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.

October 2023
(Translated into English in February 2024)
RTS Corporation
RTS Team on Forecasting PV Installed Capacity
1. Overview of the installed capacity forecast ...................................... 1
   1.1 Factors considered in forecasting PV installed capacity .......... 2
   1.2 Forecast specifications .................................................. 3
   1.3 Two scenarios of the forecast ......................................... 4
   1.4 Classification: Power generation capacity ....................... 5
   1.5 Classification: Applications and installation sites ............ 6
   1.6 Overpanelling ratio ...................................................... 7
2. Current status of PV power generation ......................................... 8
   2.1 Current status of the global PV market ............................ 9
   2.2 Current status of PV power generation in Japan ............. 14
   2.3 Trends in PV technologies and PV products .................. 21
3. Policy trends of the government, relevant ministries, agencies, and municipalities .................................................... 28
   3.1 Shift from the Sixth Strategic Energy Plan to the Basic Policy for the Realization of GX .............................................. 29
   3.2 Dissemination and introduction targets led by relevant ministries and agencies ......................................................... 36
4. Assumptions of the dissemination environment .......................... 46
   4.1 Assumptions of the dissemination environment .................. 47
   4.2 Market segments .......................................................... 56
5. Forecast of PV markets .......................................................... 61
   5.1 Residential PV market .................................................. 62
   5.2 PV market for public facilities and infrastructure facilities .... 66
   5.3 PV market for private buildings ..................................... 70
   5.4 Ground-mounted PV market .......................................... 74
   5.5 Agro PV market ........................................................... 78
   5.6 Floating PV (FPV) market .............................................. 82
6. PV system price forecasts ..................................................... 86
   6.1 Key points of PV system price forecast ............................ 87
   6.2 Forecast of PV system price .......................................... 91
   6.3 Assumptions of Levelized Cost of Electricity (LCOE) ......... 99
7. PV installed capacity in Japan (Total) ....................................... 102
   7.1 Forecast of annual and cumulative PV installed capacity in Japan (Table) ............................................................. 103
   7.2 Forecast of annual and cumulative PV installed capacity in Japan (AC-based) ......................................................... 104
   7.3 Forecast of annual and cumulative PV installed capacity in Japan (DC-based) ......................................................... 105
8. Forecast of installed capacity by category: BAU scenario (AC-based) ............................................................... 106
   8.1 Installed capacity by power generation capacity ............... 108
   8.2 Installed capacity by category: FIT/FIP and non-FIT/FIP ...... 110
   8.3 Installed capacity by category: All applications ............... 112
   8.4 Installed capacity by category: Detached houses ............. 114
   8.5 Installed capacity by category: Private buildings .......... 116
   8.6 Installed capacity by category: Public buildings and infrastructure facilities ......................................................... 118
   8.7 Installed capacity by category: Ground-mounted PV system .... 120
   8.8 Installed capacity by category: Agro PV system .......... 122
   8.9 Installed capacity by category: Floating PV system .......... 124
9. Forecast of installed capacity by category: Accelerated scenario (AC-based) ............................................................... 126
   9.1 Installed capacity by power generation capacity .......... 128
   9.2 Installed capacity by category: FIT/FIP and non-FIT/FIP ...... 130
   9.3 Installed capacity by category: All applications ............... 132
9.4 Installed capacity by category: Detached houses 134
9.5 Installed capacity by category: Private buildings 136
9.6 Installed capacity by category: Public buildings and infrastructure facilities 138
9.7 Installed capacity by category: Ground-mounted PV system 140
9.8 Installed capacity by category: Agro PV system 142
9.9 Installed capacity by category: Floating PV system 144

10. Forecast of installed capacity by category: BAU scenario (DC-based) 146
10.1 Installed capacity by power generation capacity 148
10.2 Installed capacity by category: FIT/FIP and non-FIT/FIP 150
10.3 Installed capacity by category: All applications 152
10.4 Installed capacity by category: Detached houses 154
10.5 Installed capacity by category: Private buildings 156
10.6 Installed capacity by category: Public buildings and infrastructure facilities 158
10.7 Installed capacity by category: Ground-mounted PV system 160
10.8 Installed capacity by category: Agro PV system 162
10.9 Installed capacity by category: Floating PV system 164

11. Forecast of installed capacity by category: Accelerated scenario (DC-based) 166
11.1 Installed capacity by power generation capacity 168
11.2 Installed capacity by category: FIT/FIP and non-FIT/FIP 170
11.3 Installed capacity by category: All applications 172
11.4 Installed capacity by category: Detached houses 174
11.5 Installed capacity by category: Private buildings 176
11.6 Installed capacity by category: Public buildings and infrastructure facilities 178
11.7 Installed capacity by category: Ground-mounted PV system 180
11.8 Installed capacity by category: Agro PV system 182
11.9 Installed capacity by category: Floating PV system 184

12. Forecasts of the installed capacity of storage battery systems 186
12.1 Forecast of the residential storage battery system market 187
12.1.1 Premises of the forecast of the residential storage battery system market 187
12.1.2 Point of view on economic efficiency of residential storage system 188
12.1.3 Price trends of residential storage battery systems 189
12.1.4 Forecast of the number of residential storage battery systems 190
12.1.5 Forecast of the installed capacity of residential storage battery systems 192
12.1.6 Size of the residential storage battery system market 194
12.2 Forecast of the industrial stationary storage battery system market (demand-side facilities) 195
12.2.1 Status of industrial stationary storage battery systems 195
12.2.2 Scope of applications of industrial stationary storage battery systems 196
12.2.3 Premises for forecasts of the installed capacity of industrial stationary storage battery systems 197
12.2.4 Average price of industrial storage battery systems 198
12.2.5 Forecast of the installed capacity of industrial stationary storage batteries 199
12.2.6 Annual market size of industrial stationary storage battery systems 201
12.3 Forecast of grid-scale storage battery system market (facilities on the power network) 202
12.3.1 Premises of the forecast of the installed capacity of grid-scale storage battery systems 203
12.3.2 Forecast of the installed capacity of grid-scale storage battery systems up to 2035 204
12.3.3 Premises of the calculation of the business scale 205
12.3.4 Estimation of the installed capacity of grid-scale storage battery systems up to 2035 206
12.3.5 Forecast of installed capacity of storage batteries, etc. by other organizations 207
### 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**

- 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

#### ACC scenario

**ACC = Accelerated**

- 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

<table>
<thead>
<tr>
<th>National policies</th>
<th>BAU scenario</th>
<th>ACC scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>National installation target</td>
<td>✔ 117 GW (The Sixth Strategic Energy Plan)</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Society/needs</th>
<th>BAU scenario</th>
<th>ACC scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Continued soaring of electricity rates</td>
<td>✔ Use of green power in corporate activities</td>
<td>✔ 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)</td>
</tr>
<tr>
<td>✔ Use of green power in corporate activities</td>
<td>✔ RE100 focusing on international companies</td>
<td>✔ Investment in ESG becomes mandatory</td>
</tr>
<tr>
<td>✔ RE100 focusing on international companies</td>
<td>✔ Investment in ESG becomes advantageous</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Technology/industry</th>
<th>BAU scenario</th>
<th>ACC scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Performance improvement, diversification, and lifetime extension of PV systems</td>
<td>✔ Advancements in the PV business</td>
<td>✔ Performance improvement of PV cells and modules</td>
</tr>
<tr>
<td>✔ Advancements in the PV business</td>
<td>✔ Formation of industries by diverse players</td>
<td>✔ Expansion of social implementation of next-generation PV cells and modules</td>
</tr>
<tr>
<td>✔ Formation of industries by diverse players</td>
<td>✔ Expansion of industries utilizing PV power</td>
<td>✔ Growth and development of the aggregation business</td>
</tr>
<tr>
<td>✔ Expansion of industries utilizing PV power</td>
<td></td>
<td>✔ Grid-forming inverters</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Market</th>
<th>BAU scenario</th>
<th>ACC scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔ Introduction shifts from FIT/ FIP to onsite/offsite PPAs</td>
<td>✔ Growth of the supply-demand integrated market</td>
<td>✔ Introduction through corporate PPA for most cases</td>
</tr>
<tr>
<td>✔ Growth of the supply-demand integrated market</td>
<td></td>
<td>✔ Growth of new markets such as AgroPV and floating PV (FPV)</td>
</tr>
</tbody>
</table>
7.3 Forecast of annual and cumulative PV installed capacity in Japan (DC-based)

<table>
<thead>
<tr>
<th></th>
<th>FY 2022</th>
<th>FY 2030</th>
<th>FY 2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAU scenario</td>
<td>7.1 GW, 86 GW</td>
<td>8.1 GW, 147 GW</td>
<td>14.7 GW, 205 GW</td>
</tr>
<tr>
<td>Accelerated scenario</td>
<td>15.2 GW, 181 GW</td>
<td>181 GW</td>
<td>23.5 GW, 279 GW</td>
</tr>
</tbody>
</table>

(*Light colored bars for FY 2022 onward are installed capacity under FIT/FIP programs.)
8.4 Installed capacity by category: Detached houses (2/2)

The chart shows the annual installed capacity (GW) of AC-based PV systems by category from fiscal year 2012 to 2035.

- Newly built houses
- Existing houses

Unit: GW (AC)

Forecast of installed capacity by category [BAU scenario] (AC-based)
11.7 Installed capacity by category: Ground-mounted PV system (1/2)

<table>
<thead>
<tr>
<th>Accelerated scenario</th>
<th>Unit: GW (DC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground-mounted (&lt;50kW)</td>
<td>0.2</td>
</tr>
<tr>
<td>Ground-mounted (&lt;1MW)</td>
<td>0.2</td>
</tr>
<tr>
<td>Ground-mounted (&gt;2MW)</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>0.8</td>
</tr>
<tr>
<td>Cumulative PV installed capacity</td>
<td>0.8</td>
</tr>
</tbody>
</table>

11. Forecast of installed capacity by category Accelerated scenario (DC-based)