



## Case 1: Local production of renewable energy for local consumption through public-private collaboration

NEC Capital Solutions works to bring about smart cities that run on renewable energy through participation in the business of local power producers and suppliers.

### Driving further adoption of renewable energy as a solution for a variety of social problems

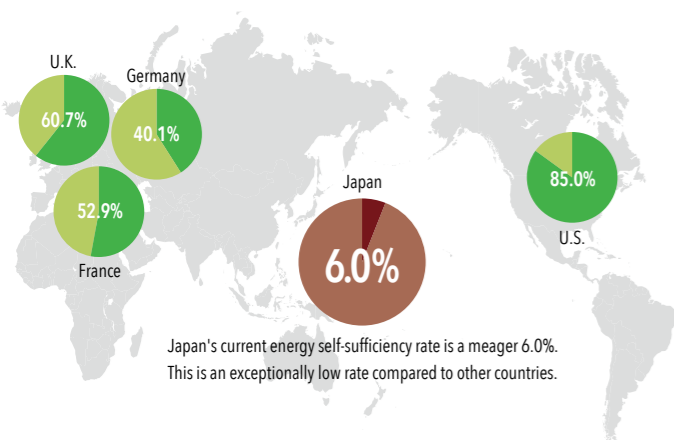
Faced with concerns over global warming and resource depletion, the world is stepping up efforts to use renewable energy and take advantage of nature's blessings through the generation of solar, wind, hydro, biomass, geothermal, and other energy sources. There is a strong drive especially in Japan to achieve a low-carbon, recycling-based society and improve energy self-sufficiency.

Japan, which is energy-resource poor, saw its energy self-sufficiency fall even further (see graph) with the shutdown of its nuclear reactors after the Great East Japan Earthquake and because Japan's economic health is greatly impacted by movements in energy prices, increasing the domestic

capability to produce power, without relying on other countries, became an urgent matter. In addition, there is also the expectation of securing essential utilities and stimulating local economies. Because of these conditions and expectations, regions around Japan have been considering renewable energy facilities.

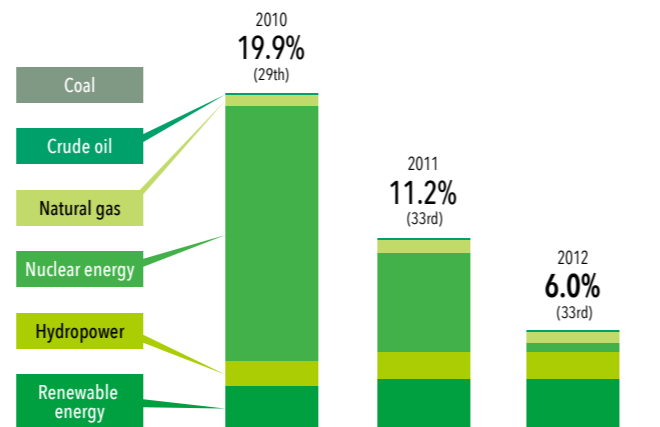
An issue that has proved problematic in these endeavors is the shouldering of construction and maintenance costs. In response, the government instituted the renewable energy feed-in-tariff ("FIT") in 2012. In addition to requiring that electricity utilities purchase power generated from renewable energy sources at fixed prices, FIT subsidizes purchase costs with taxes collected from power consumers. Costs are therefore borne by society as a whole.

Energy self-sufficiency by country



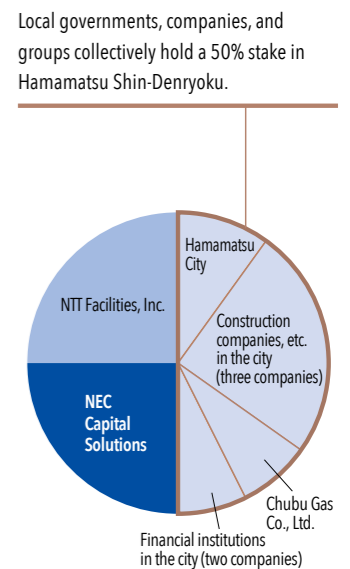
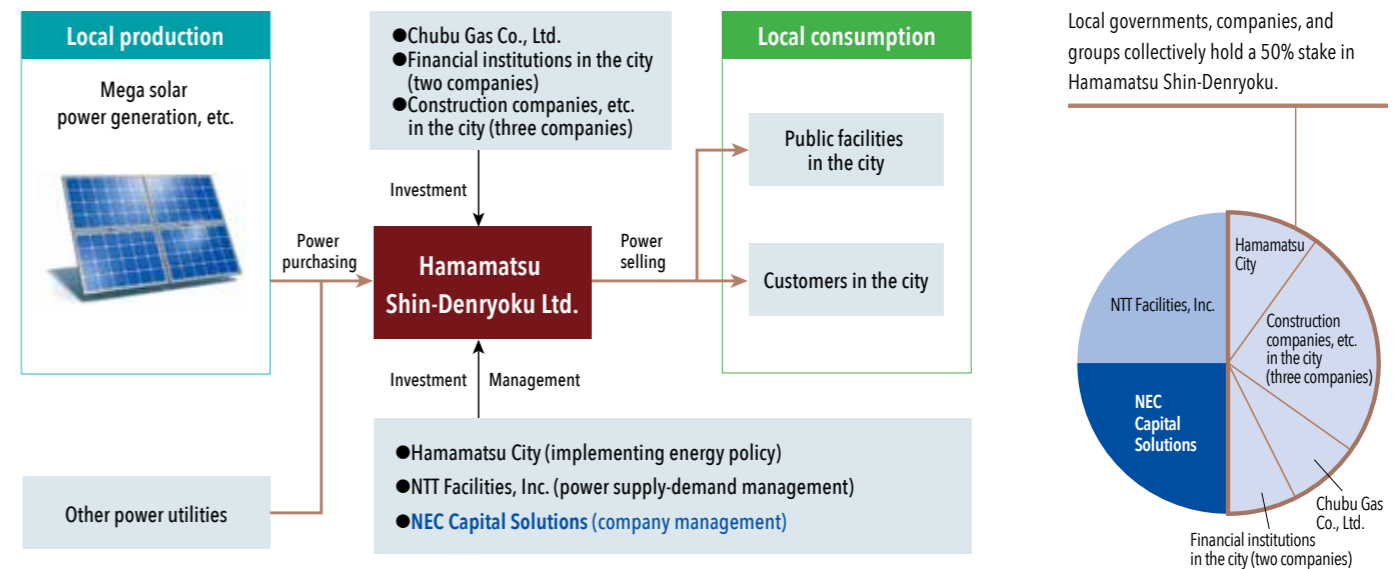
Source: Energy White Paper 2014

Japan's energy self-sufficiency over time



\*Coal percentage not shown as the figure is too small.  
Source: Prepared based on IEA, Energy Balance of OECD Countries 2013

Hamamatsu Shin-Denryoku's business scheme



### Taking advantage of combined public-private expertise to take part in establishing a power producer and supplier in Hamamatsu

Due to demand from society, renewable energy sources are being adopted all over Japan. Of these, the establishment of Hamamatsu Shin-Denryoku Ltd. (Hamamatsu Shin-Denryoku), a local power producer and supplier, in October 2015 has drawn particular attention. This company was established through the joint participation of Hamamatsu City, NEC Capital Solutions, NTT Facilities, Inc. ("NTT Facilities"), and financial institutions and private firms in Hamamatsu City.

The most important aspect of the company is its dedication to the concept of local energy production for local consumption. Leveraging its advantage as one of Japan's top regions for number of daylight hours, Hamamatsu City was one of the first municipalities in the country to adopt solar power. Hamamatsu Shin-Denryoku purchases power from solar power generation companies in the city and sells it to mainly public organizations in the city, including elementary and junior high schools. By locally consuming power locally produced, the city achieves power stability that is not reliant on power from other regions. This scheme also stimulates the local economy by recirculating within the city funds and resources involved in power supply.

By leveraging the FIT system, Hamamatsu Shin-Denryoku has been able to "buy power high and supply it low". This has helped power utilities

to expand their business by guaranteeing stable revenues while fostering a greater commitment in consumers to saving power and helping the environment through the use of renewable energy.

Hamamatsu City has worked to build itself into a "smart city" friendly to the environment and committed to furthering the usage of renewable energy citywide. NEC Capital Solutions resonates with this effort and has taken part in this project from the conceptual phase as part of CSV management. In addition to providing funding, we have made the most of expertise developed through public-private collaborative projects, including PFI, and played a major role in setting up the company's structure and operational framework.

As previously mentioned, this project has involved collaboration between Hamamatsu City, NEC Capital Solutions, and NTT Facilities, which handles power supply and demand management, as well as participation by many financial institutions and companies in the city. How to strike an agreement among so many stakeholders was a major hurdle to getting the project up and running. By capitalizing on the wealth of business experience held with local governments, financial institutions, and private firms and by faithfully addressing their problems and demands, we were able to get the company established in little time. Even since the project has launched, we have been handling the full spectrum of management operations, including calculating the optimal power purchasing and selling prices based on power supply and demand trends, processing payments and invoices, and applying for subsidies.

## Aiming to help achieve a sustainable society as a total regional energy integrator

Through involvement in projects such as those involving solar power generation in disaster areas, NEC Capital Solutions has always maintained a strong commitment to renewable energy business. The Hamamatsu Shin-Denryoku project has seen us acquire comprehensive experience in all business processes, from power purchasing to supply, and further deepen our power business knowledge and expertise. Additionally, that strong connections have been forged among Hamamatsu City, local financial institutions, and private firms such as NTT Facilities through this project has been a major asset in achieving further growth for the project.

Furthermore, the public-private partnership-based regional PPS\* project that is Hamamatsu Shin-Denryoku stands as the first and largest such initiative for an ordinance-designated city, and Japan's focus on the project has been considerable. In fact, with interest in the project having been expressed by many organizations including other local governments, financial institutions, and companies, new business opportunities are making themselves available.

NEC Capital Solutions' objective is to leverage assets developed through this project and make committed efforts to renewable energy business centered on local production for local consumption in order to elevate our profile as a "total local energy integrator." Through such efforts, we hope to not only achieve medium- to long-term growth for NEC

Capital Solutions but to also make society more sustainable while bringing further stability to energy supply and demand in Japan.

\*PPS (Power Producer and Supplier): an electricity utility new to the market that supplies power through an existing power transmission network operated by large power utilities

### Efforts to achieve a "Hamamatsu-style smart city"

Since immediately after the Great East Japan Earthquake, Hamamatsu City has been proactively undertaking energy policies centered on establishing a dedicated energy department and using renewable energy. These efforts have seen us make great achievements in the area, among which has been making Hamamatsu the top city in Japan for solar power generation.

Last year we embarked on new endeavors that maximize the vitality of the private sector, including forming Hamamatsu Shin-Denryoku Ltd. and the Hamamatsu Smart City Council. Going forward, our focus will be on carrying out energy policies through public-private partnership in order to build a Hamamatsu-style smart city and become an industry leader in Japan.



Yasutomo Suzuki  
Mayor of Hamamatsu

### Staff comments

#### We have gained a great deal through this project.



Both the Company and I have gained a great deal through participation in this project.

One aspect has been the nature of the relationship formed with the local government of Hamamatsu City. For the sake of considering how to implement the project elsewhere, it has been a very valuable experience being able to directly ask the city what their energy plans were and how they wanted to proceed. A second has been the relationships we were able to have with our co-investors. Being able to glean specialized knowledge from others has been a valuable and unprecedented experience for the Company, and we plan to put this experience to good use.

Masaru Kurosawa, Environment and Energy Department Manager, Solution Division

#### It has been a major asset to achieving further growth for our business.

Participation in the Hamamatsu Shin-Denryoku project has provided important insights for planning the overall direction and design of NEC Capital Solutions energy business. Moreover, conducting this new business with Hamamatsu City and businesses from a variety of industries provides a chance to embark on new initiatives and challenges different from those related to local power producers and suppliers. I am also certain that having improved communication with local governments and businesses through this project will prove to be a major asset as we expand our business.



Naoto Fujita, Executive Officer

Comment