

Japan's LNG Demand in FY2018: Impact of Economic Growth and Nuclear Plants' Restart

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As Japan is the fifth largest energy consumer in the world, its energy market trend is important for analyzing the international energy market. Although Japan does not have much of a presence behind dynamic emerging countries including China as the world's largest energy consumer and India as the fourth, it is a major player in the international energy market. Particularly, Japan accounts for a dominant share (31% in 2016) of global liquefied natural gas consumption, being the world's largest LNG consumer and importer. Japan's market trend and outlook attract much attention from LNG stakeholders throughout the world.

As is well known, Japan has made unprecedentedly dynamic moves in the LNG market since the Great East Japan Earthquake and the Fukushima nuclear plant accident. Japan expanded LNG imports by as much as 12.62 million tons or 17.9% from 70.56 million tons in FY2010 to 83.18 million tons in FY2011 when the March 2011 earthquake and nuclear accident affected Japan seriously. As all nuclear power plants in Japan were not in operation later, Japan's LNG imports continued to expand, reaching 89.07 million tons in FY2014. The largest LNG importer boosted LNG imports by as much as 26% in four years.

In FY2015, however, Japan's LNG imports turned down due to the restart of nuclear reactors, slack primary energy demand and slumping power generation. In the year, Japan's LNG imports decreased by 5.5 million tons or 6.2% from the previous year to 83.57 million tons. In 2016, however, they posted a slight increase to 84.75 million tons due to a rebound in primary energy demand and power generation as well as a steep fall in LNG prices indexed to crude oil prices. After such twists and turns, Japan's present and future LNG demand is attracting much attention.

The Institute of Energy Economics, Japan, released the "Economic and Energy Outlook of Japan through FY2018" on July 25th at IEEJ's 425th Forum on Research Work. As indicated by the title, the report forecasts the whole picture of Japan's energy supply and demand through FY2018, based on various assumptions. However, the following analysis focuses on LNG demand and imports.

As for the most basic assumption of Japan's economic growth, the report assumes that the Japanese economy will grow by 1.4% on robust private consumption and exports in FY2017 and by 1.1% due to brisk domestic demand, including investment related to the Tokyo Olympics, despite decelerating overseas demand (exports). The Japanese economy is thus assumed to grow by more than 1% for four years on end. The average crude oil import CIF price is forecast to rise from \$48

per barrel in FY2016 to \$51/bbl in FY2017 and \$52/bbl in FY2018 as the crude oil market slowly goes in the direction of rebalancing. Based on the crude oil price and spot LNG price assumptions, Japan's LNG import CIF price is put at \$7.7 per million British thermal units in FY2017 and \$7.6/MBtu in FY2018, against \$7.0/MBtu in FY2016.

While the economy will grow by more than 1% in FY2017, Japan's primary energy supply will post a small decrease of 0.1% due to a continued energy conservation trend. In FY2018, primary energy supply will accelerate a decline to 0.6% on slower economic growth. While primary energy supply will continue to decline slowly, electricity sales will increase by 0.4% in FY2017 and level off in FY2018, indicating energy demand's gradual shift to electricity.

The key point here is the restart of nuclear power plants. In our Reference Scenario, Japan has restarted five reactors and will restart four by the end of FY2017 and one by the end of FY2018, bringing the total number of operational reactors to 10 at the end of fiscal 2018. Nuclear power generation will increase from 18.1 billion kilowatt-hours in FY2016 to 55.6 billion kWh in FY2017 and to 65.6 billion kWh. Nuclear energy's share of the power mix will rise to 7% in FY2018. Taking into account uncertainties about the restart, the outlook sets three more scenarios for FY2018 for a sensibility analysis. In the "Zero Nuclear Scenario," no nuclear reactor will be in operation. In the "Low Nuclear Scenario," the number of reactors in operation will be limited at the present level of five. In the "High Nuclear Scenario," a total of 17 reactors will have been restarted.

Another attention-attracting electricity source is expanding renewable energy, in particular, solar photovoltaics. Since Japan introduced the feed-in tariff system in July 2012 to promote renewable energy, renewable energy power generation capacity approved under the FIT system has rapidly expanded, including mega-solar plants. Under a FIT system revision, approval has been cancelled for FIT capacity totaling 28 gigawatts. Still, approved capacity totals 67 GW. As non-operating approved capacity goes into operation, renewable energy power generation, excluding generation by large scale hydro power plants (with capacity at 30 megawatts or more), will steadily increase from 109.7 billion kWh in FY2016 to 118.9 billion kWh in FY2017 and to 127.3 billion kWh in FY2018, according to the outlook.

City gas sales are expected to rewrite a record high as sales for industrial use increase. Given the abovementioned energy supply and demand environment and electricity supply and demand conditions, however, Japan's LNG demand is expected to decline slowly. Therefore, Japan's LNG imports are forecast to decrease from 84.75 million tons in FY2016 to 82.1 million tons in FY2017 and 80.3 million tons in FY2018 in IEEJ's Reference Scenario. According to the abovementioned sensibility analysis, the restart of nuclear power plants will greatly influence Japan's LNG imports. In the Zero and Low Nuclear Scenarios, LNG imports in FY2018 will rise sharply from the level in the Reference Scenario to 86.8 million tons and 83.7 million tons, respectively. In the High Nuclear Scenario, however, LNG imports will slip below 80 million to 76.7 million tons.

Various developments could come depending on uncertain factors including the restart of nuclear plants. Given some economic growth, the energy conservation trend and the expansion of nuclear and renewable power generation, however, Japan's LNG imports are basically forecast to

moderately decrease.

Meanwhile, Japan's LNG imports in the first half of 2017 increased by 2.24 million tons or 5.5% from a year earlier to 43.23 million tons. This summer has seen heat waves up to July in many regions, which could influence future LNG demand. In the actual market, economic factors, pricing factors, energy competition, temperatures and other complicated conditions will exert influences on actual demand and consumption patterns. In foreseeing the LNG market size of Japan as the world's largest LNG consumer, we must pay attention to micro factors emerging in the actual market in addition to a general and fundamental trends of Japan' economy and energy market.

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