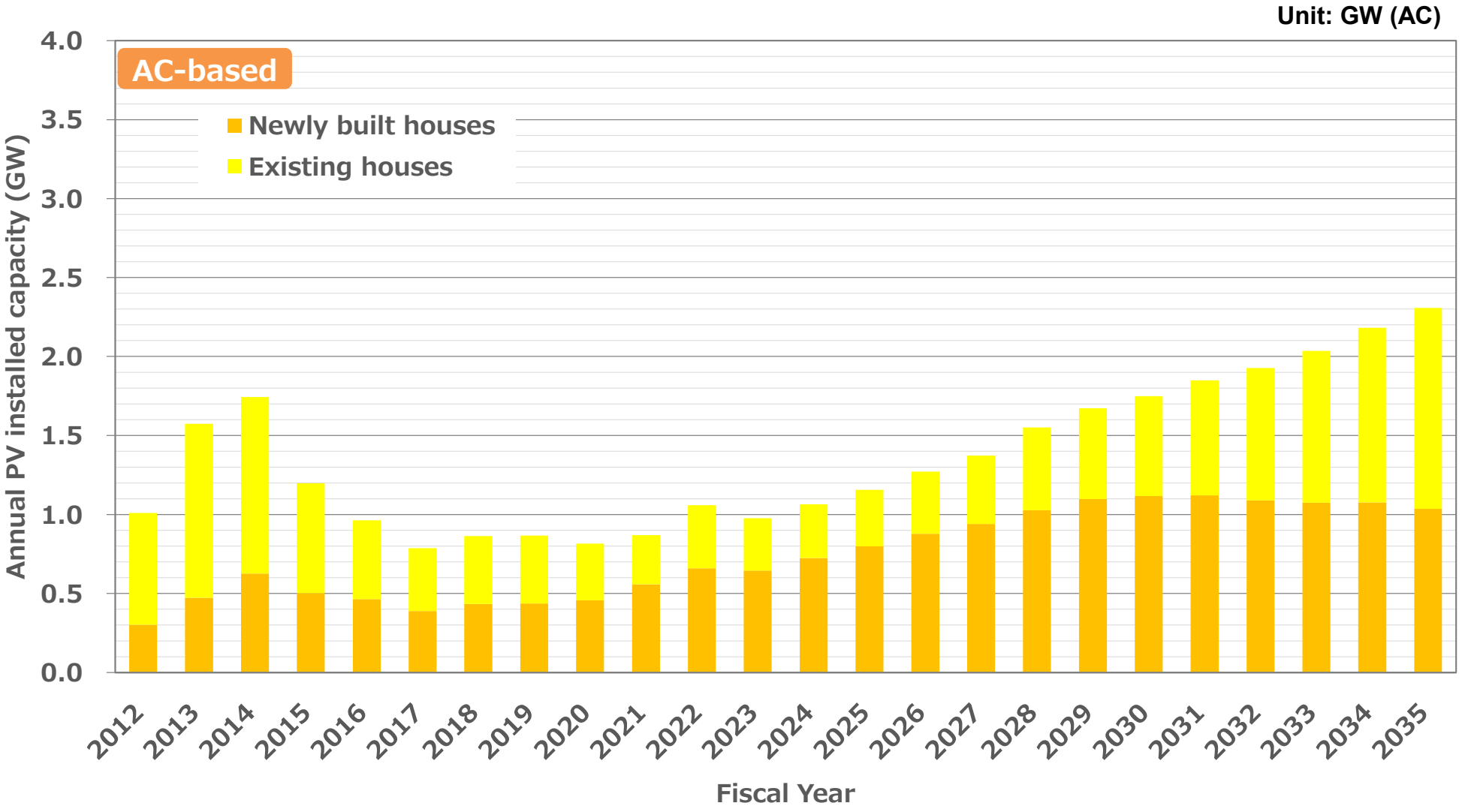
8.4 Installed capacity by category: Detached houses (2/2)



[BAU scenario]

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8. Forecast of installed capacity by category BAU scenario (AC-based)

11.7 Installed capacity by category: Ground-mounted PV system (1/2)

Accelerated scenario

Unit: GW (DC)

FY		2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Forecast	2024 Forecast	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast	2031 Forecast	2032 Forecast	2033 Forecast	2034 Forecast	2035 Forecast
Annual PV installed capacity	Ground-mounted (<50kW)	0.2	1.1	2.6	2.0	1.4	1.0	0.9	1.0	0.9	0.7	1.5	2.0	2.1	2.2	2.4	2.5	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3
	Ground-mounted (<1MW)	0.2	1.5	1.4	1.3	0.8	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3
	Ground-mounted (<2MW)	0.3	1.3	1.8	2.1	1.4	1.1	0.9	0.9	0.8	0.6	0.5	0.5	0.4	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Ground-mounted (>2MW)	0.1	0.5	1.1	1.4	1.4	1.7	2.0	2.3	2.3	1.7	1.0	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
	Total	0.8	4.3	7.0	6.8	5.1	4.5	4.4	4.9	4.5	3.5	3.4	3.6	3.3	3.6	3.6	3.6	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Cumulative PV installed capacity		0.8	5.2	12.1	18.9	24.0	28.5	32.9	37.8	42.3	45.8	49.2	52.8	56.1	59.7	63.3	66.9	70.1	73.0	76.1	79.1	82.2	85.2	88.3	91.3

[Accelerated scenario]