

☆RIM POWER INTELLIGENCE DAILY

★No.1639 Apr 28 2020

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--TOKYO, 16:00 JST Apr 28 2020<Assessment Closing Time>

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○Golden Week Holiday Notice

Rim will not issue Power report on Apr 29 and May 4-6, 2020 for the Golden Week holidays in Japan. The publication will resume on May 7 onward after the holidays. To view the Rim Intelligence 2020 holiday schedule, please visit the URL below:

<https://eng.rim-intelligence.co.jp/contents/info/RimHolidayNotice2020EN.pdf>

○Report on adherence to PRA principles

Rim Intelligence uploaded the report of the governance, processes and controls relating to the adherence to the PRA principles based on reasonable assurance on Feb 27, 2020. All of the daily reports of Rim Intelligence are subject to the principles. Please visit the following website for perusal.

<Reports>

Bunker Oil, Crude/Condensate, Asia Products (Products), LPG, Lorry Rack, Japan Products, Petrochemicals, LNG, Power

<https://www.rim-intelligence.co.jp/contents/info/pramenuEng4/>

©RECX-22 index

RECX-22 index for Tuesday was 44.88, up 0.19 points from the previous day

-----Introduction of Rim reports-----

Please access the URL below for a lineup of Rim reports. You can view sample reports as well as detailed explanations on the contents:

<https://eng.rim-intelligence.co.jp/first/report>

Lineup:

Bunker Oil	Crude/Condensate	Products	
LPG	Petrochemicals	Polyolefins	
LNG	Power	Daily Data	Rim Data File

For inquiries on the above, please contact:

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© POWER Market								
○Rim Index Day-Ahead Prices								
Apr 29 2020	East Japan			DOD	West Japan			DOD
24 Hours	6.28	-	7.28	-0.27	2.75	-	3.75	-0.56
Day Time	6.21	-	7.21	-0.23	1.65	-	2.65	-1.20
Peak Time	4.85	-	5.85	-0.71	0.01	-	0.01	-2.32
Night Time	6.38	-	7.38	-0.34	4.33	-	5.27	+0.35
Yen/kWh								

*Day Time 08:00-22:00, Peak Time 13:00-16:00, Night Time 0:00-08:00 & 22:00-24:00

○ Rim Index Forward Prices					
Month	24 Hours	DOD	Month	24 Hours	DOD
Jun-20	7.19	-0.01	Feb-21	5.71	-0.06
Jul-20	7.60	-0.01	Mar-21	4.74	-0.07
Aug-20	6.51	-0.01	Apr-21	4.83	-0.06
Sep-20	5.19	-0.02	May-21	4.86	-0.06
Oct-20	4.39	-0.04	Jun-21	4.93	-0.05
Nov-20	4.40	-0.06	Jul-21	6.02	-0.04
Dec-20	5.51	-0.07	Aug-21	5.97	-0.04
Jan-21	5.61	-0.06			
Yen/kWh					
*Nationwide prices based on power generation costs reflecting Rim's estimated spot prices of fuel including Coal, LNG, Crude Oil and C-Fuel and JCC. Marginal costs (fuel costs) are calculated by multiplying the ratio of each fuel used at thermal units of nine leading power utilities by the above power generation costs. Marginal costs are adjusted by the alpha factor calculated based on the historical patterns of marginal costs and spot prices.					

○ JEPX System Prices				
Day	Apr-29-2020		DOD	WOW
24 Hours Average	Yen/kWh	4.19	-0.72	-0.49
Day Time Average	Yen/kWh	3.13	-1.32	-1.45
Peak Time Average	Yen/kWh	0.69	-3.22	-3.37
Total Traded Volumes	kWh	584,960,400	-117,857,750	-176,688,800
*Data are obtained from the JEPX website. Prices are for reference only and not Rim's assessments.				
Day Time= 8:00-22:00, Peak Time=13:00-16:00, Average=Simple Average				

○ Estimated Monthly Prices-24 Hours Average (Nationwide)										Unit: Yen/kWh
	Jun-20	DOD	Jul-20	DOD	Aug-20	DOD	Sep-20	DOD	Oct-20	DOD
A	7.20	-0.03	7.67	-0.03	6.42	-0.03	5.24	-0.04	4.44	-0.07
C	9.06	-0.03	10.52	-0.07	10.28	-0.08	7.92	-0.09	8.03	-0.10
D	6.85	0.00	7.88	0.00	7.86	0.00	6.85	0.00	6.55	0.00
E	7.66	0.00	6.87	0.00	6.01	0.00	5.85	0.00	5.95	0.00
F	7.86	0.00	8.96	0.00	9.02	0.00	7.77	0.00	7.60	0.00
Ave.	7.57	-0.01	8.17	-0.01	7.77	-0.01	6.82	0.00	6.70	0.00
	Nov-20	DOD	Dec-20	DOD	Jan-21	DOD	Feb-21	DOD	Mar-21	DOD
A	4.44	-0.08	5.52	-0.08	5.67	-0.10	5.77	-0.09	4.84	-0.10
C	7.63	-0.10	8.21	-0.12	8.61	-0.12	8.70	-0.12	7.41	-0.12
D	6.75	0.00	7.10	0.00	7.45	0.00	7.58	0.00	6.78	0.00
E	6.62	0.00	6.97	0.00	7.09	0.00	6.90	0.00	6.56	0.00
F	7.83	0.00	8.03	0.00	8.43	0.00	8.47	0.00	7.50	0.00
Ave.	7.00	-0.03	7.37	0.00	7.66	0.00	7.65	0.00	6.92	-0.03
	Apr-21	DOD	May-21	DOD	Jun-21	DOD	Jul-21	DOD	Aug-21	DOD
A	4.91	-0.11	4.87	-0.13	4.99	-0.14	6.05	-0.15	5.95	-0.17
C	7.29	-0.10	8.01	-0.10	8.02	-0.09	9.61	-0.10	9.50	-0.11
D	6.69	0.00	6.15	0.00	6.51	0.00	7.68	0.00	7.61	0.00
E	6.44	0.00	6.43	0.00	6.60	0.00	6.74	0.00	6.73	0.00
F	7.64	0.00	7.19	0.00	7.96	0.00	8.74	0.00	8.83	0.00
Ave.	6.81	-0.03	6.59	0.00	7.02	0.00	7.72	0.00	7.72	0.00

*Prices are estimated by five retail electricity suppliers shown as A, C, D, E and F. Prices are not Rim's assessments. Ave. is the average excluding the highest and lowest prices.

○ Estimated Monthly Prices-Day Time Average (Nationwide)										Unit: Yen/kWh
	Jun-20	DOD	Jul-20	DOD	Aug-20	DOD	Sep-20	DOD	Oct-20	DOD
A	8.17	-0.03	10.44	-0.04	8.85	-0.04	6.49	-0.05	5.11	-0.08
C	10.10	-0.03	13.05	-0.07	12.71	-0.07	9.36	-0.09	8.95	-0.10
D	7.65	0.00	8.87	0.00	8.71	0.00	7.76	0.00	7.25	0.00
E	8.07	0.00	7.73	0.00	6.80	0.00	6.38	0.00	6.28	0.00
F	8.37	0.00	10.63	0.00	10.80	0.00	9.02	0.00	8.06	0.00
Ave.	8.20	-0.01	9.98	-0.01	9.45	-0.02	7.76	-0.01	7.20	0.00
	Nov-20	DOD	Dec-20	DOD	Jan-21	DOD	Feb-21	DOD	Mar-21	DOD
A	4.92	-0.09	6.36	-0.10	6.73	-0.11	6.56	-0.11	5.21	-0.11
C	8.37	-0.09	9.06	-0.12	9.47	-0.12	9.45	-0.12	8.00	-0.12
D	7.48	0.00	8.08	0.00	8.58	0.00	8.65	0.00	7.84	0.00
E	6.80	0.00	7.24	0.00	7.33	0.00	7.02	0.00	6.58	0.00
F	8.09	0.00	8.88	0.00	9.71	0.00	9.74	0.00	8.34	0.00
Ave.	7.46	0.00	8.07	0.00	8.46	-0.04	8.37	-0.04	7.47	-0.04
	Apr-21	DOD	May-21	DOD	Jun-21	DOD	Jul-21	DOD	Aug-21	DOD
A	5.38	-0.12	5.60	-0.15	5.67	-0.16	8.30	-0.20	8.14	-0.23
C	7.82	-0.11	8.81	-0.10	9.06	-0.10	12.14	-0.10	11.93	-0.10
D	7.41	0.00	7.05	0.00	7.45	0.00	8.65	0.00	8.62	0.00
E	6.53	0.00	6.59	0.00	6.90	0.00	7.50	0.00	7.57	0.00
F	8.14	0.00	7.93	0.00	8.86	0.00	10.79	0.00	10.88	0.00
Ave.	7.25	-0.04	7.19	0.00	7.74	0.00	9.25	-0.06	9.21	-0.08

*Average prices during 8:00-20:00 hours on weekdays. Prices are estimated by five retail electricity suppliers shown as A, C, D, E and F. Prices are not Rim's assessments. Ave. is the average excluding the highest and lowest prices.

OTOCOM Power Futures East Japan Base Load Power Day Time (8:45~15:15)							Unit: Yen/kWh	
Month	Pv Close	Open	High	Low	Settle	DOD	Volume	Close
Apr-2020	6.80	-	-	-	-	0.00	-	6.80
May-2020	7.55	-	-	-	-	-0.65	-	6.90
Jun-2020	7.65	-	-	-	-	-0.15	-	7.50
Jul-2020	8.85	-	-	-	-	-0.10	-	8.75
Aug-2020	8.53	-	-	-	-	-0.11	-	8.42
Sep-2020	7.07	-	-	-	-	-0.11	-	6.96
Oct-2020	6.72	-	-	-	-	-0.11	-	6.61
Nov-2020	6.92	-	-	-	-	-0.12	-	6.80
Dec-2020	7.31	-	-	-	-	-0.13	-	7.18
Jan-2021	7.54	-	-	-	-	-0.12	-	7.42
Feb-2021	8.08	-	-	-	-	-0.12	-	7.96
Mar-2021	7.36	-	-	-	-	-0.36	-	7.00
Apr-2021	6.92	-	-	-	-	-0.11	-	6.81
May-2021	6.62	-	-	-	-	-0.11	-	6.51
Jun-2021	6.86	-	-	-	-	-0.12	-	6.74
Total							-	

OTOCOM Power Futures West Japan Base Load Power Day Time (8:45~15:15)							Unit: Yen/kWh	
Month	Pv Close	Open	High	Low	Settle	DOD	Volume	Close
Apr-2020	4.28	-	-	-	-	-0.06	-	4.22
May-2020	6.52	-	-	-	-	-0.65	-	5.87
Jun-2020	7.26	-	-	-	-	-0.73	-	6.53
Jul-2020	8.04	-	-	-	-	-0.09	-	7.95
Aug-2020	7.19	-	-	-	-	-0.10	-	7.09
Sep-2020	5.49	-	-	-	-	-0.09	-	5.40
Oct-2020	5.71	-	-	-	-	-0.10	-	5.61
Nov-2020	6.21	-	-	-	-	-0.41	-	5.80
Dec-2020	6.87	-	-	-	-	-0.14	-	6.73
Jan-2021	7.56	-	-	-	-	-0.13	-	7.43
Feb-2021	7.08	-	-	-	-	-0.11	-	6.97
Mar-2021	5.86	-	-	-	-	-0.09	-	5.77
Apr-2021	5.52	-	-	-	-	-0.09	-	5.43
May-2021	5.33	-	-	-	-	-0.09	-	5.24
Jun-2021	5.86	-	-	-	-	-0.10	-	5.76
Total							-	

OTOCOM Power Futures East Japan DT Load Power Day Time (8:45~15:15)								Unit: Yen/kWh
Month	Pv Close	Open	High	Low	Settle	DOD	Volume	Close
May-2020	7.95	-	-	-	-	-0.05	-	7.90
Jun-2020	9.22	8.22	8.22	8.00	8.00	-0.92	2	8.30
Jul-2020	12.90	-	-	-	-	-0.11	-	12.79
Aug-2020	12.09	-	-	-	-	-0.13	-	11.96
Sep-2020	8.84	-	-	-	-	-0.11	-	8.73
Oct-2020	8.52	-	-	-	-	-0.11	-	8.41
Nov-2020	8.48	-	-	-	-	-0.12	-	8.36
Dec-2020	8.48	-	-	-	-	-0.13	-	8.35
Jan-2021	9.07	-	-	-	-	-0.12	-	8.95
Feb-2021	9.22	-	-	-	-	-0.11	-	9.11
Mar-2021	7.90	-	-	-	-	-0.10	-	7.80
Apr-2021	7.71	-	-	-	-	-0.10	-	7.61
May-2021	7.87	-	-	-	-	-0.11	-	7.76
Jun-2021	7.99	-	-	-	-	-0.11	-	7.88
Jul-2021	-	-	-	-	-	-	-	10.43
Total							2	

OTOCOM Power Futures West Japan DT Load Power Day Time (8:45~15:15)								Unit: Yen/kWh
Month	Pv Close	Open	High	Low	Settle	DOD	Volume	Close
May-2020	7.48	-	-	-	-	-0.75	-	6.73
Jun-2020	7.92	-	-	-	-	-0.08	-	7.84
Jul-2020	11.14	-	-	-	-	-0.11	-	11.03
Aug-2020	9.07	-	-	-	-	-0.11	-	8.96
Sep-2020	7.17	-	-	-	-	-0.09	-	7.08
Oct-2020	7.03	-	-	-	-	-0.10	-	6.93
Nov-2020	7.67	-	-	-	-	-0.13	-	7.54
Dec-2020	8.55	-	-	-	-	-0.15	-	8.40
Jan-2021	9.26	-	-	-	-	-0.13	-	9.13
Feb-2021	8.31	-	-	-	-	-0.11	-	8.20
Mar-2021	6.60	-	-	-	-	-0.09	-	6.51
Apr-2021	6.14	-	-	-	-	-0.09	-	6.05
May-2021	6.69	-	-	-	-	-0.09	-	6.60
Jun-2021	7.17	-	-	-	-	-0.11	-	7.06
Jul-2021	-	-	-	-	-	-	-	9.37
Total							-	

For the publication schedule during the Golden Week holidays in Japan, please refer to the Holiday Notice on the top page of this report.

©Market Summary

○Summary

<Day-ahead delivery Apr 29>

East, West prices dip on GW holiday demand loss

Rim Index for Day-ahead delivery fell further in both East and West Japan. For Apr 29 delivery, the 24-hour average eased by Yen 0.27 from the previous day to Yen 6.78 in East Japan and by Yen 0.56 to Yen 3.25 in West Japan. The East-West spread was at Yen 3.53 in favor of the East, widening by Yen 0.29 from Yen 3.24 for Apr 28 delivery.

Spot prices weakened reflecting a slowdown in industrial demand nationwide with a start of the Golden Week holidays. In addition, power demand from entertainment facilities and hotels would be weaker than the previous year because of restricted outings by people for the COVID-19 prevention, creating an overhang in power supply. But the market's downside room was limited by a series of thermal unit shutdowns planned on Apr 29 both in East and West Japan.

In East Japan, spot prices lost ground during day time including peak time, and suffered even deeper losses during night time. In West Japan, supply demand fundamentals for day time loosened up, but night time prices strengthened. In East Japan, night time prices apparently came under pressure from forecasts for a slight rise in the lowest temperature in Sendai and Sapporo, shrugging off thermal unit shutdowns. Meanwhile in West Japan, spot prices were already weak enough to mark the lower price limit of Yen 0.01 even for weekday delivery. Power producers tightened output controls on power generation units besides solar power in a bid to avoid an excessive supply glut. Such a move was believed to have helped push up night time prices.

The temperatures on Apr 29 were expected to rise moderately from Apr 28 across Japan. According to the weather forecast released by the Japan

Meteorological Agency at 11:00 hours on Apr 28, the highest temperature in East Japan on Apr 29 would be at 21 degrees in Tokyo, 3 degrees higher than Apr 28, 19 degrees in Sendai, up 5 degrees, and 13 degrees in Sapporo, down 1 degree. In West Japan, the highest temperature on Apr 29 would be at 22 degrees in Osaka, 2 degrees higher than Apr 28, 24 degrees in Nagoya, up 3 degrees, and 22 degrees in Fukuoka, up 2 degrees. The lowest temperature on Apr 29 would be at 9 degrees in Tokyo, flat from Apr 28, 7 degrees in Sendai, up 2 degrees, 6 degrees in Sapporo, up 2 degrees, 10 degrees in Osaka, unchanged, 8 degrees in Nagoya, down 1 degree, and 10 degrees in Fukuoka, down 2 degrees.

Meanwhile, a clear sky would be witnessed not only in West Japan but through Tokyo on Apr 29. The weather on Apr 29 would be sunny in Tokyo, partly cloudy in Sendai, and cloudy with some rains in Sapporo while Osaka, Nagoya and Fukuoka were forecast to be clear. On Apr 28, Tokyo, Sendai and Sapporo as well as Osaka were partly cloudy while Nagoya and Fukuoka were sunny.

By time zone, the day time average weakened by Yen 0.23 to Yen 6.71 in East Japan and by Yen 1.20 to Yen 2.15 in West Japan. The peak time average tumbled by Yen 0.71 to Yen 5.35 in East Japan and by Yen 2.32 to Yen 0.01 in West Japan. The night time average retreated by Yen 0.34 to Yen 6.88 in East Japan, but firmed up by Yen 0.35 to Yen 4.80 in West Japan.

By area, the 24-hour average shed by Yen 0.37 to Yen 6.65 in Hokkaido, by Yen 0.39 to Yen 6.66 in Tohoku, by Yen 0.23 to Yen 6.82 in Tokyo, by Yen 0.59 to Yen 3.27 in five areas in West Japan including Chubu, Hokuriku, Kansai, Chugoku and Shikoku, and by Yen 0.39 to Yen 3.16 in Kyushu. The intraday high in prices was at Yen 9.06 in three areas in East Japan including Hokkaido, Tohoku

and Tokyo during 18:00-19:00 hours, and Yen 5.67 in six areas in West Japan including Chubu, Hokuriku, Kansai, Chugoku, Shikoku and Kyushu during 19:00-19:30 hours. Meanwhile, the intraday low in prices was at Yen 4.42 in Hokkaido and Tohoku during 13:00-13:30 hours, Yen 5.26 in Tokyo during 13:30-14:00 hours, and the lower price limit of Yen 0.01 in six areas in West Japan including Chubu, Hokuriku, Kansai, Chugoku, Shikoku and Kyushu. The intraday low of Yen 0.01 materialized during 9:00-16:00 hours in five areas including Chubu, Hokuriku, Kansai, Chugoku and Shikoku, and during 08:00-16:30 hours in Kyushu.

In relation to thermal power plants, 12 units with a combined capacity of nearly 4,900-MW led by LNG-fired units in East and West Japan would be suspended while two 700-MW units would resume operation on Apr 29. (One unit under a Daily Start and Stop operation was excluded from the calculation)

For Apr 29 delivery, volumes of power offered through sell tenders were 954.62 mil kWh, up 1.1%

from the previous day. Meanwhile, volumes of power bid through buy tenders dwindled by 14.7% to 726.17 mil kWh. Offers outstripped bids in 27 windows. Amid rapidly waning buying interest, traded volumes were only 584.96 mil kWh, falling off the 600 mil kWh mark for the first time since May 6, 2019 delivery.

As for an impact from the COVID-19 expansion on the power market through slowing economic activities, an industry source said, "It is really tough to gauge the magnitude of the COVID-19 impact at this stage." The energy market was gripped by a bearish mood with a crash in crude oil prices attracting keen attention. But concerns loomed crude oil prices could be corrected upward sharply anytime as trade participants viewed speculation selling was behind the crude oil market's recent weakness. In the power market, supply may be squeezed as a result of an overreaction to a demand loss. In such a case, there would be risk of sudden price spikes if the temperatures rose steeply in summer.

Thermal Power Plant Situation

JFE Steel idles Ohgishima No3 unit Apr 28

JFE Steel suspended the 142-MW No3 unit fed with blast furnace gas at its Ohgishima power station in Tokyo at 1:00 hours on Apr 28 for a planned suspension. The unit was scheduled to resume operation on Apr 30 after completing repair works. Tokyo Gas Yokosuka Power was poised to shut down the 239.7-MW LNG-fired Yokosuka power station at 20:30 hours on Apr 28. The facility would be back in service on Jun 1.

On Apr 29, 12 units in East and West Japan would be halted. Suspended units in East Japan included one 600-MW coal-fired unit, three gas-fired units

with a combined capacity of 1,517-MW, and one 350-MW fuel/gas fired unit. In West Japan, two coal-fired units with a combined capacity of nearly 650-MW and five gas-fired units with a combined capacity of nearly 2,100-MW would be switched off. Meanwhile, one 600-MW coal-fired unit in East Japan and one 150-MW gas-fired unit in West Japan would be sent back in service on Apr 29. (One gas-fired unit under a Daily Start and Stop operation was excluded from the calculation).

Shutdown and restart plans on Apr 30 and May 1 are shown in the below table.

**Thermal Power Plants: Operation forecast Apr 29**

Company	Plant	Area	Fuel	Unit	Output (kW)	Outage	Period	Restart	Update
Shutdown									
Thoku Electric Power Company	Higashi Niigata	Tohoku	Heavy Oil /Gas	Minato No.2	350,000	Planned	29-Apr-20 0:00	01-May-20	23-Apr-20 17:43
JERA	Yokohama	Tokyo	Gas	No.7-1	377,000	Planned	29-Apr-20 0:00	03-May-20	23-Jan-20 19:12
JERA	Yokohama	Tokyo	Gas	No.7-2	377,000	Planned	29-Apr-20 0:00	03-May-20	23-Jan-20 19:12
JERA	Shin Nagoya	Chubu	Gas	No.8-4	400,000	Planned	29-Apr-20 0:00	08-May-20	21-Feb-20 10:50
JERA	Nishi Nagoya	Chubu	Gas	No.7-1 Gas Turbine A	261,000	Planned	29-Apr-20 7:30	29-Apr-20	21-Apr-20 9:05
Hokuriku Electric Power Company	Nanao Ota	Hokuriku	Coal	No.1	500,000	Planned	29-Apr-20 0:00	06-May-20	26-Mar-20 14:03
Kansai Electric Power Company	Himeji Dai Ichi	Kansai	Gas	No.6	713,000	Planned	29-Apr-20 0:00	13-May-20	23-Apr-20 14:34
Kansai Electric Power Company	Himeji Dai Ni	Kansai	Gas	No.4	486,500	Planned	29-Apr-20 0:00	03-Jun-20	13-Apr-20 15:43
Chugoku Electric Power Co.,Inc.	Mizushima	Chugoku	Coal	No.2	156,000	Planned	29-Apr-20 0:00	08-May-20	06-Apr-20 18:59
Kyushu Electric Power Company	Shin Oita	Kyushu	Gas	No.2-1	230,000	Planned	29-Apr-20 0:00	03-Jun-20	11-Mar-20 17:35
J Power	Isogo	Tokyo	Coal	No.1	600,000	Planned	29-Apr-20 0:00	04-May-20	22-Apr-20 15:19
Kawasaki Natural Gas Power Generation	Kawasaki Natural Gas Power Center	Tokyo	Gas	No.1	413,000	Planned	29-Apr-20 2:00	02-Jun-20	01-Nov-19 15:39
Restart									
Tohoku Electric Power Company	Noshiro	Tohoku	Coal	No.2	600,000	Planned	25-Apr-20 0:00	29-Apr-20	16-Apr-20 16:16
JERA	Nishi Nagoya	Chubu	Gas	No.7-1 Gas Turbine A	261,000	Planned	29-Apr-20 7:30	29-Apr-20	21-Apr-20 9:05
Kimitsu Cooperative Thermal Power Company	Kimitsu Kyodo	Tokyo	Gas	No.6	152,900	Planned	27-Apr-20 5:48	29-Apr-20	27-Apr-20 5:50

Thermal Power Plants: Operation forecast Apr 30

Company	Plant	Area	Fuel	Unit	Output (kW)	Outage	Period	Restart	Update
Shutdown									
JERA	Futtsu	Tokyo	Gas	No.1-1	167,000	Planned	30-Apr-20 0:00	01-May-20	23-Jan-20 19:12
JERA	Futtsu	Tokyo	Gas	No.1-2	167,000	Planned	30-Apr-20 0:00	01-May-20	23-Jan-20 19:12
JERA	Kawagoe	Chubu	Gas	No.3-1	243,000	Planned	30-Apr-20 0:50	09-May-20	21-Apr-20 8:54
JERA	Kawagoe	Chubu	Gas	No.3-2	243,001	Planned	30-Apr-20 0:00	10-May-20	20-Feb-20 18:28
JERA	Kawagoe	Chubu	Gas	No.3-3	243,000	Planned	30-Apr-20 15:30	09-May-20	21-Apr-20 8:58
JERA	Kawagoe	Chubu	Gas	No.3-4	243,000	Planned	30-Apr-20 0:30	10-May-20	21-Apr-20 8:58
JERA	Kawagoe	Chubu	Gas	No.3-5	243,000	Planned	30-Apr-20 0:40	10-May-20	21-Apr-20 9:00
JERA	Kawagoe	Chubu	Gas	No.3-6	243,000	Planned	30-Apr-20 0:20	10-May-20	21-Apr-20 9:01
JERA	Kawagoe	Chubu	Gas	No.3-7	243,000	Planned	30-Apr-20 0:10	10-May-20	21-Apr-20 9:02
JERA	Nishi Nagoya	Chubu	Gas	No.7-1 Gas Turbine C	261,000	Planned	30-Apr-20 1:00	30-Apr-20	21-Apr-20 9:07
JERA	Hekinan	Chubu	Coal	No.1	700,000	Planned	30-Apr-20 0:00	10-May-20	21-Apr-20 9:40
Kansai Electric Power Company	Maizuru	Kansai	Coal	No.2	900,000	Planned	30-Apr-20 0:00	30-Apr-20	27-Apr-20 14:39
Restart									
JERA	Shin Nagoya	Chubu	Gas	No.8-3	400,000	Planned	18-Mar-20 0:00	30-Apr-20	20-Mar-20 15:59
JERA	Nishi Nagoya	Chubu	Gas	No.7-1 Gas Turbine C	261,000	Planned	30-Apr-20 1:00	30-Apr-20	21-Apr-20 9:07
Kansai Electric Power Company	Himeji Dai Ni	Kansai	Gas	No.5	486,500	Planned	28-Apr-20 4:00	30-Apr-20	23-Apr-20 14:32
Kansai Electric Power Company	Maizuru	Kansai	Coal	No.2	900,000	Planned	30-Apr-20 0:00	30-Apr-20	27-Apr-20 14:39

Thermal Power Plants: Operation forecast May 1

Company	Plant	Area	Fuel	Unit	Output (kW)	Outage	Period	Restart	Update
Shutdown									
Hokkaido Electric Power Company	Tomatoatsuma	Hokkaido	Coal	No.4	700,000	Planned	01-May-20 0:00	07-May-20	15-Apr-20 8:54
JERA	Nishi Nagoya	Chubu	Gas	No.7-1 Gas Turbine B	261,000	Planned	01-May-20 7:30	01-May-20	21-Apr-20 9:06
Kansai Electric Power Company	Himeji Dai Ni	Kansai	Gas	Precedent No.5	600,000	Planned	01-May-20 7:00	03-May-20	27-Apr-20 14:20
Kansai Electric Power Company	Himeji Dai Ni	Kansai	Gas	Precedent No.6	600,000	Planned	01-May-20 7:00	03-May-20	27-Apr-20 14:21
Restart									
Thoku Electric Power Company	Higashi Niigata	Tohoku	Heavy Oil /Gas	Minato No.2	350,000	Planned	29-Apr-20 0:00	01-May-20	23-Apr-20 17:43
JERA	Futtsu	Tokyo	Gas	No.1-1	167,000	Planned	30-Apr-20 0:00	01-May-20	23-Jan-20 19:12
JERA	Futtsu	Tokyo	Gas	No.1-2	167,000	Planned	30-Apr-20 0:00	01-May-20	23-Jan-20 19:12
JERA	Nishi Nagoya	Chubu	Gas	No.7-1 Gas Turbine B	261,000	Planned	01-May-20 7:30	01-May-20	21-Apr-20 9:06

Forward Prices (Fuel Price Trends)
Forward prices drop further on lower fuel costs

Rim Index for forward fell further on Apr 28. The downturn came following softer trends for Rim's JCC (Japan Crude Cocktail) forecast together with DES Northeast Asia LNG prices and FOB Newcastle Australia coal prices. But C-Fuel prices in Asia bounced back, partly erasing the loss in forward prices.

Dubai paper swaps, a criterion used to forecast the JCC, retreated by \$0.29-1.02 from the previous day on Apr 27. Dubai paper swaps stood in the high \$25 level for June 2020, the low \$27 level for July 2020 and the mid \$37 level for August 2021. In the international crude oil market as of 17:00 hours Tokyo time on Apr 28, the NYMEX WTI contract for June 2020 traded at \$10.48 while the ICE Brent contract for June 2020 hovered at \$19.49. The DES Northeast Asia market for LNG stretched declines on Apr 27. The market edged lower amid lingering relaxed supply-demand fundamentals. LNG prices slipped off the \$2 mark per mmBtu for June 2020 arrival, and hovered slightly above \$2 for July 2020 arrival. In the coal market on Apr 27, FOB Newcastle prices on the ICE futures fell back. The June 2020 contract ended at \$50.90, down \$1.80 from

Apr 24. The July 2020 contract settled down \$1.95 at \$51.25 while the August 2021 contract was \$1.15 lower at \$61.20.

Crude prices (JCC + petroleum and coal tax) eased to Yen 15,290 for the front month of June 2020, down Yen 320 from the previous day. Compared to the front month, prices for December 2020 were Yen 4,860 higher and prices for August 2021 were Yen 9,610 higher. For C-Fuel (import price + import tax + petroleum and coal tax), prices for June 2020 were Yen 1,880 higher at Yen 25,720. Compared to the front month, prices for December 2020 were Yen 3,480 higher and prices for August 2021 were Yen 5,730 higher. For LNG (mixture of JCC and DES Northeast Asia spot price + petroleum and coal tax), prices for June 2020 were Yen 120 lower at Yen 48,880. Compared to the front month, prices for December 2020 were Yen 27,510 lower and prices for August 2021 were Yen 22,880 lower. For coal (FOB Newcastle price + freight cost + petroleum and coal tax), prices for June 2020 were Yen 200 lower at Yen 7,980. Compared to the front month, prices for December 2020 were Yen 450 higher and prices for August 2021 were Yen 1,120 higher.

OTOCOM Power Futures Summary
East day time changes hands, first deal since Apr 3

On the Tokyo Commodity Exchange (TOCOM) on Apr 28, a deal was reported in day time (8:45-15:15

hours) trading. In East Japan, two lots of the day time load power contract for June 2020 changed

hands at Yen 8.00-8.22. A deal in day time trading materialized for the first times since Apr 3. For day time load power, the contract months were rolled over on Apr 28, with the front month and forward month shifting to May 2020 and July 2021, respectively.

As of 15:00 hours on Apr 28, offers were cast for the base load contract in both East and West Japan. In East Japan, 30 lots each month were offered for May 2020-March 2021. In West Japan, 20 lots each month were asked for May 2020-March 2021.

Month	Base East		Base West		DT East		DT West	
	Offer	Bid	Offer	Bid	Offer	Bid	Offer	Bid
Apr-20	7.00	6.01	5.28	3.28				
May-20	6.90	6.00	5.20	-	7.90	7.00	6.00	-
Jun-20	7.50	6.20	5.70	-	8.00	7.25	-	-
Jul-20	9.20	-	8.40	-	14.50	-	-	-
Aug-20	9.00	-	8.20	-	14.50	-	-	-
Sep-20	8.80	-	7.80	-	-	-	-	-
Oct-20	7.00	-	5.71	-	11.00	-	-	-
Nov-20	7.10	-	5.80	-	11.00	-	-	-
Dec-20	9.20	-	8.40	-	-	-	-	-
Jan-21	7.10	-	8.20	-	-	-	-	-
Feb-21	9.20	-	8.20	-	-	-	-	-
Mar-21	7.00	-	5.86	-	-	-	-	-
Apr-21	-	-	-	-	-	-	-	-
May-21	-	-	-	-	-	-	-	-
Jun-21	-	-	-	-	-	-	-	-
Jul-21	-	-	-	-	-	-	-	-

Unit Yen/kWh

©JEPX Day-Ahead Spot Data

○Sell/Buy

Apr 29 delivery	24Hours	DoD	Day Time	DoD	Peak Time	DoD	Night Time	DoD
Sell	954,622,900	1.1%	627,037,300	-0.9%	150,877,150	-0.7%	327,585,600	5.3%
Buy	726,165,150	-14.7%	407,749,300	-20.0%	77,836,400	-27.5%	318,415,850	-6.8%

※Unit : kWh

○Trade Volumes

Apr 29 delivery	24Hours	Day Time	Peak Time	Night time
Trade volumes	584,960,400	336,463,500	69,781,800	248,496,900
DoD	-16.8%	-21.5%	-25.8%	-9.4%

※Unit : kWh

○East Japan Average Prices(50Hz) and West Japan Average Prices(60Hz)

Apr 29 delivery	High	DoD	Low	DoD	Day Time	DoD	Peak Time	DoD	Night Time	DoD	0:00-8:00	DoD	22:00-24:00	DoD
East Japan	9.06	-1.7%	4.42	6.0%	6.71	-3.3%	5.35	-11.7%	6.88	-4.7%	6.65	-3.8%	7.80	-7.7%
West Japan	5.67	-28.1%	0.01	0.0%	2.15	-35.8%	0.01	-99.6%	4.80	7.9%	4.72	8.8%	5.11	4.7%
Price spread (East-West)	3.39		4.41		4.56		5.34		2.08		1.93		2.69	

※Unit : Yen/kWh

O9 Area Average Prices(24Hours)

Apr 29 delivery	Hokkaido	DoD	Tohoku	DoD	Tokyo	DoD	Chubu	DoD	Hokuriku	DoD
	6.65	-0.37	6.66	-0.39	6.82	-0.23	3.27	-0.59	3.27	-0.59
24Hours	Kansai	DoD	Chugoku	DoD	Shikoku	DoD	Kyushu	DoD	※Unit : Yen/kWh	
	3.27	-0.59	3.27	-0.59	3.27	-0.59	3.16	-0.39		

OPrice Divergence by Region

For Apr 29 delivery, price divergence occurred in four regions shown as below:

Tokyo and Chubu (Frequency Converter)

Tohoku and Tokyo (Soma-Futaba Interconnection Line)

Hokkaido and Tohoku (Kitahon Interconnection Line)

Chugoku and Kyushu (Kanmon Interconnection Line)

Apr 29 Delivery(Kitahon Interconnection Line:Hokkaido-Tohoku) ※yen/kWh

Time	System Prices	Hokkaido	Tohoku	Price spread (Hokkaido-Tohoku)	Price spread with System (Hokkaido-S) (Tohoku-S)	
7:00~7:30	4.12	5.35	5.71	-0.36	1.23	1.59
7:30~8:00	3.95	5.35	5.61	-0.26	1.40	1.66
10:00~10:30	0.01	5.35	5.37	-0.02	5.34	5.36
15:30~16:00	3.10	5.25	5.31	-0.06	2.15	2.21

Apr 29 Delivery(Soma Futaba Interconnection Line:Tohoku-Tokyo) ※yen/kWh

Time	System Prices	Tohoku	Tokyo	Price spread (Tohoku-Tokyo)	Price spread with System (Tohoku-S) (Tokyo-S)	
8:30~9:00	3.25	5.35	5.37	-0.02	2.10	2.12
9:00~9:30	1.00	5.36	5.37	-0.01	4.36	4.37
9:30~10:00	0.01	5.35	5.37	-0.02	5.34	5.36
10:30~11:00	0.01	4.98	5.85	-0.87	4.97	5.84
11:00~11:30	0.01	4.96	5.91	-0.95	4.95	5.90
11:30~12:00	0.01	4.43	5.91	-1.48	4.42	5.90
12:00~12:30	0.01	4.43	5.89	-1.46	4.42	5.88
12:30~13:00	0.01	4.45	5.37	-0.92	4.44	5.36
13:00~13:30	0.01	4.42	5.94	-1.52	4.41	5.93
14:00~14:30	0.01	5.17	5.37	-0.20	5.16	5.36
14:30~15:00	0.01	5.18	5.37	-0.19	5.17	5.36
15:00~15:30	0.98	5.19	5.37	-0.18	4.21	4.39
15:30~16:00	3.10	5.31	5.37	-0.06	2.21	2.27

Apr 29 Delivery(Kanmon Interconnection Line:Chugoku-Kyushu) ※yen/kWh

Time	System Prices	Chugoku	Kyushu	Price spread (Chugoku-Kyushu)	Price spread with System (Chugoku-S) (Kyushu-S)	
8:00~8:30	3.92	2.71	0.01	2.70	-1.21	-3.91
8:30~9:00	3.25	0.03	0.01	0.02	-3.22	-3.24
16:00~16:30	4.07	2.71	0.01	2.70	-1.36	-4.06

Apr 29 Delivery(Frequency Converter:Tokyo(50Hz)-Chuubu(60Hz))

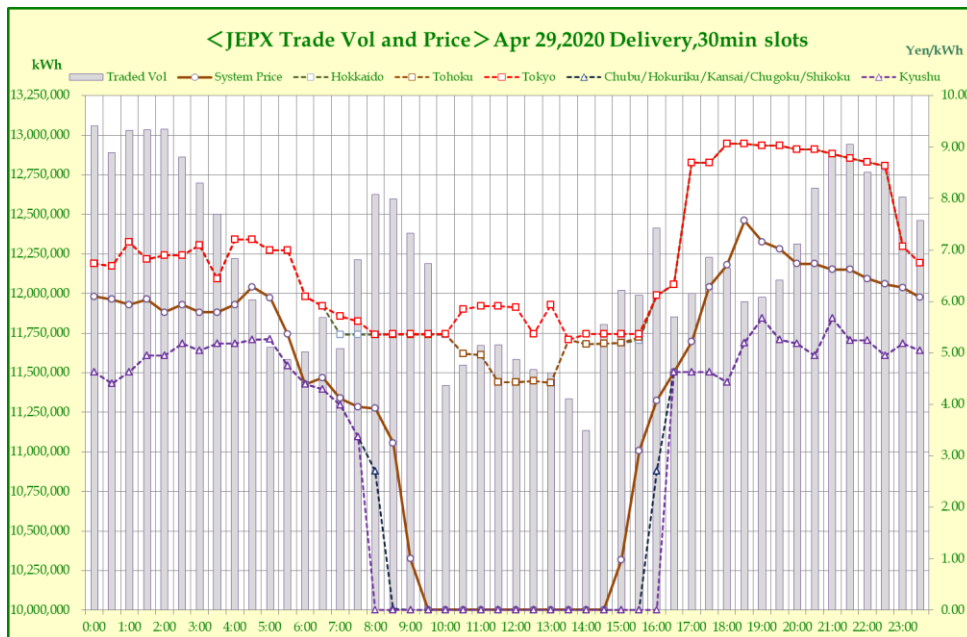
¥/yen/kWh

Time	System Prices	Tokyo	Chubu	Price spread (Tokyo-Chubu)	Price spread with System (Tokyo-S) (Chubu-S)	
0:00~0:30	6.10	6.74	4.63	2.11	0.64	-1.47
0:30~1:00	6.04	6.69	4.40	2.29	0.65	-1.64
1:00~1:30	5.94	7.15	4.63	2.52	1.21	-1.31
1:30~2:00	6.04	6.82	4.95	1.87	0.78	-1.09
2:00~2:30	5.79	6.89	4.95	1.94	1.10	-0.84
2:30~3:00	5.94	6.89	5.18	1.71	0.95	-0.76
3:00~3:30	5.79	7.09	5.05	2.04	1.30	-0.74
3:30~4:30	5.79	6.44	5.18	1.26	0.65	-0.61
4:00~4:30	5.94	7.20	5.18	2.02	1.26	-0.76
4:30~5:00	6.28	7.20	5.26	1.94	0.92	-1.02
5:00~5:30	6.07	6.99	5.27	1.72	0.92	-0.80
5:30~6:00	5.37	6.99	4.75	2.24	1.62	-0.62
6:00~6:30	4.39	6.10	4.39	1.71	1.71	0.00
6:30~7:00	4.52	5.91	4.29	1.62	1.39	-0.23
7:00~7:30	4.12	5.71	3.99	1.72	1.59	-0.13
7:30~8:00	3.95	5.61	3.37	2.24	1.66	-0.58
8:00~8:30	3.92	5.35	2.71	2.64	1.43	-1.21
8:30~9:00	3.25	5.37	0.03	5.34	2.12	-3.22
9:00~9:30	1.00	5.37	0.01	5.36	4.37	-0.99
9:30~10:00	0.01	5.37	0.01	5.36	5.36	0.00
10:00~10:30	0.01	5.37	0.01	5.36	5.36	0.00
10:30~11:00	0.01	5.85	0.01	5.84	5.84	0.00
11:00~11:30	0.01	5.91	0.01	5.90	5.90	0.00
11:30~12:00	0.01	5.91	0.01	5.90	5.90	0.00
12:00~12:30	0.01	5.89	0.01	5.88	5.88	0.00
12:30~13:00	0.01	5.37	0.01	5.36	5.36	0.00
13:00~13:30	0.01	5.94	0.01	5.93	5.93	0.00
13:30~14:00	0.01	5.26	0.01	5.25	5.25	0.00
14:00~14:30	0.01	5.37	0.01	5.36	5.36	0.00
14:30~15:00	0.01	5.37	0.01	5.36	5.36	0.00
15:00~15:30	0.98	5.37	0.01	5.36	4.39	-0.97
15:30~16:00	3.10	5.37	0.01	5.36	2.27	-3.09
16:00~16:30	4.07	6.12	2.71	3.41	2.05	-1.36
16:30~17:00	4.63	6.33	4.63	1.70	1.70	0.00
17:00~17:30	5.22	8.69	4.63	4.06	3.47	-0.59
17:30~18:00	6.28	8.69	4.63	4.06	2.41	-1.65
18:00~18:30	6.71	9.06	4.43	4.63	2.35	-2.28
18:30~19:00	7.57	9.06	5.20	3.86	1.49	-2.37
19:00~19:30	7.16	9.03	5.67	3.36	1.87	-1.49
19:30~20:00	7.02	9.03	5.26	3.77	2.01	-1.76
20:00~20:30	6.73	8.95	5.18	3.77	2.22	-1.55
20:30~21:00	6.73	8.95	4.95	4.00	2.22	-1.78
21:00~21:30	6.62	8.87	5.67	3.20	2.25	-0.95
21:30~22:00	6.62	8.78	5.25	3.53	2.16	-1.37
22:00~22:30	6.44	8.71	5.25	3.46	2.27	-1.19
22:30~23:00	6.34	8.63	4.95	3.68	2.29	-1.39
23:00~23:30	6.27	7.07	5.18	1.89	0.80	-1.09
23:30~24:00	6.08	6.75	5.05	1.70	0.67	-1.03

©JEPX Day-Ahead Spot Price Charts

OTraded Volumes and Prices (Apr 29 delivery)

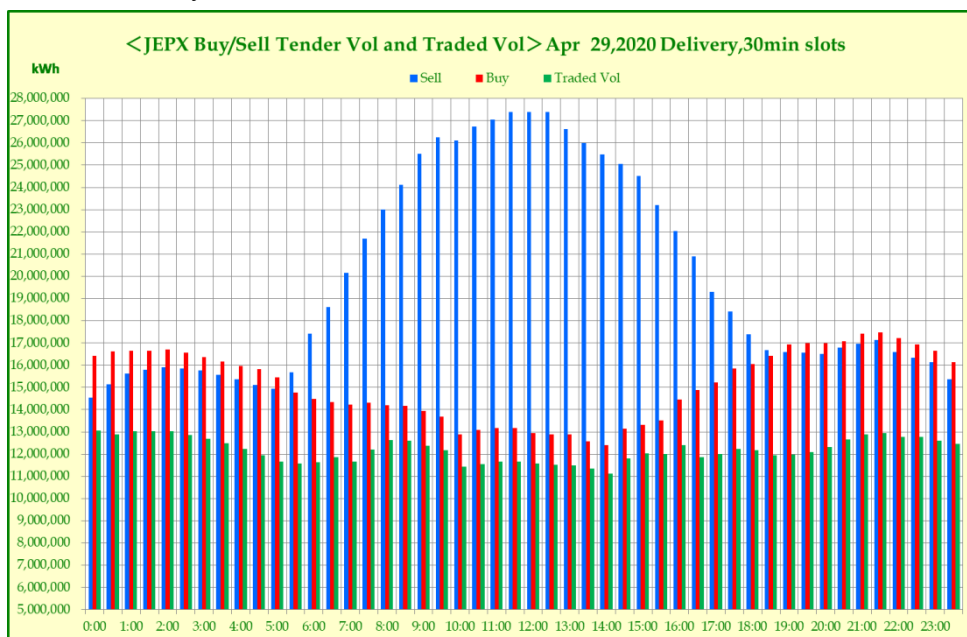
Price divergence for 2 hours (4 windows) between Hokkaido and Tohoku (Kitahon Interconnection Line)
Price divergence for 6.5 hours (13 windows) between Tohoku and Tokyo (Soma-Futaba Interconnection Line)
Price divergence for 24 hours (48 windows) between Tokyo and Chubu (Frequency Converter)
Price divergence for 1.5 hours (3 windows) between Chugoku and Kyushu (Kanmon Interconnection Line)
Traded volumes: 584.96 mil kWh, Actual highest price: Yen 9.06(East Japan), Actual lowest price: Yen 0.01 (West Japan, System Price)



OSell/Buy Tenders and Traded Prices (Apr 29 delivery)

Total offered volumes via sell tenders: 954.62 mil kWh

Total bid volumes via buy tenders: 726.16 mil kWh



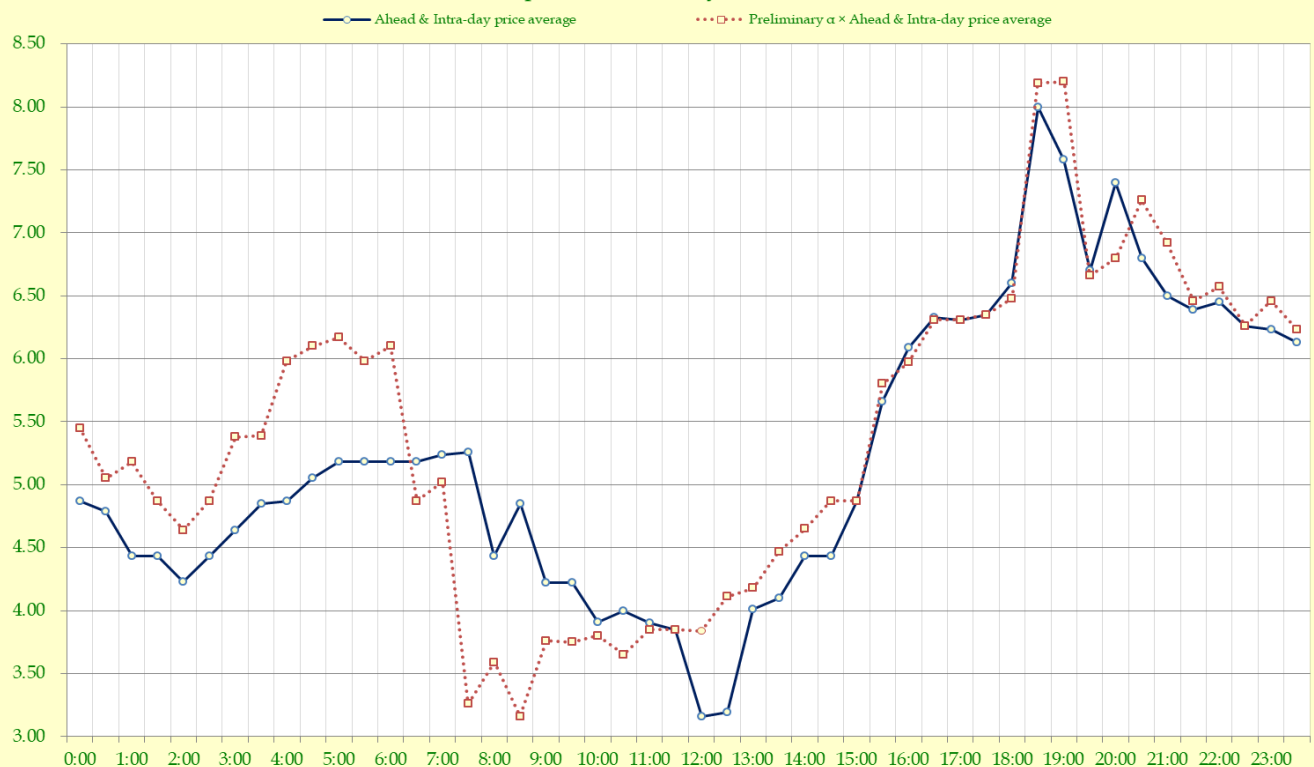
©JEPX [Ahead & Intra-day price average] and [Preliminary $\alpha \times$ Ahead & Intra-day price average]
OApr 23 Delivery

Ahead & Intra-day price average		Preliminary $\alpha \times$ Ahead & Intra-day price average		Preliminary α	
24Hours	5.23	24Hours	5.37	24Hours	1.03
Day time	5.30	Day time	5.29	Day time	1.00
Peak time	4.58	Peak time	4.81	Peak time	1.05
Night time	5.14	Night time	5.49	Night time	1.07

Yen/kWh

	0:00	0:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30
Ahead & Intra-day price average	4.87	4.79	4.43	4.43	4.23	4.43	4.64	4.85	4.87	5.05	5.18	5.18
Preliminary $\alpha \times$ Ahead & Intra-day price average	5.45	5.05	5.18	4.87	4.64	4.87	5.38	5.39	5.98	6.10	6.17	5.98
Preliminary α	1.12	1.05	1.17	1.10	1.10	1.10	1.16	1.11	1.23	1.21	1.19	1.15
	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30
Ahead & Intra-day price average	5.18	5.18	5.24	5.26	4.43	4.85	4.22	4.22	3.91	4.00	3.90	3.85
Preliminary $\alpha \times$ Ahead & Intra-day price average	6.10	4.87	5.02	3.26	3.59	3.16	3.76	3.75	3.80	3.65	3.85	3.85
Preliminary α	1.18	0.94	0.96	0.62	0.81	0.65	0.89	0.89	0.97	0.91	0.99	1.00
	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30
Ahead & Intra-day price average	3.16	3.19	4.01	4.10	4.43	4.43	4.87	5.66	6.09	6.33	6.31	6.35
Preliminary $\alpha \times$ Ahead & Intra-day price average	3.84	4.11	4.18	4.47	4.65	4.87	4.87	5.80	5.97	6.31	6.31	6.35
Preliminary α	1.22	1.29	1.04	1.09	1.05	1.10	1.00	1.02	0.98	1.00	1.00	1.00
	18:00	18:30	19:00	19:30	20:00	20:30	21:00	21:30	22:00	22:30	23:00	23:30
Ahead & Intra-day price average	6.60	8.00	7.58	6.70	7.40	6.80	6.50	6.39	6.45	6.26	6.23	6.13
Preliminary $\alpha \times$ Ahead & Intra-day price average	6.48	8.19	8.20	6.66	6.80	7.26	6.92	6.46	6.57	6.26	6.46	6.23
Preliminary α	0.98	1.02	1.08	0.99	0.92	1.07	1.06	1.01	1.02	1.00	1.04	1.02

<JEPX> [Ahead & Intra-day price average] and [Preliminary $\alpha \times$ Ahead & Intra-day price average]
Apr 23,2020 Delivery,30min slots



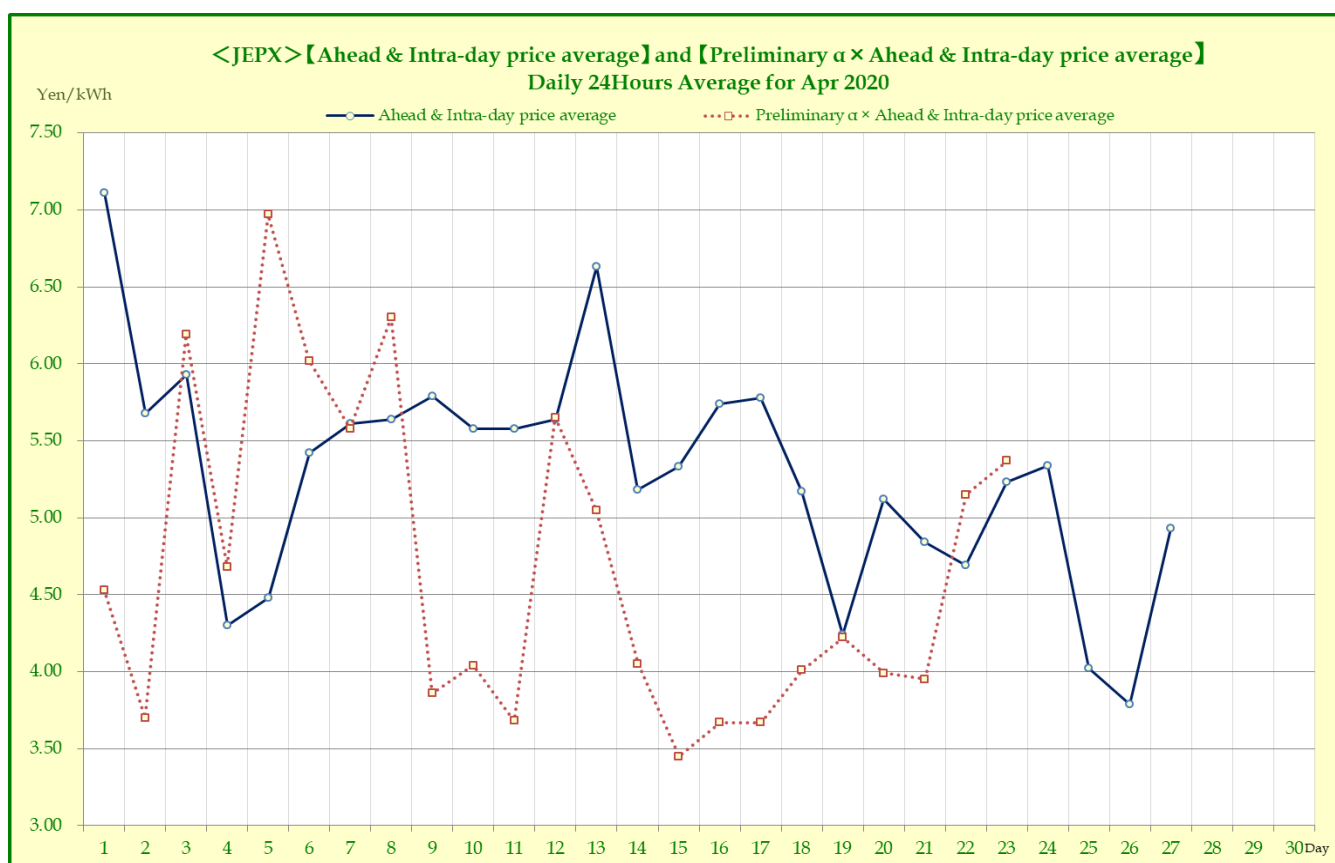
○Apr Delivery • 24Hours

The average price and preliminary alpha factor based on the data obtained on Apr 1-23

*Ahead & Intra-day price average shown for Apr 1-27

Ahead & Intra-day price average (4/1-23)		Preliminary $\alpha \times$ Ahead & Intra-day price average (4/1-23)		Preliminary α (4/1-23)		※Ahead & Intra-day price average (4/1-27)	
24Hours	5.42	24Hours	4.69	24Hours	0.86	24Hours	5.29
Day time	5.31	Day time	4.78	Day time	0.90	Day time	5.12
Peak time	4.23	Peak time	4.20	Peak time	0.99	Peak time	4.00
Night time	5.57	Night time	4.55	Night time	0.82	Night time	5.53

yen/kWh



○Tentative Monthly Imbalance Rates by 9 Regions (Apr)

Tentative Monthly Imbalance Rates as of Apr 1-23

Unit : yen/kWh

	Hokkaido	Tohoku	Tokyo	Chubu	Hokuriku	Kansai	Chugoku	Shikoku	Kyusyu
X (Preliminary $\alpha \times$ the weighted average of Day-ahead and Intra-day prices)	4.69								
β (Median of difference of area price and system price in each month)	1.38	1.38	1.43	-0.94	-0.94	-0.94	-0.98	-0.98	-1.07
K (Incentive index for shortage)	2.98	1.46	1.46	0.49	0.48	0.48	0.48	0.49	0.54
Imbalance fees for shortage ($X + \beta + K$)	9.05	7.53	7.58	4.24	4.23	4.23	4.19	4.20	4.16
L (Incentive index for surplus)	-1.18	-0.43	-0.43	-0.74	-0.71	-0.71	-0.71	-0.72	-0.70
Imbalance compensation for surplus ($X + \beta + L$)	4.89	5.64	5.69	3.01	3.04	3.04	3.00	2.99	2.92

α : Adjustment corresponding to power supply/demand situation for the whole system (exception range=3% of upper and lower limit of bids)

β : Adjustment reflecting the differences in market prices by region

K and L: Incentive index by region (value determined periodically by the Minister of Economy, Trade and Industry)

©Weekly Temperature Forecast at Main Cities
○Apr 29- May 5 Forecast by Meteorological Agency as of Apr 28 11:00
<Temperatures>

The highest temperature was forecast to be mostly flat or above the average year across Japan. Some areas may be much warmer than usual in the middle of the period. The lowest temperature was expected to be similar or below normal early in the period across Japan, and some areas may be way colder than the average year. Later in the period, the day's low will be normal or above the average year, and some areas may be far warmer than normal.

<Weather>

North Japan will be sometimes gripped by high atmospheric pressure with sunshine. But clouds will spread out due to pressure troughs and cold air, with a chance of rains in the first half of the period. In East and West Japan, the weather in the first half of the period will be mostly sunny amid high atmospheric pressure. But pressure troughs and humid air are expected to bring more clouds in the latter half of the period, with a chance of rains in some areas.

City	29-Apr minimum temperature	29-Apr highest temperature	Weather	City	3-May minimum temperature	3-May highest temperature	Weather
Sapporo	6.0	13.0	☀→☁	Sapporo	11.0	20.0	☁
Sendai	7.0	19.0	* / ☁	Sendai	11.0	23.0	☁ / *
Niigata	7.0	17.0	☁→*	Niigata	9.0	20.0	☁ / *
Tokyo	9.0	21.0	*	Tokyo	15.0	24.0	☁
Nagoya	8.0	24.0	*	Nagoya	16.0	23.0	☁
Toyama	8.0	22.0	* / ☁	Toyama	13.0	24.0	☁ / *
Osaka	10.0	22.0	*	Osaka	16.0	23.0	☁
Hiroshima	7.0	22.0	*	Hiroshima	15.0	21.0	☁
Takamatsu	9.0	23.0	*	Takamatsu	15.0	21.0	☁
Fukuoka	10.0	22.0	*	Fukuoka	16.0	22.0	☁ ☂
City	30-Apr minimum temperature	30-Apr highest temperature	Weather	City	4-May minimum temperature	4-May highest temperature	Weather
Sapporo	5.0	18.0	*→☁	Sapporo	9.0	17.0	☁
Sendai	8.0	18.0	* / ☁	Sendai	14.0	21.0	☁ / *
Niigata	5.0	19.0	* / ☁	Niigata	12.0	20.0	☁
Tokyo	11.0	23.0	* / ☁	Tokyo	15.0	24.0	☁
Nagoya	11.0	25.0	*	Nagoya	16.0	24.0	☁
Toyama	8.0	24.0	* / ☁	Toyama	15.0	24.0	☁
Osaka	12.0	25.0	*	Osaka	18.0	25.0	☁
Hiroshima	10.0	24.0	* / ☁	Hiroshima	17.0	26.0	☁ / *
Takamatsu	10.0	23.0	* / ☁	Takamatsu	16.0	25.0	☁
Fukuoka	11.0	24.0	* / ☁	Fukuoka	17.0	24.0	☁
City	1-May minimum temperature	1-May highest temperature	Weather	City	5-May minimum temperature	5-May highest temperature	Weather
Sapporo	9.0	20.0	☁ / *	Sapporo	9.0	16.0	☁
Sendai	9.0	23.0	* / ☁	Sendai	14.0	23.0	☁
Niigata	8.0	22.0	* / ☁	Niigata	11.0	20.0	☁
Tokyo	13.0	26.0	* / ☁	Tokyo	16.0	26.0	☁ / *
Nagoya	13.0	25.0	* / ☁	Nagoya	18.0	26.0	☁ / *
Toyama	11.0	27.0	* / ☁	Toyama	15.0	24.0	☁
Osaka	14.0	25.0	* / ☁	Osaka	19.0	26.0	☁ / *
Hiroshima	12.0	24.0	* / ☁	Hiroshima	16.0	26.0	☁ / *
Takamatsu	11.0	25.0	* / ☁	Takamatsu	16.0	25.0	☁ / *
Fukuoka	14.0	25.0	* / ☁	Fukuoka	16.0	24.0	☁ / *
City	2-May minimum temperature	2-May highest temperature	Weather				
Sapporo	11.0	19.0	☁ ☂				
Sendai	10.0	25.0	* / ☁				
Niigata	10.0	22.0	* / ☁				
Tokyo	14.0	26.0	* / ☁				
Nagoya	14.0	25.0	* / ☁				
Toyama	13.0	28.0	* / ☁				
Osaka	15.0	25.0	☁ / *				
Hiroshima	14.0	24.0	☁				
Takamatsu	12.0	24.0	☁ / *				
Fukuoka	15.0	23.0	☁				

◎9 Area Power Data and Chart
○9 Area Peak Capacity and Rim 24Hours Average Prices
29-Apr,2020 Supply and Demand forecast

Area	Supply Capacity	Peak demand	Reserve rate	Usage	Peak demand time	Temperature forecast(Low/High)
Hokkaido	409	331	23.6%	80.9%	18~19:00	6.0 / 13.0
Tohoku	980	820	19.5%	83.7%	18~19:00	7.0 / 19.0
Tokyo	3,404	2,734	24.5%	80.3%	18~19:00	9.0 / 21.0
East Japan total	4,793	3,885	23.4%	81.1%	-	7.3 / 17.7
Chubu	1,498	1,321	13.4%	88.2%	09~10:00	8.0 / 24.0
Hokuriku	338	309	9.4%	91.4%	04~05:00	8.0 / 22.0
Kansai	1,581	1,420	11.3%	89.8%	19~20:00	10.0 / 22.0
Chugoku	680	615	10.6%	90.4%	04~05:00	7.0 / 22.0
Shikoku	360	285	26.3%	79.2%	04~05:00	9.0 / 23.0
Kyushu	1,038	850	22.1%	81.9%	19~20:00	10.0 / 22.0
West Japan total	5,495	4,800	14.5%	87.4%	-	8.7 / 22.5
9 Area total	10,288	8,685	18.5%	84.4%	-	8.2 / 20.9

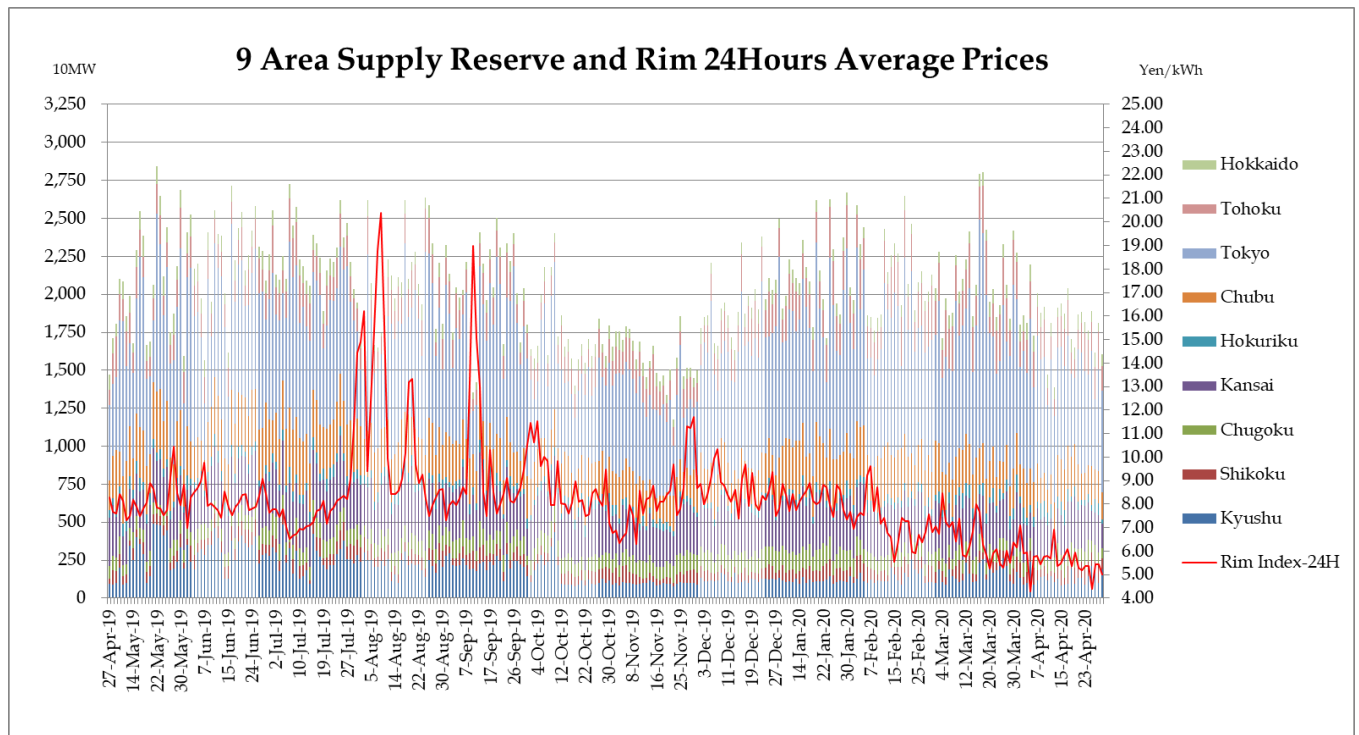
Unit:10MW、Temperature ℃

Temperature Area(Sapporo,Sendai,Tokyo,Nagoya,Osaka,Hroshima,Takamatsu,Fukuoka)

29-Apr-20, Supply Reserve Forecast

※Unit : 10MW,DoD

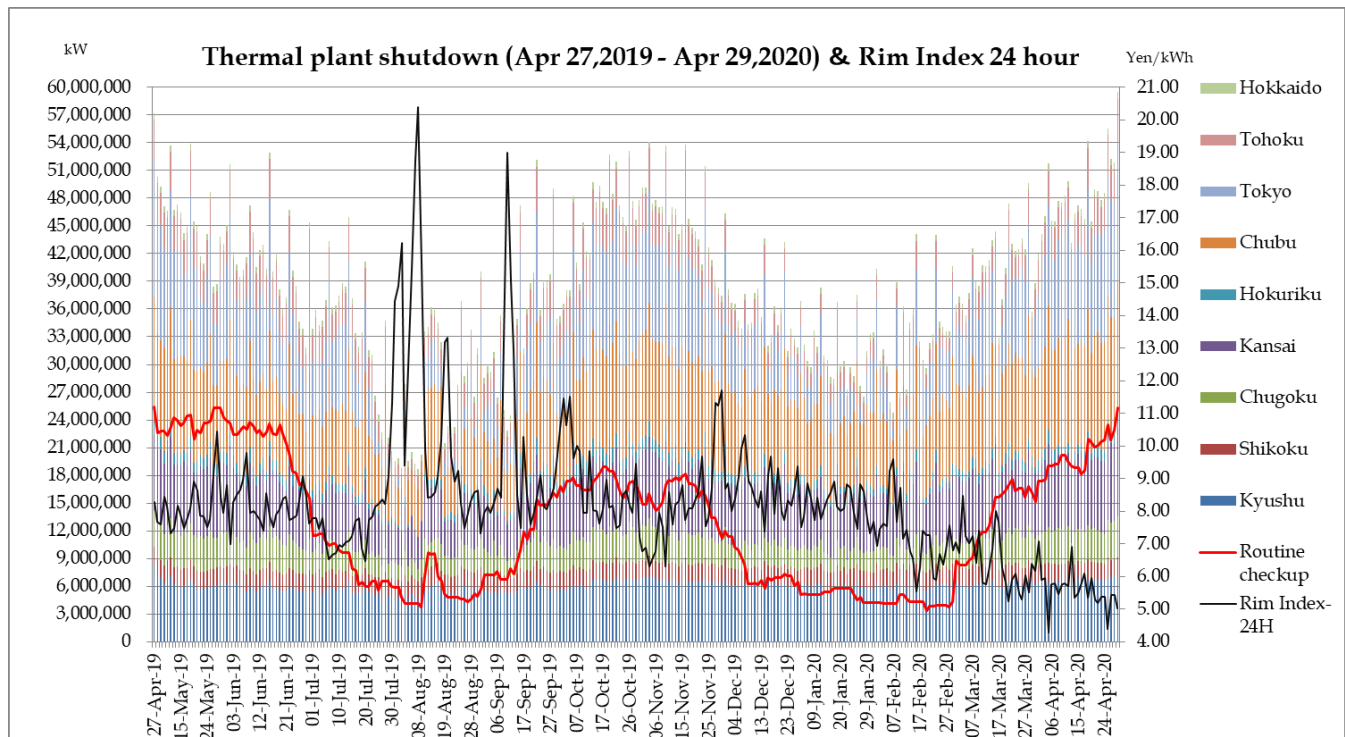
	Total	Hokkaido	Tohoku	Tokyo	Chubu	Hokuriku	Kansai	Chugoku	Shikoku	Kyushu
供給予備力	1,603(-207)	78(+22)	160(-89)	670(-1)	177(-35)	29(-50)	161(-83)	65(-16)	75(-45)	188(+90)



©Latest Status of Thermal Power Stations
OOOperation Updates as of Apr 28

Company	Plant	Area	Fuel	Unit	Output (kW)	Outage	Period	Restart	Update
JERA	Futtsu	Tokyo	Gas	No.1-3	167,000	Planned	27-Apr-20 0:00	27-Apr-20	27-Apr-20 16:40
JERA	Futtsu	Tokyo	Gas	No.1-4	167,000	Planned	27-Apr-20 0:00	27-Apr-20	27-Apr-20 16:41
Facilities of independent power companies									
JFE Steel	Ogishima Power Center at Higashi Nihon Steel Plant	Tokyo	By-Product Gas/Natural Gas/Heavy Oil	No.3	142,000	Planned	28-Apr-20 1:00	30-Apr-20	28-Apr-20 13:06
Tokyo Gas Yokosuka Power	Yokosuka Power Station	Tokyo	Gas	Stand-alone	239,700	Planned	28-Apr-20 20:30	01-Jun-20	28-Apr-20 11:35
Tokyo Gas Yokosuka Power	Yokosuka Power Station	Tokyo	Gas	Stand-alone	239,700	Planned	23-Jun-20 20:30	29-Jun-20	28-Apr-20 12:10
Tokyo Gas Yokosuka Power	Yokosuka Power Station	Tokyo	Gas	Stand-alone	239,700	Planned	29-Dec-20 22:30	04-Jan-21	28-Apr-20 12:08

Nine power utilities in Japan are expected to suspend thermal units with a combined capacity of 59.45 mil kW as of April 29 (National Holiday), Wednesday. Nearly 25.33 mil kW will be off line for planned maintenance while unplanned shutdowns account for a loss of the remaining 34.12 mil kW. In the corresponding point a year before, a combined 57.16 mil kW was idled as of April 27 2019, Saturday, including nearly 25.38 mil kW for planned maintenance and nearly 31.78 mil kW for unplanned suspensions.



©Spark/Dark Spreads and Fuel Cost Netback
○Spark/Dark Spreads

Rim Index (yen/kWh Apr.29)								
24h	DT	Peak	Night					
5.02	4.43	2.68	5.84					
Fuel	thermal efficiency(%)	Fuel Price yen / ton · kl	After tax yen/ton · kl	Generation cost yen/kWh	Spread (yen/kWh)			
					24 hr	DT	Peak	Night
LNG	44.10	10,688	12,548	1.88	+3.14	+2.55	+0.80	+3.96
	50.00			1.65	+3.36	+2.78	+1.03	+4.19
	59.00			1.40	+3.61	+3.03	+1.28	+4.44
Coal	40.50	6,570	7,940	2.75	+2.27	+1.68	-0.07	+3.09
	45.00			2.47	+2.54	+1.96	+0.21	+3.37
Imported CFO	38.40	23,961	23,961	5.45	-0.44	-1.02	-2.77	+0.39
Domestic CFO								
0.3% sulfur	38.40	33,500	33,500	7.62	-2.61	-3.19	-4.94	-1.78
3.0% sulfur	38.40	25,000	25,000	5.69	-0.67	-1.26	-3.01	+0.15
Crude	38.40	16,360	19,160	4.56	+0.46	-0.13	-1.88	+1.28

*1 Rim Index is the average of East Japan prices and West Japan prices.

*2 Thermal efficiency shown in BOLD is the average thermal efficiency for general electric utilities in the fiscal year 2013.

*3 In the section of Fuel Price, LNG is a yen-based conversion from DES North East prices for first-half June delivery published in Rim LNG Report. Coal is a yen-based conversion from a sum of FOB Newcastle prices for May loading and freight rates. Imported CFO is a yen-based conversion from CFR Japan FO 0.3%S prices published in Rim Products Report. Domestic CFO is the average of East Japan prices and West Japan prices for May delivery published in Rim Japan Products Report. Crude Oil is a yen-based conversion from the CIF import price for May delivery estimated by Rim. The exchange rate applied for the yen-based conversion is the TTS (Telegraphic Transfer Selling) Rate published by the MUFJ Bank.

*4 Generation Cost is calculated based on power calorie, fuel calorie, thermal efficiency and fuel prices, and it is so-called marginal cost excluding facility utilization rates.

*5 Spread is calculated by deducting Generation Cost from Rim Index.

*6 The latest Petroleum and Coal Tax (Global Warming Tax) is applied. From Apr 1, 2016, the tax was increased by Yen 760/kl to Yen 2,800/kl for Crude/Refined Products. The tax for Gaseous Hydrocarbon was revised upward by Yen 780/ton to Yen 1,860/ton, while the tax for Coal was up Yen 670/ton at Yen 1,370/ton.

OFuel Cost Netback

Rim Index (Yen/kWh)※1	Delivery	24h	Day time	Peak time	Night time	Yen/\$ (Apr.27)※
	Apr-29	5.02	4.43	2.68	5.84	108.60

	RIM Index		Thermal Efficiency※3	Fuel Cost Netback (DES, CIF)				Fuel Prices※4		Margin
	(Yen/kWh)			\$/mt	\$/mmBtu	\$/bbl	Yen/kl	Apr-27	Unit	
LNG	24h	5.02	44.10%	291.74	5.64			1.90	\$/mmBtu	3.74
			50.00%	333.06	6.44				\$/mmBtu	4.54
			59.00%	396.09	7.66				\$/mmBtu	5.76
	Day time	4.43	44.10%	255.71	4.94				\$/mmBtu	3.04
			50.00%	292.21	5.65				\$/mmBtu	3.75
			59.00%	347.89	6.73				\$/mmBtu	4.83
	Peak time	2.68	44.10%	147.93	2.86				\$/mmBtu	0.96
			50.00%	170.01	3.29				\$/mmBtu	1.39
			59.00%	203.70	3.94				\$/mmBtu	2.04
	Night time	5.84	44.10%	342.55	6.62				\$/mmBtu	4.72
			50.00%	390.67	7.55				\$/mmBtu	5.65
			59.00%	464.07	8.97				\$/mmBtu	7.07
Coal	24h	5.02	40.50%	120.90	4.97			60.50	\$/mt	60.40
			45.00%	135.73	5.58				\$/mt	75.23
	Day time	4.43	40.50%	105.32	4.33				\$/mt	44.82
			45.00%	118.43	4.87				\$/mt	57.93
	Peak time	2.68	40.50%	58.73	2.41				\$/mt	-1.77
			45.00%	66.66	2.74				\$/mt	6.16
	Night time	5.84	40.50%	142.86	5.87				\$/mt	82.36
			45.00%	160.14	6.58				\$/mt	99.64
Imported CFO	24h	5.02	38.40%	180.27	4.48			197.50	\$/mt	-17.23
	Day time	4.43	38.40%	155.87	3.88				\$/mt	-41.63
	Peak time	2.68	38.40%	82.86	2.06				\$/mt	-114.64
	Night time	5.84	38.40%	214.69	5.34				\$/mt	17.19
Crude	24h	5.02	38.40%	173.50	4.51	26.76		25.08	\$/bbl	1.68
	Day time	4.43	38.40%	150.16	3.90	23.16			\$/bbl	-1.92
	Peak time	2.68	38.40%	80.34	2.09	12.39			\$/bbl	-12.69
	Night time	5.84	38.40%	206.41	5.37	31.84			\$/bbl	6.76
Domestic CFO 0.3% sulfur	24h	5.02	38.40%				22,039	33,500	Yen/kl	-11,461
	Day time	4.43	38.40%				19,468		Yen/kl	-14,032
	Peak time	2.68	38.40%				11,778		Yen/kl	-21,722
	Night time	5.84	38.40%				25,665		Yen/kl	-7,835
Domestic CFO 3.0% sulfur	24h	5.02	38.40%				22,039	25,000	Yen/kl	-2,961
	Day time	4.43	38.40%				19,468		Yen/kl	-5,532
	Peak time	2.68	38.40%				11,778		Yen/kl	-13,222
	Night time	5.84	38.40%				25,665		Yen/kl	665

*1 Rim Index is the average of East Japan prices and West Japan prices.

*2 The exchange rate applied for the yen-based conversion is the TTS (Telegraphic Transfer Selling) Rate published by the MUFJ Bank.

*3 Thermal efficiency shown in BOLD is the average thermal efficiency for general electric utilities in the fiscal year 2013.

*4 In the section of Actual Fuel Cost, LNG is a yen-based conversion from DES North East prices for first-half June delivery published in Rim LNG Report. Coal is a yen-based conversion from a sum of FOB Newcastle prices for May loading and freight rates. Imported CFO is a yen-based conversion from CFR Japan FO 0.3%S prices published in Rim Products Report. Crude Oil is a yen-based conversion from the CIF import price for May delivery estimated by Rim. Domestic CFO is the average of East Japan prices and West Japan prices for May delivery published in Rim Japan Products Report.

*5 The latest Petroleum and Coal Tax (Global Warming Tax) is applied. From Apr 1, 2016, the tax was increased by Yen 760/kl to Yen 2,800/kl for Crude/Refined Products. The tax for Gaseous Hydrocarbon was revised upward by Yen 780/ton to Yen 1,860/ton, while the tax for Coal was up Yen 670/ton at Yen 1,370/ton.

◎Power Bid Results(Public Institutions)
○Bid Results

* Eco-friendly regulations

Area of user	* Eco	Estimated demand volumet (kwh)	Contracted power (kw)	Load factor (%)	Contract period	Average price (yen/kwh)	Lowest offer before tax (yen/kwh)
Kanto	*	1,846,900	802	26.3	2020/3/1-2021/2/28	17.2	31,788,834
Chugoku	*	826,000	580	16.3	2020/4/1-2021/3/31	15.6	12,875,575
Kanto	*	1,599,619	1,619	11.3	2020/4/1-2021/3/31	21.3	34,021,181
Kyushu		3,094,173	779	45.2	2019/7/1-2020/6/30	12.5	38,615,767
Kanto		3,317,161	n.a.		2019/11/1-2020/10/31	13.9	46,069,872
Chubu	*	3,635,000	9,920	4.2	2020/4/1-2021/3/31	24.1	87,684,504
Shikoku		31,100	39	9	2020/4/1-2021/3/31	19.0	590,102
Shikoku		119,600	155	8.8	2020/4/1-2021/3/31	18.7	2,230,896
Shikoku		129,500	85	17.4	2020/4/1-2021/3/31	15.0	1,938,002
Shikoku		180,000	157	13.1	2020/4/1-2021/3/31	16.4	2,951,632
Shikoku		136,600	120	13.0	2020/4/1-2021/3/31	16.4	2,236,847
Shikoku		108,300	134	9.2	2020/4/1-2021/3/31	18.4	1,990,251
Shikoku		83,400	89	10.7	2020/4/1-2021/3/31	17.2	1,431,752
Shikoku		128,300	123	11.9	2020/4/1-2021/3/31	16.7	2,144,597
Shikoku		81,700	44	21.2	2020/4/1-2021/3/31	14.1	1,152,940
Shikoku		112,400	108	11.9	2020/4/1-2021/3/31	16.8	1,890,903

* Eco-friendly regulations

Area of user	* Eco	Estimated demand volumet (kwh)	Contracted power (kw)	Load factor (%)	Contract period	Average price (yen/kwh)	Lowest offer before tax (yen/kwh)
Shikoku		280,500	221	14.5	2020/4/1-2021/3/31	15.7	4,393,693
Chubu		33,825,314	7,897	48.8	2020/4/1-2021/3/31	14.5	489,913,385
Chubu		44,102,194	11,053	45.4	2020/4/1-2021/3/31	14.7	650,190,565
Kansai	*	n.a.	n.a.	n.a.	2020/4/1-2021/3/31	-	137,375,128
Kansai	*	2,181,303	500	50	2020/4/1-2021/3/31	11.8	25,685,050
Kansai	*	11,406,621	4,522	29	2020/4/1-2021/3/31	13.4	152,502,898
Chubu		1,469,940	376	45	2020/3-2021/3	17.4	25,566,015
Kansai	*	2,878,000	1,190	27.6	2020/4/1-2021/3/31	11.9	34,334,469
Chubu	*	550,700	209	30.1	2020/4/1-2021/3/31	15.2	8,349,700
Chubu	*	29,908,000	n.a.		2020/4/1-2021/3/31	13.9	416,289,768
Chubu	*	42,234,000	n.a.		2020/4/1-2021/3/31	13.0	547,485,645
Chubu	*	18,867,000	n.a.		2020/4/1-2021/3/31	14.5	274,160,612

©Japan Power Demand by Region
○Apr 27 2020

※Power demand graphs every Friday

Japan power demand by region

Apr 27 2020

Area	MW	on prev day	on year	MWh	on prev day	on year
Hokkaido	3,445	7.7%	-1.3%	77,053	8.1%	-2.4%
Tohoku	9,282	10.9%	-0.4%	199,405	9.9%	-4.6%
Tokyo	32,309	18.3%	1.6%	658,104	16.1%	-1.6%
Chubu	14,986	30.9%	14.4%	304,235	22.8%	5.4%
Hokuriku	3,344	15.2%	6.3%	71,319	16.1%	1.3%
Kansai	15,696	15.2%	4.3%	327,523	11.6%	-0.2%
Chugoku	6,270	3.6%	3.9%	139,655	8.6%	3.4%
Shikoku	2,997	7.2%	8.6%	64,987	13.5%	7.0%
Kyushu	8,974	7.3%	0.9%	199,108	11.7%	0.5%
Total	97,303	15.7%	4.0%	2,041,390	14.3%	0.2%

Unit:Maximum power demand in MW, daily demand in MWh

Total Japan Power Output

The totals from Apr 1 to 27

Area	output	year ago	on year
Hokkaido	2,117,150	2162639	-2.1%
Tohoku	5,714,210	5,882,257	-2.9%
Tokyo	18,675,258	19,568,741	-4.6%
Chubu	8,783,286	9,492,075	-7.5%
Hokuriku	2,056,793	2,135,768	-3.7%
Kansai	9,501,786	10,058,766	-5.5%
Chugoku	4,037,071	4,135,444	-2.4%
Shikoku	1,840,025	1,838,454	0.1%
Kyushu	5,607,430	5,734,381	-2.2%
Total	58,333,009	61,008,526	-4.4%

Unit:MWh

©Market News
○Fuel
Benchmark Crudes: Brent and WTI fall on high crude inventories

Benchmark Brent crude futures fell on Tuesday. The June Brent crude oil futures contract in after-hours trading at 15:30 Tokyo time was at \$19.04 per barrel (bbl), down 95cts from the closing price of the previous day. The June WTI contract in overnight NYMEX ACCESS trade was \$11.14 per bbl, down 95cts from the previous day. Meanwhile in the Dubai OTC market, the June cash Dubai was quoted at \$16.85 per bbl, down 96cts from the same time the previous day.

Brent crude contracts dropped. US crude inventories remained high which was regarded as a bearish factor and triggered selling in both WTI and Brent crude contracts.

Meanwhile, regarding the outlook for the front-month Brent crude contract, Hiroyuki Kikukawa, a general manager research department at Nissan Securities, said prices would not rise and fall largely and would move within the ranges between \$16-22. While US crude storage capacity has been limited, selling would increase in the WTI crude contracts ahead of the expiry of the front-month contract. In line with WTI, selling could emerge in the Brent crude contracts, so that prices were unlikely to be in an upward trend. "Meanwhile, US equity market is in an upward trend, which would support the crude oil market. Thus, prices are unlikely to fall sharply," Kikukawa said.

Nine power utilities reduce final fuel cost adjustment for June on weaker crude, coal

Nine power utilities in Japan finalized fuel cost adjustment for June 2020. All of the nine utilities lowered the adjustment factors from the previous month in reaction to the weaker fuel price average. Crude oil dropped for a first month in four, while coal stretched a losing streak to 15 months. LNG increased moderately for a first month in two.

The three-month fuel price average over Jan-Mar 2020, a criterion to determine fuel cost adjustment for nine power utilities in June 2020, fell by Yen 700 from Dec 2019-Feb 2020 for Hokkaido, by Yen 500 for Hokuriku and Shikoku, by Yen 400 for Chugoku, by Yen 300 for Tohoku and Tokyo, by Yen 200 for Kyushu, and by Yen 100 for Chubu and Kansai. Kansai and Kyushu dropped for 15 months in a row, while Chubu was down for a second straight month. Hokkaido, Tohoku, Tokyo, Hokuriku and Chugoku decreased for a first month in four, while Shikoku's dip came for a first month in three.

The three-month price average for each fuel was at Yen 46,335 per kiloliter for crude oil, declining for a first month in four by Yen 1,192 from the previous month. LNG edged up by Yen 15 to Yen 52,922 per ton, increasing marginally for a first month in two. Coal tumbled for 15 consecutive months by Yen 211 to Yen 9,931 per ton, slipping off the Yen 10,000 mark for the first time in three years and three months since the fuel cost adjustment for March 2017.

According to the revised preliminary trade statistics for March 2020 released by the Japan's Ministry of Finance, crude oil plummeted by Yen 6,211 from the previous month to Yen 42,437 per kiloliter, showing the month-on-month decline for a first month in six. LNG was up Yen 448 to Yen 53,358 per ton, rising for a second straight month. Coal sank by Yen 504 to Yen 9,547 per ton, posting the month-on-month drop in two months in a row. Coal failed to maintain the Yen 10,000 mark for the first time since Yen 8,901 in November 2016.

Among nine power utilities, TEPCO Fuel & Power said its average fuel prices over Jan-Mar 2020 was at Yen 35,100, down Yen 300 from Dec 2019-Feb 2020, and down Yen 9,100 from its own base price. The unit prices of fuel cost adjustment for June 2020 were at minus Yen 2.11/kWh for low voltage power, down Yen 0.07 from the previous month, minus Yen 2.04/kWh for high voltage power, down Yen 0.07, and minus Yen 2.01 for extra high voltage power, down Yen 0.07. Fuel cost adjustment is reflected into the company's revenue, so any upward or downward cost adjustment will push up or down the revenue.

The average fuel prices are based on the three-month average of CIF import prices of crude oil, LNG and coal (thermal coal) from three to five months prior to the price adjustment month released by the Ministry of Finance in Japan. Nine power utilities calculate the average fuel prices by using own alpha factors on top of the three-month price average and determine fuel cost adjustment.

Average Fuel Prices & Fuel Cost Adjustment, June-20									
	Average Fuel Prices			Fuel Cost Adjustment					
	Jan 20 - Mar 20	vs Dec 19 - Feb 20	vs Base Prices	Low Voltage Power	MoM	High Voltage Power	MoM	Extra-High Voltage Power	MoM
Hokkaido	29,600	-700	-7,600	-1.50	-0.14	-1.44	-0.14	-1.40	-0.13
Tohoku	27,000	-300	-4,400	-0.97	(0.06)	-0.94	(0.07)	-0.91	(0.07)
Tokyo	35,100	-300	-9,100	-2.11	-0.07	-2.04	-0.07	-2.01	-0.07
Chubu	30,900	-100	-15,000	-3.50	(0.03)	-3.35	(0.03)	-3.30	(0.02)
Hokuriku	22,000	-500	100	0.02	-0.08	0.02	-0.07	0.02	-0.07
Kansai	26,300	-100	-800	-0.13	-0.01	-0.13	-0.02	-0.12	-0.01
Chugoku	23,800	-400	-2,200	-0.53	(0.10)	-0.51	(0.09)	-0.50	(0.09)
Shikoku	23,100	-500	-2,900	-0.57	-0.10	-0.55	-0.10	-0.53	-0.09
Kyushu	20,800	-200	-6,600	-0.90	-0.03	-0.86	-0.03	-0.84	-0.02
Unit : Average Fuel Prices(Yen/kl) , Fuel Adjustment Cost(Yen/kWh)									

Base Prices				
	Average Fuel Prices	Fuel Cost Adjustment		
		Low Voltage Power	High Voltage Power	Extra-High Voltage Power
Hokkaido	37,200	0.197	0.189	0.184
Tohoku	31,400	0.221	0.213	0.206
Tokyo	44,200	0.232	0.224	0.221
Chubu	45,900	0.233	0.223	0.220
Hokuriku	21,900	0.161	0.152	0.150
Kansai	27,100	0.165	0.158	0.156
Chugoku	26,000	0.245	0.234	0.227
Shikoku	26,000	0.196	0.188	0.183
Kyushu	27,400	0.136	0.130	0.128
Unit : Average Fuel Prices(Yen/kl) , Fuel Adjustment Cost(Yen/kWh)				

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