



# Current Status of Plutonium Utilization Plan, etc. of the Electric Power Companies of Japan

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March 29, 2016

The Federation of Electric Power Companies of Japan

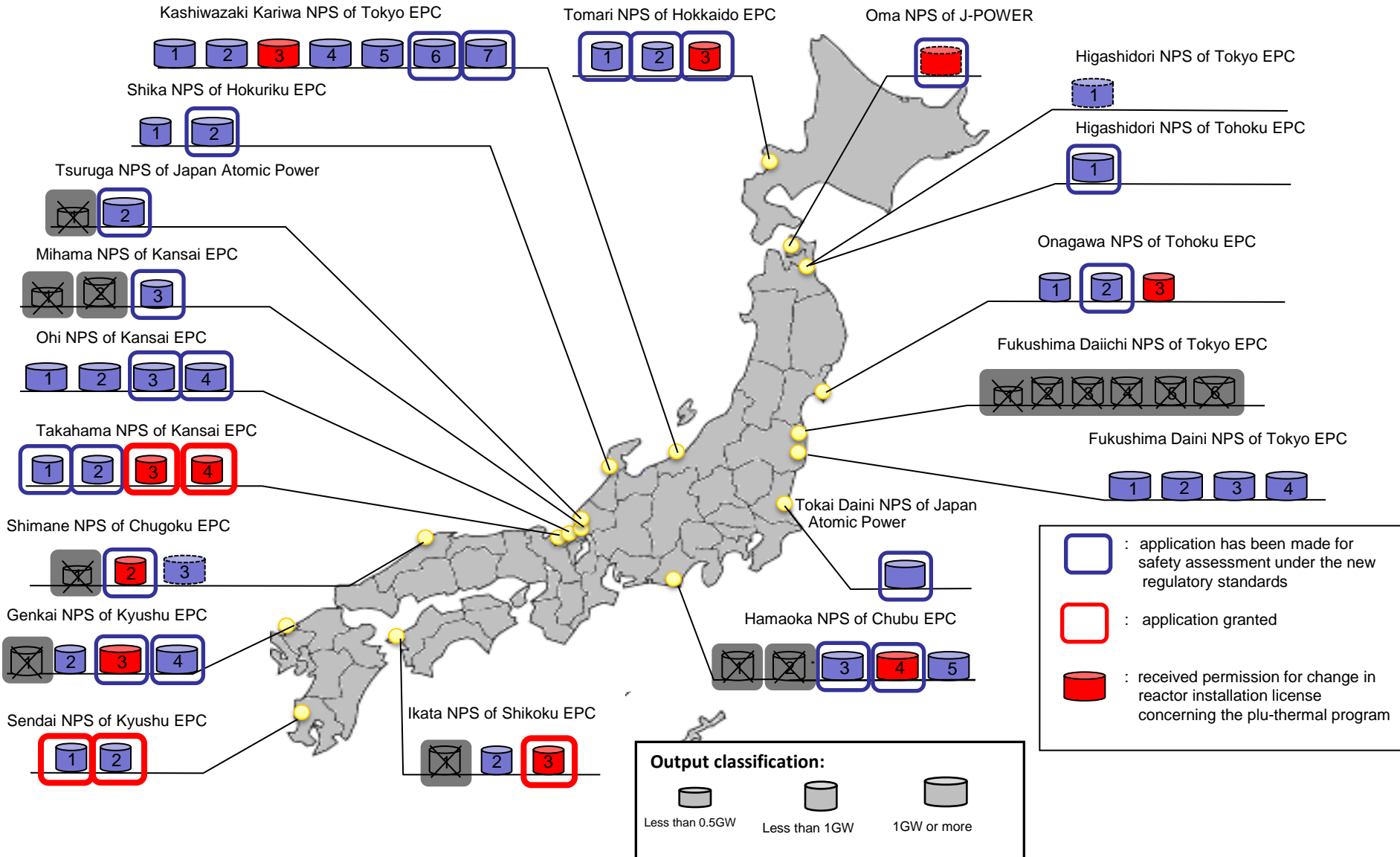
- Based on the Basic Position on Japan's Use of Plutonium decided by the Atomic Energy Commission on August 5, 2003, the electric power companies of Japan published a plutonium utilization plan in January 2006 and have updated it every fiscal year since then.
- Under the national policy of “not possessing plutonium reserves of which use is undetermined”, based on the concept that plutonium recovered at the Rokkasho reprocessing plant must be fully utilized, including Japan's inventory abroad, the electric power companies of Japan have developed a plu-thermal program (utilization of plutonium in light water reactors) to be achieved as early as possible. The latest plu-thermal program (published in June 2009) aims to introduce MOX fuel to 16 to 18 reactors throughout Japan by fiscal 2015, and solid progress has been made: applications for a change in reactor installation license for starting to use MOX fuel have been approved for 10 reactors, three of which have already started the plu-thermal program\*.
- \* This excludes Unit 3 at Fukushima Daiichi Nuclear Power Station (which will be decommissioned under a decision made in April 2012)
- After the Great East Japan Earthquake, however, nuclear power plants were shut down one after another. Currently, utmost efforts are being made to take necessary actions such as ensuring compliance with the new regulatory standards established by the Nuclear Regulation Authority (NRA).

- Since the earthquake, the electric power companies of Japan have refrained from developing and announcing plans for using plutonium because of the impacts from the earthquake and the fact that plutonium recovery at the Rokkasho Reprocessing Plant is not in operation. **Nevertheless, in March 2013 the companies announced their view on the development and announcement of future plutonium utilization plans as follows:**
  - ✓ Based on the outlook on progress made by individual electric power companies toward restarting reactors and considering the schedule and other factors to start up the Rokkasho Reprocessing Plant, we shall compile and publish a plutonium utilization plan before the restart of plutonium recovery operations.
- Today, **we would like to present the evolving situation since the last report, and announce the views of Japan's electric power companies on issues such as the development and announcement of the plutonium utilization plan and the plutonium thermal program.**

- So far, 26 power reactors of 11 electric power companies have applied for the safety assessment in accordance with the new regulatory standards. Of these, 5 reactors have received permission and three of them have already restarted operation\*.
- Among the reactors which have received permission for a change in reactor installation license concerning the plu-thermal program, 8 reactors have applied for the safety assessment in accordance with the new regulatory standards, and three of them (Takahama Units 3 & 4 and Ikata Unit 3) have already received permission.
- Other reactors, however, are still undergoing the examination process or preparing to apply and therefore, they have no firm plans for a specific timing of restarting.

\* The operation of Takahama Unit 3 has been halted in response to a provisional injunction order issued on March 9, 2016. Kansai Electric Power Co., Inc. filed an objection to this order on March 14, 2016.

# State of progress toward restarting nuclear power plants



- Since the last presentation (in March 2013), progress has been made as some reactors have passed the safety assessment in accordance with the new regulatory standards. Considering the current circumstances of restarting reactors, however, **we need to delay the target deadline of fiscal 2015** written in the current plu-thermal program for starting to use MOX fuel in 16 to 18 reactors.
- ***As for the policy of introducing the plu-thermal program in 16 to 18 reactors throughout Japan, this plan remains unaltered*** because this is the number of reactors needed in order to fully utilize the quantity of plutonium that will be recovered at the Rokkasho reprocessing plant by reprocessing 800 tons of spent fuel in addition to our inventory abroad.
- Even after the Great East Japan Earthquake, the importance of the nuclear fuel cycle including the plu-thermal program remains unchanged at all. **We will continue utmost efforts to start the plu-thermal program.**

- Being well aware of the importance of transparency concerning the use of plutonium to ensure that domestic and international stakeholders accept such use by the electric power companies of Japan, we recognize the need to announce our plutonium utilization plan before restarting plutonium recovery operations at the Rokkasho Reprocessing Plant.
- The restarting of nuclear power plants is a major premise for developing reliable plans for using plutonium and implementing the plu-thermal program. However, as mentioned in slide 3, many reactors have no firm plans for a specific timing of restarting at this stage. The electric power companies of Japan will continue devoting themselves to restarting the reactors and thus being able to announce our plans for the use of plutonium as soon as possible from the point of ensuring transparency.
- Based on the outlook of individual electric power companies toward restarting reactors and considering the schedule and other factors to start up the Rokkasho Reprocessing Plant, we shall compile and announce our plutonium utilization plan and the plu-thermal program before restarting plutonium recovery operations at the latest.

# Amount of plutonium (as of the end of December 2015)

Reference

(fissile plutonium, kg)

Owner	Amount in Japan				Amount overseas			Total
	JAEA *1	JNFL *2	Power stations *3	Subtotal	France *5	UK	Subtotal	
Hokkaido EPC	—	59	—	59	66*6	—	66	125
Tohoku EPC	11	64	—	75	206	159	364	439
Tokyo EPC	135	620	138	893	2,073 *4, 6	5,976	8,049	8,942
Chubu EPC	81	150	145	376	1,522 *4	745	2,267	2,643
Hokuriku EPC	—	7	—	7	90	—	90	97
Kansai EPC	183	454	695	1,332	5,573*4	2,362	7,935	9,267
Chugoku EPC	20	69	—	89	423	355	777	867
Shikoku EPC	63	109	136	308	32	666	698	1,007
Kyushu EPC	76	261	516	854	73	1,030	1,103	1,957
Japan Atomic Power (J-POWER) *5	101	116	—	217	484	2,739	3,223	3,440
<b>Total</b>	<b>671</b>	<b>1,910</b>	<b>1,630</b>	<b>4,211</b>	<b>10,542</b>	<b>14,032</b>	<b>24,574</b>	<b>28,784</b>

\* Totals may not add up due to rounding to the nearest whole number. A dash (-) indicates no fissile plutonium owned.

\*1 The amount of plutonium already used by the Japan Atomic Energy Agency (JAEA) for research and development is excluded.

\*2 The amount of Puf delivered to electric power companies is given.

\*3 When MOX fuel is loaded to a reactor and irradiation starts, the corresponding amount is subtracted from the amount owned.

\*4 The amount of plutonium processed, or being processed, or being prepared for processing into MOX fuel, is included.

\*5 A portion of Puf recovered in France will be provided to J-POWER by the electric power companies (approx. 0.1 tonnes by Tohoku EPC, approx. 0.7 tonnes by Tokyo EPC, approx. 0.1 tonnes by Chubu EPC, approx. 0.1 tonnes by Hokuriku EPC, approx. 0.2 tonnes by Chugoku EPC, approx. 0.0 tonnes by Shikoku EPC, approx. 0.1 tonnes by Kyushu EPC; the total amounting to approx. 1.3 tonnes Puf.)

\*6 Approx. 40kg of Puf kept in France by Tokyo EPC is planned to be provided to Hokkaido EPC.