

☆RIM POWER INTELLIGENCE DAILY

★No.1579 Jan 30 2020

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--TOKYO, 16:00 JST Jan 30 2020<Assessment Closing Time>

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ORenewal of Rim's Website

Rim Intelligence has renewed our website on Oct 7, Monday. Before the renewal, we will transfer the server of our website on Oct 6, Sunday. Although we do not change the URL(<https://eng.rim-intelligence.co.jp/index/top>) of the top page, some URLs for our reports or market news pages will be changed. Therefore, in case you have bookmarked some URLs in our website, please bookmark again after the website is renewed on Oct 7.

Moreover, the URL of Rim Trading Board will be changed, but you can jump to the new page automatically when you access the current page. Please bookmark the new URL.

If you have any questions, please feel free to contact us.

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©RECX-22 index

RECX-22 index for Thursday was 95.92, up 0.99 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								
Jan 31 2020	East Japan			DOD	West Japan			DOD
24 Hours	7.57	-	8.57	+0.14	6.78	-	7.78	+0.55
Day Time	8.05	-	9.05	+0.19	6.98	-	7.98	+0.47
Peak Time	6.89	-	7.89	+0.22	5.16	-	6.10	+0.47
Night Time	6.90	-	7.90	+0.08	6.50	-	7.50	+0.66
Yen/kWh								

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

○ Rim Index Day-Ahead Monthly Average Prices						
Jan-2020	East Japan	MOM	West Japan	MOM	East-West Average	MOM
24 Hours	8.33	-0.44	7.17	-0.59	7.75	-0.52
Day Time	8.86	-0.60	7.50	-0.56	8.18	-0.58
Peak Time	7.86	-0.65	6.22	-0.53	7.04	-0.59
Night Time	7.60	-0.21	6.72	-0.63	7.16	-0.42
Yen/kWh						

○ Rim Index Forward Prices					
Month	24 Hours	DOD	Month	24 Hours	DOD
Mar-20	8.34	0.00	Nov-20	8.15	+0.01
Apr-20	8.43	0.00	Dec-20	9.10	0.00
May-20	8.50	-0.05	Jan-21	9.06	+0.01
Jun-20	8.46	-0.04	Feb-21	9.04	0.00
Jul-20	9.32	-0.02	Mar-21	7.97	0.00
Aug-20	9.19	0.00	Apr-21	7.94	0.00
Sep-20	8.65	0.00	May-21	7.88	+0.01
Oct-20	8.19	+0.01			

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	Jan-31-2020		DOD	WOW
24 Hours Average	Yen/kWh	7.50	+0.27	-0.43
Day Time Average	Yen/kWh	7.72	+0.31	-0.33
Peak Time Average	Yen/kWh	6.17	+0.35	-1.21
Total Traded Volumes	kWh	938,741,100	+13,287,650	-8,406,600

*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
	Mar-20	DOD	Apr-20	DOD	May-20	DOD	Jun-20	DOD	Jul-20	DOD
A	8.38	-0.11	8.45	-0.10	8.40	-0.05	8.50	-0.05	9.41	-0.05
C	9.71	0.00	9.49	0.00	9.83	0.00	10.08	0.00	11.86	0.00
D	9.06	0.00	8.15	0.00	8.01	0.00	8.41	0.00	9.76	0.00
E	8.46	0.00	8.28	0.00	8.29	0.00	8.58	0.00	8.58	0.00
F	8.59	0.00	8.56	0.00	8.32	0.00	9.03	0.00	10.59	0.00
Ave.	8.70	-0.01	8.43	-0.03	8.34	-0.01	8.70	-0.02	9.92	-0.02
	Jul-20	DOD	Aug-20	DOD	Sep-20	DOD	Oct-20	DOD	Nov-20	DOD
A	9.05	-0.06	8.70	-0.05	8.19	-0.05	8.11	-0.04	9.01	-0.02
C	11.61	-0.01	9.11	-0.01	9.54	0.00	9.56	-0.01	10.38	0.00
D	9.86	0.00	9.43	0.00	8.80	0.00	8.69	0.00	9.61	0.00
E	9.01	0.00	8.88	0.00	8.84	0.00	8.94	0.00	9.19	0.00
F	10.67	0.00	9.38	0.00	9.04	0.00	9.22	0.00	9.58	0.00
Ave.	9.86	-0.02	9.12	-0.01	8.89	0.00	8.95	0.00	9.46	0.00
	Dec-20	DOD	Jan-21	DOD	Feb-21	DOD	Mar-21	DOD	Apr-21	DOD
A	9.05	-0.03	9.01	-0.02	8.03	-0.02	7.97	-0.01	7.80	-0.01
C	10.78	-0.01	11.08	0.00	9.30	-0.01	9.23	0.00	9.48	-0.01
D	9.78	0.00	9.85	0.00	8.99	0.00	8.16	0.00	8.03	0.00
E	9.29	0.00	8.96	0.00	8.38	0.00	8.14	0.00	7.98	0.00
F	9.82	0.00	9.92	0.00	8.52	0.00	8.66	0.00	8.22	0.00
Ave.	9.63	0.00	9.59	-0.01	8.63	0.00	8.32	0.00	8.08	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
	Mar-20	DOD	Apr-20	DOD	May-20	DOD	Jun-20	DOD	Jul-20	DOD
A	9.25	-0.12	9.25	-0.11	9.71	-0.06	9.64	-0.06	12.81	-0.07
C	10.35	0.00	10.08	0.00	10.63	0.00	11.12	0.00	14.39	0.00
D	9.78	0.00	8.75	0.00	8.61	0.00	8.95	0.00	10.28	0.00
E	8.74	0.00	8.62	0.00	8.72	0.00	9.24	0.00	9.91	0.00
F	9.37	0.00	9.09	0.00	8.74	0.00	9.80	0.00	13.26	0.00
Ave.	9.47	-0.04	9.03	-0.04	9.06	-0.02	9.56	-0.02	12.12	-0.02
	Aug-20	DOD	Sep-20	DOD	Oct-20	DOD	Nov-20	DOD	Dec-20	DOD
A	12.48	-0.08	10.78	-0.06	9.43	-0.06	8.97	-0.05	10.38	-0.03
C	14.04	0.00	10.55	-0.01	10.45	-0.01	10.30	0.00	11.23	-0.01
D	10.36	0.00	9.91	0.00	9.58	0.00	9.54	0.00	10.72	0.00
E	10.40	0.00	9.87	0.00	9.50	0.00	9.33	0.00	9.76	0.00
F	13.53	0.00	10.92	0.00	9.98	0.00	9.86	0.00	10.63	0.00
Ave.	12.14	-0.02	10.41	-0.03	9.69	0.00	9.58	0.00	10.58	-0.01
	Jan-21	DOD	Feb-21	DOD	Mar-21	DOD	Apr-21	DOD	May-21	DOD
A	10.91	-0.03	10.30	-0.02	8.82	-0.02	8.74	-0.01	8.96	-0.01
C	11.64	-0.01	11.90	0.00	9.94	-0.01	9.82	0.00	10.28	-0.01
D	10.96	0.00	10.98	0.00	10.16	0.00	8.92	0.00	8.65	0.00
E	9.86	0.00	9.38	0.00	8.65	0.00	8.45	0.00	8.36	0.00
F	11.01	0.00	11.16	0.00	9.24	0.00	9.03	0.00	8.52	0.00
Ave.	10.96	-0.01	10.81	-0.01	9.33	-0.01	8.90	0.00	8.71	0.00

*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
020/01	8.23	-	-	-	-	-0.06	-	8.17
Feb-2020	9.15	-	-	-	-	-0.02	-	9.13
Mar-2020	8.78	-	-	-	-	+0.04	-	8.82
Apr-2020	8.89	-	-	-	-	+0.02	-	8.91
May-2020	8.89	-	-	-	-	0.00	-	8.89
Jun-2020	9.15	-	-	-	-	+0.01	-	9.16
Jul-2020	10.64	-	-	-	-	-0.01	-	10.63
Aug-2020	10.32	-	-	-	-	0.00	-	10.32
Sep-2020	9.03	-	-	-	-	+0.00	-	9.03
Oct-2020	8.54	-	-	-	-	+0.00	-	8.54
Nov-2020	8.76	-	-	-	-	0.00	-	8.76
Dec-2020	9.17	-	-	-	-	-0.01	-	9.16
Jan-2021	9.58	-	-	-	-	-0.02	-	9.56
Feb-2021	10.14	-	-	-	-	-0.02	-	10.12
Mar-2021	9.03	-	-	-	-	+0.03	-	9.06
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
Jan-2020	7.34	-	-	-	-	-0.05	-	7.29
Feb-2020	8.65	-	-	-	-	-0.02	-	8.63
Mar-2020	7.92	-	-	-	-	0.00	-	7.92
Apr-2020	8.48	-	-	-	-	-0.02	-	8.46
May-2020	7.54	-	-	-	-	-0.02	-	7.52
Jun-2020	8.29	-	-	-	-	-0.01	-	8.28
Jul-2020	9.30	-	-	-	-	-0.01	-	9.29
Aug-2020	8.73	-	-	-	-	+0.01	-	8.74
Sep-2020	7.22	-	-	-	-	+0.01	-	7.23
Oct-2020	7.42	-	-	-	-	+0.02	-	7.44
Nov-2020	7.99	-	-	-	-	+0.02	-	8.01
Dec-2020	8.73	-	-	-	-	-0.01	-	8.72
Jan-2021	9.29	-	-	-	-	-0.04	-	9.25
Feb-2021	8.70	-	-	-	-	-0.02	-	8.68
Mar-2021	7.70	-	-	-	-	-0.01	-	7.69
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
Jan-2020	9.35	-	-	-	-	-0.08	-	9.27
Feb-2020	10.06	-	-	-	-	0.00	-	10.06
Mar-2020	9.71	-	-	-	-	0.00	-	9.71
Apr-2020	9.63	-	-	-	-	+0.06	-	9.69
May-2020	10.06	-	-	-	-	+0.01	-	10.07
Jun-2020	10.33	-	-	-	-	0.00	-	10.33
Jul-2020	14.16	-	-	-	-	-0.02	-	14.14
Aug-2020	13.53	-	-	-	-	-0.02	-	13.51
Sep-2020	10.70	-	-	-	-	-0.01	-	10.69
Oct-2020	10.29	-	-	-	-	0.00	-	10.29
Nov-2020	10.28	-	-	-	-	-0.01	-	10.27
Dec-2020	10.57	-	-	-	-	0.00	-	10.57
Jan-2021	11.32	-	-	-	-	-0.02	-	11.30
Feb-2021	11.64	-	-	-	-	-0.02	-	11.62
Mar-2021	9.91	-	-	-	-	0.00	-	9.91
Total							-	

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
Jan-2020	8.34	-	-	-	-	-0.06	-	8.28
Feb-2020	9.37	-	-	-	-	-0.01	-	9.36
Mar-2020	8.14	-	-	-	-	+0.01	-	8.15
Apr-2020	8.35	-	-	-	-	+0.01	-	8.36
May-2020	8.57	-	-	-	-	+0.02	-	8.59
Jun-2020	9.11	-	-	-	-	+0.02	-	9.13
Jul-2020	12.32	-	-	-	-	+0.03	-	12.35
Aug-2020	11.24	-	-	-	-	+0.04	-	11.28
Sep-2020	9.12	-	-	-	-	+0.04	-	9.16
Oct-2020	8.94	-	-	-	-	+0.04	-	8.98
Nov-2020	9.73	-	-	-	-	+0.04	-	9.77
Dec-2020	10.55	-	-	-	-	-0.01	-	10.54
Jan-2021	11.30	-	-	-	-	-0.03	-	11.27
Feb-2021	10.29	-	-	-	-	0.00	-	10.29
Mar-2021	8.61	-	-	-	-	+0.05	-	8.66
Total							-	

©Market Summary
○Summary
<Day-ahead delivery Jan 31>
Prices rise across the board on lower temp forecast

Rim Index for Day-ahead delivery strengthened across time zone in both East and West Japan. For Jan 31 delivery, the 24 hours average firmed up by Yen 0.14 from the previous day to Yen 8.07 in East Japan and by Yen 0.55 to Yen 7.28 in West Japan. The East-West spread was at Yen 0.79 in favor of the East, shrinking Yen 0.41 from Yen 1.20 for Jan 30 delivery.

On Jan 29-30, the highest temperature in Tokyo was at 17-18 degrees, unseasonably warm for winter, but was forecast to drop to 11-13 degrees on Jan 31. The temperatures would still remain above the average year, but a disappearance of spring climate in the last few days was expected to boost heating demand and push up the market. In Tohoku, the highest temperature in the southern part was at 11-13 degrees on Jan 30, surpassing the 10-degree mark, but was forecast to fall off the 10-degree mark to 7-9 degrees on Jan 31, leading to the outlook for increased heating demand. In Hokkaido, temperatures on Jan 31 were forecast to be slightly colder than Jan 30, most regions would remain gripped by snowy weather like Jan 30. West Japan as well was expected to see a decline in the highest temperature on Jan 31. In Nagoya and Osaka, the highest temperature would be at 10 degrees on Jan 31, down from 13 degrees on Jan 30, so heating demand was likely to pick up. In both East and West Japan, solar power supply was expected to remain stable, so power prices generally hovered in the Yen 6 level in Tokyo and Yen 5 level in Kansai during day time (08:00-16:00 hours). But prices in both East and West Japan were mostly pegged in the Yen 9 level in later hours with an expected decrease in solar power supply. A source at a power producer and supplier said, "the market's rise was relatively small as expected," adding that a disappearance of unusually warm temperatures was expected to stimulate demand, but the market was still left undervalued.

By time zone, the day time average crept up by Yen 0.19 to Yen 8.55 in East Japan and by Yen 0.47 to Yen 7.48 in West Japan. The peak time average firmed up by Yen 0.22 to Yen 7.39 in East Japan and by Yen 0.47 to Yen 5.63 in West Japan. The night time average gained Yen 0.08 to Yen 7.40 in East Japan and Yen 0.66 to Yen 7.00 in West Japan.

By region, the 24-hour average eased by Yen 0.49 to Yen 11.66 in Hokkaido. But the 24-hour average rose by Yen 0.21 to Yen 7.74 in Tohoku and Tokyo, by Yen 0.60 to Yen 7.34 in five areas including Chubu, Hokuriku, Kansai, Chugoku and Shikoku, and by Yen 0.29 to Yen 7.00 in Kyushu. The intraday high in prices was at Yen 22.81 in Hokkaido during 16:00-17:00 hours, Yen 9.96 in Tohoku and Tokyo in one window during 17:30-18:00 hours, Yen 10.08 in five areas including Chubu, Hokuriku, Kansai, Chugoku and Shikoku during 17:30-18:00 hours, and Yen 8.63 in Kyushu in a total of 12 windows during 06:30-09:00, 16:30-17:00, 17:30-18:30, 19:00-19:30, 21:00-21:30 and 22:00-23:00 hours. Meanwhile, the intraday low in prices was at Yen 6.48 in Hokkaido during 01:00-03:00 hours, Yen 6.08 in Tohoku and Tokyo during 12:00-13:00 hours, and Yen 4.71 in six areas in West Japan during 12:30-13:00 hours.

In relation to thermal power plants, Itoigawa Power was poised to restart the 149-MW coal-fired Itoigawa power station in Niigata prefecture in Tohoku on Feb 2. The unit was shut down for an unplanned checkup on Jan 26. In Tokyo, JERA was scheduled to send back on line the 160-MW No5 LNG-fired unit in the No2 train at its Futtsu power station in Chiba prefecture on Feb 3. The unit entered regular maintenance on Jan 26. Meanwhile, Hokkaido EPC suspended the 350-MW No2 oil-fired unit at its Date power station on Jan 25 due to a boiler disorder, but it remained unclear when the unit would resume operation as of 16:30 hours on Jan 30. On Jan 31, Kyushu would see one 360-MW coal-fired unit and one 255-MW unit fed

with blast furnace gas being sent back in service. The unit startups would further beef up power supply, a factor that pared the rise in power prices in Kyushu for Jan 31 delivery.

For Jan 31 delivery, volumes of power offered through sell tenders were 1,100.53 mil kWh, down 0.7% from the previous day. Meanwhile, volumes of power bid through buy tenders were 1,108.12 mil kWh, almost stable from the previous day. Offers and bids almost matched in terms of volumes. Offers outpaced bids during 00:00-05:30 and 10:00-16:00 hours, but bids outstripped offers during 05:30-10:00 and 16:00-24:00 hours.

According to one-month weather forecasts during Feb 1-29 released by the Japan Meteorological

Agency at 14:30 hours on Jan 30, the temperatures would be flat or above the average year in North Japan and higher than the average year in East and West Japan. Especially in East and West Japan, the temperatures were expected to be warmer than the average year with a 70% possibility, indicating warm winter would persist in February. Meanwhile, cold regions were forecast to have less snowfalls. In East to West Japan alongside the Sea of Japan, snowfalls were expected to be lighter than the average year with a 70% possibility. Following the bearish weather forecast, a source at a power producer and supplier said, "Spot prices in January hit the record low, but February will be almost the same situation."

OThermal Power Plant Situation

Joban advances Nakoso No10 unit restart to Jan 30

Joban Joint Power sent back on line the 250-MW No10 coal-fired unit with the integrated coal gasification combined cycle (IGCC) at its Nakoso power station in Fukushima prefecture on Jan 30 following a completion of regular maintenance. The restart was scheduled on Feb 2 as of Jan 29. The unit entered the checkup on Sep 4, 2019.

On Jan 31, one 149-MW thermal unit in East Japan would be suspended while West Japan would see three units with a combined capacity at 1,215-MW back in operation. As mentioned in Market Commentary, two units with a combined capacity at 615-MW out of three were located in Kyushu.

On Feb 1, four thermal units with a combined capacity at 1,294-MW in West Japan would be sent off line. Meanwhile, one 700-MW unit in West Japan would resume operation.

On Feb 2, one 149-MW thermal unit in West Japan would be shut down. Meanwhile, one 149-MW unit in East Japan and two units with a combined capacity at 234-MW in West Japan would be restarted. As mentioned in Market Commentary, Itoigawa Power was poised to restart the 149-MW coal-fired Itoigawa power station in Niigawa prefecture in Tohoku on Feb 2. The unit was sent off line for unplanned maintenance on Jan 26.

Thermal Power Plants:Operation forecast Jan 31

Company	Plant	Area	Fuel	Unit	Output(kW)	Outage	Period	Restart	Update
Shutdown									
JFE Steel Corporation	Chiba Combined	Tokyo	Gas	-	149,000	Planned	31-Jan-20 22:00	03-Feb-20	30-Jan-20 13:48
Restart									
Kansai Electric Power Company	Ako	Kansai	Oil	No.2	600,000	Planned	29-Jan-20 9:00	31-Jan-20	29-Jan-20 18:35
Kyushu Electric Power Company	Karita	Kyushu	Cosl	No.1	360,000	Planned	12-Oct-19 6:00	31-Jan-20	09-Oct-19 16:04
Oita Co-operative Thermal Power Company	Oita kyodo	Kyushu	Gas	N0.1	25,500	Unplanned	05-Nov-19 22:39	31-Jan-20	24-Jan-20 17:06

Thermal Power Plants:Operation forecast Feb 1

Company	Plant	Area	Fuel	Unit	Output(kW)	Outage	Period	Restart	Update
Shutdown									
JERA Company	Kawagoe	Chubu	Gas	No.2	700,000	Planned	01-Feb-20 0:00	01-Feb-20	20-Jan-20 11:32
	Yokkaichi	Chubu	Gas	No.4-3	117,000	Planned	01-Feb-20 0:00	02-Feb-20	25-Feb-19 13:57
				No.4-5	117,000	Planned	01-Feb-20 0:00	02-Feb-20	30-Jan-20 14:22
Kyushu Electric Power Company	Karita	Kyushu	Coal	No.1	360,000	Planned	01-Feb-20 0:00	27-Jun-20	09-Oct-19 16:04
Restart									
JERA Company	Kawagoe	Chubu	Gas	No.2	700,000	Planned	01-Feb-20 0:00	01-Feb-20	20-Jan-20 11:32

Thermal Power Plants:Operation forecast Feb 2

Company	Plant	Area	Fuel	Unit	Output(kW)	Outage	Period	Restart	Update
Shutdown									
JXTG Nippon Oil & Energy Corporation	Marifu No.2 Plant	Chugoku	Oil	-	149,000	Planned	02-Feb-20 0:00	24-Mar-20	24-Jan-20 13:25
Restart									
JERA Company	Yokkaichi	Chubu	Gas	No.4-3	117,000	Planned	01-Feb-20 0:00	02-Feb-20	25-Feb-19 13:57
				No.4-5	117,000	Planned	01-Feb-20 0:00	02-Feb-20	30-Jan-20 14:22
Itoigawa Power Company	Itoigawa Power	Tohoku	Coal	-	149,000	Unplanned	26-Jan-20 8:50	02-Feb-20	29-Jan-20 13:07

OFoward Prices (Fuel Price Trends)
Forward prices almost flat amid mixed fuel costs

Rim Index for forward prices were mixed in a tight range on Jan 30. Rim's JCC (Japan Crude Cocktail) forecast and coal prices on an FOB Newcastle Australia basis were generally firmer, but prices for C-Fuel in Asia deepened losses, making forward prices directionless.

The estimated monthly average of Dubai paper swaps, a criterion used to forecast the JCC, strengthened by \$0.70-0.88 from the previous day. Dubai paper swaps stood in the high \$57 level for March 2020, the low \$57 level for April 2020 and the mid \$49 level for May 2021. In the international crude oil market as of 17:00 hours Tokyo time on Jan 30, the NYMEX WTI contract for March 2020 traded at \$52.36 while the ICE Brent contract for March 2020 hovered at \$58.73. The DES Northeast Asia market for LNG showed little change amid intact supply-demand fundamentals. In the coal market on Jan 29, FOB Newcastle prices on the ICE futures weakened except for forward two months. The March 2020 contract ended at \$67.00, down \$0.70 from Jan 28. The April 2020 contract settled down

\$0.50 at \$67.30 while the May 2021 contract was up \$0.60 at \$72.35.

Crude prices (JCC + petroleum and coal tax) advanced to Yen 47,560 for the front month of March 2020, up Yen 450 from the previous day. Compared to the front month, prices for June 2020 were Yen 2,240 lower and prices for May 2021 were Yen 6,550 lower. For C-Fuel (import price + import tax + petroleum and coal tax), prices for March 2020 were Yen 660 lower at Yen 60,760. Compared to the front month, prices for June 2020 were Yen 1,180 lower and prices for May 2021 were Yen 1,570 lower. For LNG (mixture of JCC and DES Northeast Asia spot price + petroleum and coal tax), prices for March 2020 were Yen 10 higher at Yen 49,510. Compared to the front month, prices for June 2020 were Yen 1,780 higher, but prices for May 2021 were Yen 3,730 lower. For coal (FOB Newcastle price + freight cost + petroleum and coal tax), prices for March 2020 were Yen 60 lower at Yen 9,850. Compared to the front month, prices for June 2020 were Yen 200 higher and prices for May 2021 were Yen 590 higher.

OTOCOM Power Futures Summary

No deals on Jan 30, sell/buy ideas afar apart

On the Tokyo Commodity Exchange (TOCOM) on Jan 30, no deals were reported during day time (8:45-15:15 hours), night time (16:30-19:00 hours) and after-hours block trading. In East Japan, the February 2020 contract for base lower power changed hands for three consecutive days until Jan 29. But the market witnessed offers and bids far apart on Jan 30. As mentioned in Market Commentary, according to one-month weather forecasts during Feb 1-29 released by the Japan Meteorological Agency on Jan 30, temperatures

would remain warmer than usual across Japan, leaving limited requirements for hedging.

As of 15:00 hours on Jan 30, the lowest sell indications and highest buy indications for each contract month were shown below. The narrowest gap between sell and buy ideas was at Yen 0.65 for the February 2020 contract of base load power in East Japan, comparing with the previous day's offer/bid spread at Yen 0.25. Offers were posted at Yen 9.40, countered by bids at Yen 8.75.

Month	Base East		Base West		DT East		DT West	
	Offer	Bid	Offer	Bid	Offer	Bid	Offer	Bid
Jan-20	9.15	7.38	8.32	6.82	9.89	8.36	9.33	7.54
Feb-20	9.40	8.75	9.24	7.65	10.56	9.57	9.45	7.55
Mar-20	9.33	8.25	8.46	7.27	10.10	8.78	9.05	7.86
Apr-20	9.46	8.27	9.10	7.90	10.64	9.05	9.10	7.90
May-20	11.15	-	-	-	10.80	-	-	-
Jun-20	11.25	-	-	-	10.80	-	-	-
Jul-20	13.50	-	-	-	14.50	-	-	-
Aug-20	13.20	-	-	-	14.50	-	-	-
Sep-20	12.00	-	-	-	14.00	-	-	-
Oct-20	11.00	-	-	-	11.00	-	-	-
Nov-20	11.00	-	-	-	11.00	-	-	-
Dec-20	12.00	-	-	-	14.00	-	-	-
Jan-21	-	-	-	-	14.25	-	-	-
Feb-21	-	-	-	-	14.25	-	-	-
Mar-21	-	-	-	-	-	-	-	-

Unit Yen/kWh

©JEPX Day-Ahead Spot Data

○Sell/Buy

Jan 31 delivery	24Hours	DoD	Day Time	DoD	Peak Time	DoD	Night Time	DoD
Sell	1,100,533,450	-0.7%	685,797,350	-0.4%	159,433,100	-0.9%	414,736,100	-1.4%
Buy	1,108,124,650	1.9%	685,997,650	1.7%	145,475,900	0.4%	422,127,000	2.4%

※Unit : kWh

○Traded Volumes

Jan 31 delivery	24Hours	Day Time	Peak Time	Night time
Trade volumes	938,741,100	592,856,400	128,043,200	345,884,700
DoD	1.4%	1.8%	-0.3%	0.8%

※Unit : kWh

OEast Japan Average Prices(50Hz) and West Japan Average Prices(60Hz)

Jan 31 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	22.81	-8.8%	6.08	16.5%	8.55	2.3%	7.39	3.1%	7.40	1.1%	7.17	0.3%	8.31	3.7%
West Japan	10.08	7.1%	4.71	8.0%	7.48	6.7%	5.63	9.1%	7.00	10.4%	6.70	9.8%	8.23	12.3%
Price spread (East-West)	12.73		1.37		1.07		1.76		0.40		0.47		0.08	

※Unit: Yen/kWh

O9 Area Average Prices(24Hours)

Jan 31 delivery	Hokkaido	DoD	Tohoku	DoD	Tokyo	DoD	Chubu	DoD	Hokuriku	DoD
	11.66	-0.49	7.74	+0.21	7.74	+0.21	7.34	+0.60	7.34	+0.60
24Hours	Kansai	DoD	Chugoku	DoD	Shikoku	DoD	Kyushu	DoD		
	7.34	+0.60	7.34	+0.60	7.34	+0.60	7.00	+0.29		

※Unit : Yen/kWh

OPrice Divergence by Region

For Jan 31 delivery, price divergence occurred in three regions shown as below:

Tokyo-Chubu (Frequency Converter)

Hokkaido and Tohoku (Kitahon Interconnection Line)

Chugoku and Kyushu (Kanmon Interconnection Line)

Jan 31 Delivery(Kanmon Interconnection Line:Chugoku-Kyushu) ※yen/kWh

Time	System Prices	Chugoku	Kyushu	Price spread (Chugoku-Kyushu)	Price spread with System (Chugoku-S)	Price spread with System (Kyushu-S)
6:30~7:00	8.63	8.95	8.63	0.32	0.32	0.00
7:00~7:30	9.09	9.20	8.63	0.57	0.11	-0.46
7:30~8:00	8.93	9.15	8.63	0.52	0.22	-0.30
8:00~8:30	8.63	9.04	8.63	0.41	0.41	0.00
8:30~9:00	8.63	9.00	8.63	0.37	0.37	0.00
9:00~9:30	8.59	8.59	8.21	0.38	0.00	-0.38
11:00~11:30	6.40	5.64	5.16	0.48	-0.76	-1.24
13:30~14:00	5.41	5.34	5.16	0.18	-0.07	-0.25
14:00~14:30	6.32	5.95	5.16	0.79	-0.37	-1.16
14:30~15:00	6.43	6.01	5.16	0.85	-0.42	-1.27
15:00~15:30	6.59	5.31	5.16	0.15	-1.28	-1.43
15:30~16:00	6.83	6.59	5.41	1.18	-0.24	-1.42
16:00~16:30	8.63	8.71	8.21	0.50	0.08	-0.42
16:30~17:00	8.74	9.19	8.63	0.56	0.45	-0.11
17:00~17:30	9.33	9.73	8.21	1.52	0.40	-1.12
17:30~18:00	9.73	10.08	8.63	1.45	0.35	-1.10
18:00~18:30	9.73	9.73	8.63	1.10	0.00	-1.10
18:30~19:00	9.57	9.57	8.21	1.36	0.00	-1.36
19:00~19:30	9.17	9.17	8.63	0.54	0.00	-0.54
19:30~20:00	9.09	9.09	8.21	0.88	0.00	-0.88
20:00~20:30	8.94	9.01	8.21	0.80	0.07	-0.73
20:30~21:00	8.94	9.01	8.21	0.80	0.07	-0.73
21:00~21:30	8.63	8.94	8.63	0.31	0.31	0.00
22:00~22:30	8.63	9.05	8.63	0.42	0.42	0.00
22:30~23:00	8.63	8.71	8.63	0.08	0.08	0.00

Jan 31 Delivery(Kitahon Interconnection Line:Hokkaido-Tohoku)

¥/yen/kWh

Time	System Prices	Price spread		Price spread with System	
		Hokkaido	Tohoku	(Hokkaido-S)	(Tohoku-S)
5:30~6:00	6.79	9.48	6.86	2.62	0.07
7:30~8:00	8.93	12.03	9.15	2.88	0.22
8:00~8:30	8.63	12.03	9.04	2.99	0.41
8:30~9:00	8.63	13.82	9.00	4.82	0.37
9:00~9:30	8.59	14.04	8.59	5.45	0.00
9:30~10:00	8.21	14.03	8.34	5.69	0.13
10:00~10:30	6.65	14.02	6.65	7.37	0.00
10:30~11:00	6.54	16.00	6.65	9.35	0.11
11:00~11:30	6.40	15.00	6.53	8.47	0.13
11:30~12:00	5.98	16.00	6.53	9.47	0.55
12:00~12:30	5.16	15.00	6.08	8.92	0.92
12:30~13:00	5.16	14.13	6.08	8.05	0.92
13:00~13:30	5.41	16.00	6.37	9.63	0.96
13:30~14:00	5.41	15.81	6.37	9.44	0.96
14:00~14:30	6.32	15.41	6.50	8.91	0.18
14:30~15:00	6.43	16.21	6.54	9.67	0.11
15:00~15:30	6.59	16.00	6.83	9.17	0.24
15:30~16:00	6.83	18.00	6.83	11.17	0.00
16:00~16:30	8.63	22.81	9.01	13.80	0.38
16:30~17:00	8.74	22.81	9.19	13.62	0.45
17:00~17:30	9.33	16.00	9.73	6.27	0.40
17:30~18:00	9.73	14.02	9.96	4.06	0.23
18:00~18:30	9.73	11.98	9.73	2.25	0.00
18:30~19:00	9.57	11.99	9.57	2.42	0.00
19:00~19:30	9.17	12.00	9.17	2.83	0.00
19:30~20:00	9.09	11.99	9.09	2.90	0.00
20:00~20:30	8.94	11.91	9.01	2.90	0.07
20:30~21:00	8.94	11.91	9.01	2.90	0.07

Jan 31 Delivery(Frequency Converter:Tokyo(50Hz)-Chubu(60Hz))

¥/yen/kWh

Time	System Prices	Price spread		Price spread with System	
		Tokyo	Chubu	(Tokyo-S)	(Chubu-S)
0:00~0:30	6.37	6.58	5.16	1.42	-1.21
0:30~1:00	5.91	6.58	5.15	1.43	-0.76
1:00~1:30	5.64	6.48	5.00	1.48	-0.64
1:30~2:00	6.21	6.48	5.03	1.45	-1.18
2:00~2:30	6.32	6.48	5.34	1.14	-0.98
9:30~10:00	8.21	8.34	8.14	0.20	-0.07
10:00~10:30	6.65	6.65	6.59	0.06	-0.06
10:30~11:00	6.54	6.65	5.34	1.31	-1.20
11:00~11:30	6.40	6.53	5.64	0.89	-0.76
11:30~12:00	5.98	6.53	5.16	1.37	-0.82
12:00~12:30	5.16	6.08	4.74	1.34	-0.42
12:30~13:00	5.16	6.08	4.71	1.37	-0.45
13:00~13:30	5.41	6.37	5.16	1.21	-0.25
13:30~14:00	5.41	6.37	5.34	1.03	-0.07
14:00~14:30	6.32	6.50	5.95	0.55	-0.37
14:30~15:00	6.43	6.54	6.01	0.53	-0.42
15:00~15:30	6.59	6.83	5.31	1.52	-1.28
15:30~16:00	6.83	6.83	6.59	0.24	-0.24
16:00~16:30	8.63	9.01	8.71	0.30	0.08
17:30~18:00	9.73	9.96	10.08	-0.12	0.35
22:30~23:00	8.63	8.96	8.71	0.25	0.08

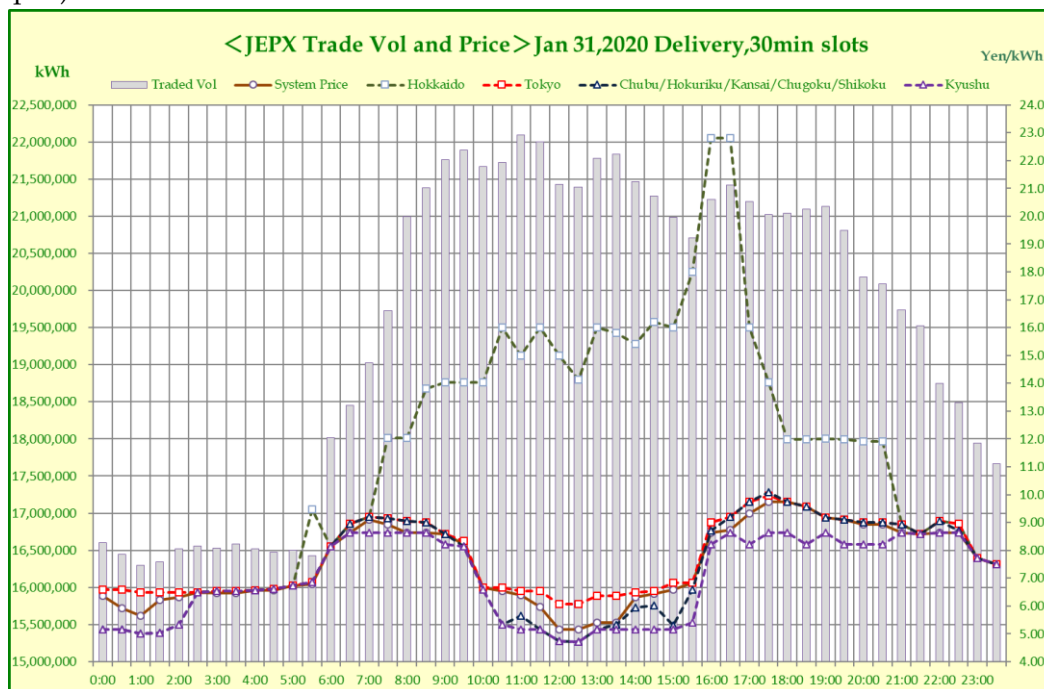
©JEPX Day-Ahead Spot Price Charts
OTraded Volumes and Prices (Jan 31 delivery)

Price divergence for 14 hours (28 windows) between Hokkaido and Tohoku (Kitahon Interconnection Line)

Price divergence for 10.5 hours (21 windows) between Tokyo and Chubu (Frequency Converter)

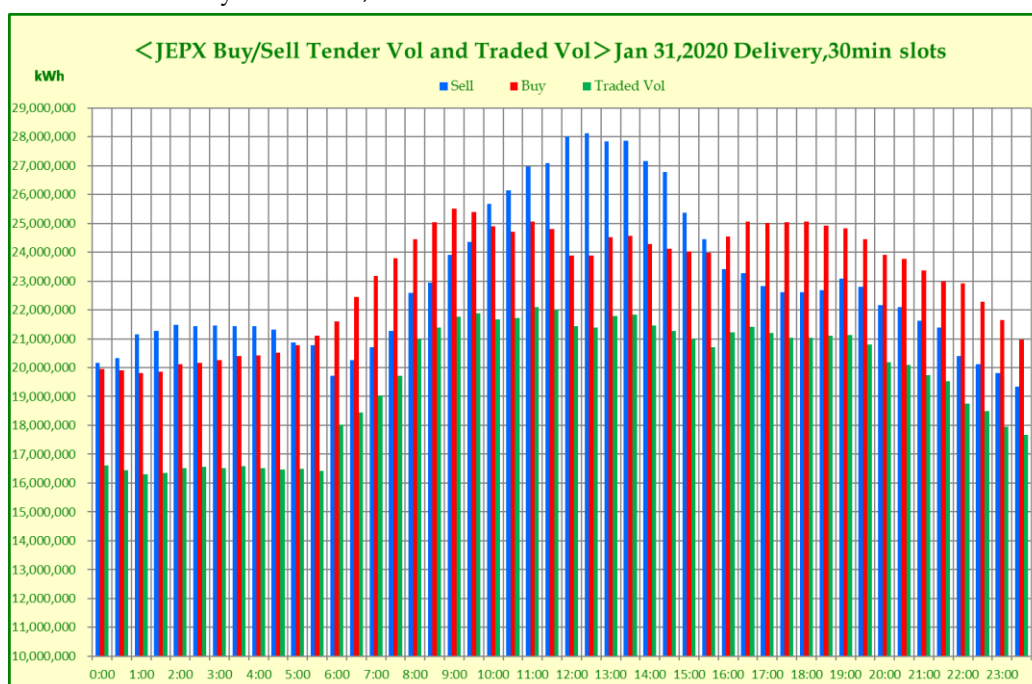
Price divergence for 12.5 hours (25 windows) between Chugoku and Kyushu (Kanmon Interconnection Line)

Traded volumes: 938.74 mil kWh, Actual highest price: Yen 22.81 (Hokkaido), Actual lowest price: Yen 4.71 (West Japan)


OSell/Buy Tenders and Traded Prices (Jan 31 delivery)

Total offered volumes via sell tenders: 1,100.53 mil kWh

Total bid volumes via buy tenders: 1,108.12 mil kWh

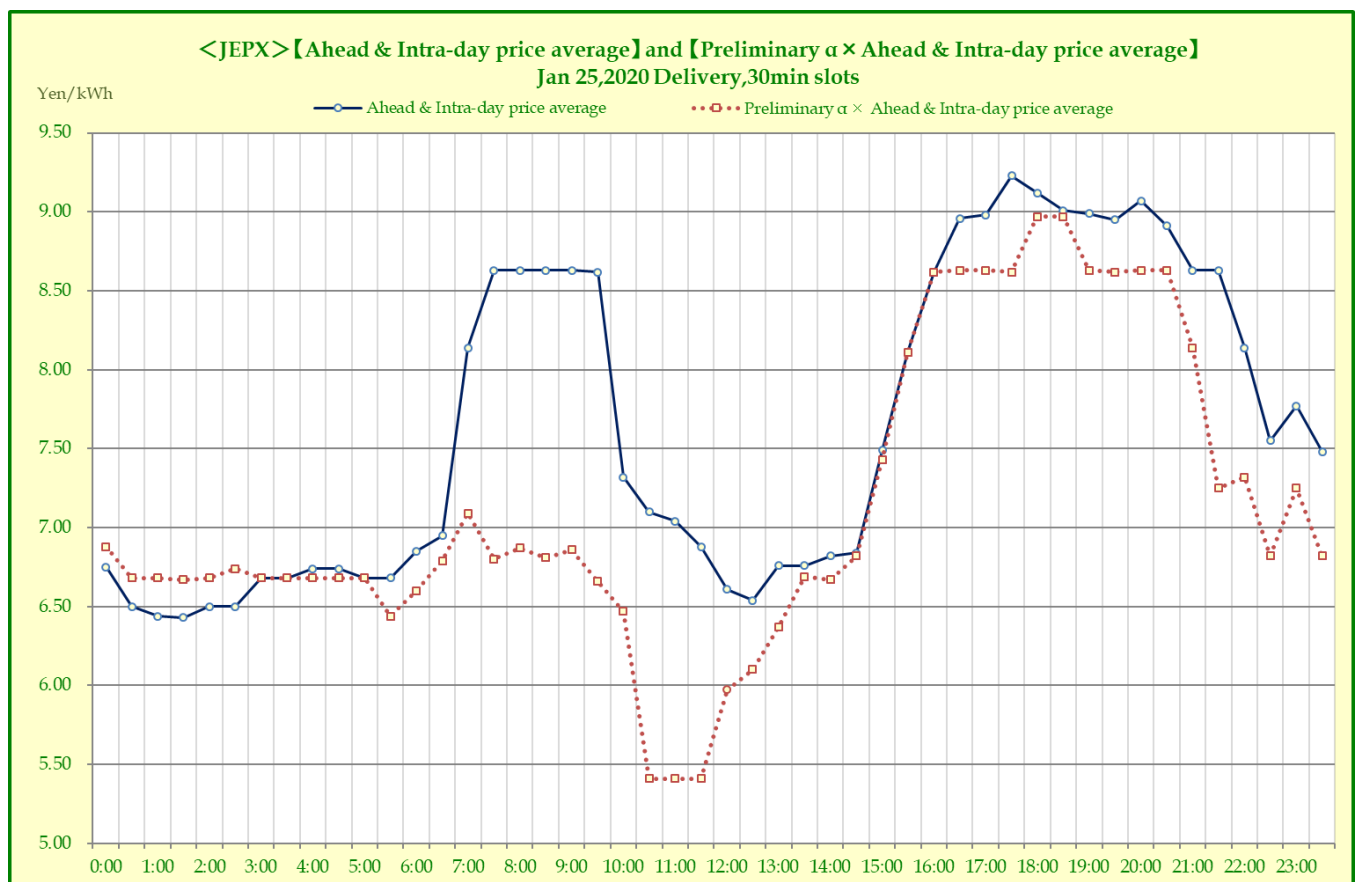


©JEPX [Ahead & Intra-day price average] and [Preliminary $\alpha \times$ Ahead & Intra-day price average]
OJan 25 Delivery

Ahead & Intra-day price average		Preliminary $\alpha \times$ Ahead & Intra-day price average		Preliminary α	
24Hours	7.64	24Hours	7.13	24Hours	0.93
Day time	8.07	Day time	7.37	Day time	0.91
Peak time	7.13	Peak time	7.02	Peak time	0.98
Night time	7.04	Night time	6.78	Night time	0.96

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	6.75	6.50	6.44	6.43	6.50	6.50	6.68	6.68	6.74	6.74	6.68	6.68
Preliminary $\alpha \times$ Ahead & Intra-day price average	6.88	6.68	6.68	6.67	6.68	6.74	6.68	6.68	6.68	6.68	6.68	6.44
Preliminary α	1.02	1.03	1.04	1.04	1.03	1.04	1.00	1.00	0.99	0.99	1.00	0.96
	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	6.85	6.95	8.14	8.63	8.63	8.63	8.63	8.62	7.32	7.10	7.04	6.88
Preliminary $\alpha \times$ Ahead & Intra-day price average	6.60	6.79	7.09	6.80	6.87	6.81	6.86	6.66	6.47	5.41	5.41	5.41
Preliminary α	0.96	0.98	0.87	0.79	0.80	0.79	0.79	0.77	0.88	0.76	0.77	0.79
	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	6.61	6.54	6.76	6.76	6.82	6.84	7.49	8.11	8.62	8.96	8.98	9.23
Preliminary $\alpha \times$ Ahead & Intra-day price average	5.97	6.10	6.37	6.69	6.67	6.82	7.43	8.11	8.62	8.63	8.63	8.62
Preliminary α	0.90	0.93	0.94	0.99	0.98	1.00	0.99	1.00	1.00	0.96	0.96	0.93
	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	9.12	9.01	8.99	8.95	9.07	8.91	8.63	8.63	8.14	7.55	7.77	7.48
Preliminary $\alpha \times$ Ahead & Intra-day price average	8.97	8.97	8.63	8.62	8.63	8.63	8.14	7.25	7.32	6.82	7.25	6.82
Preliminary α	0.98	1.00	0.96	0.96	0.95	0.97	0.94	0.84	0.90	0.90	0.93	0.91



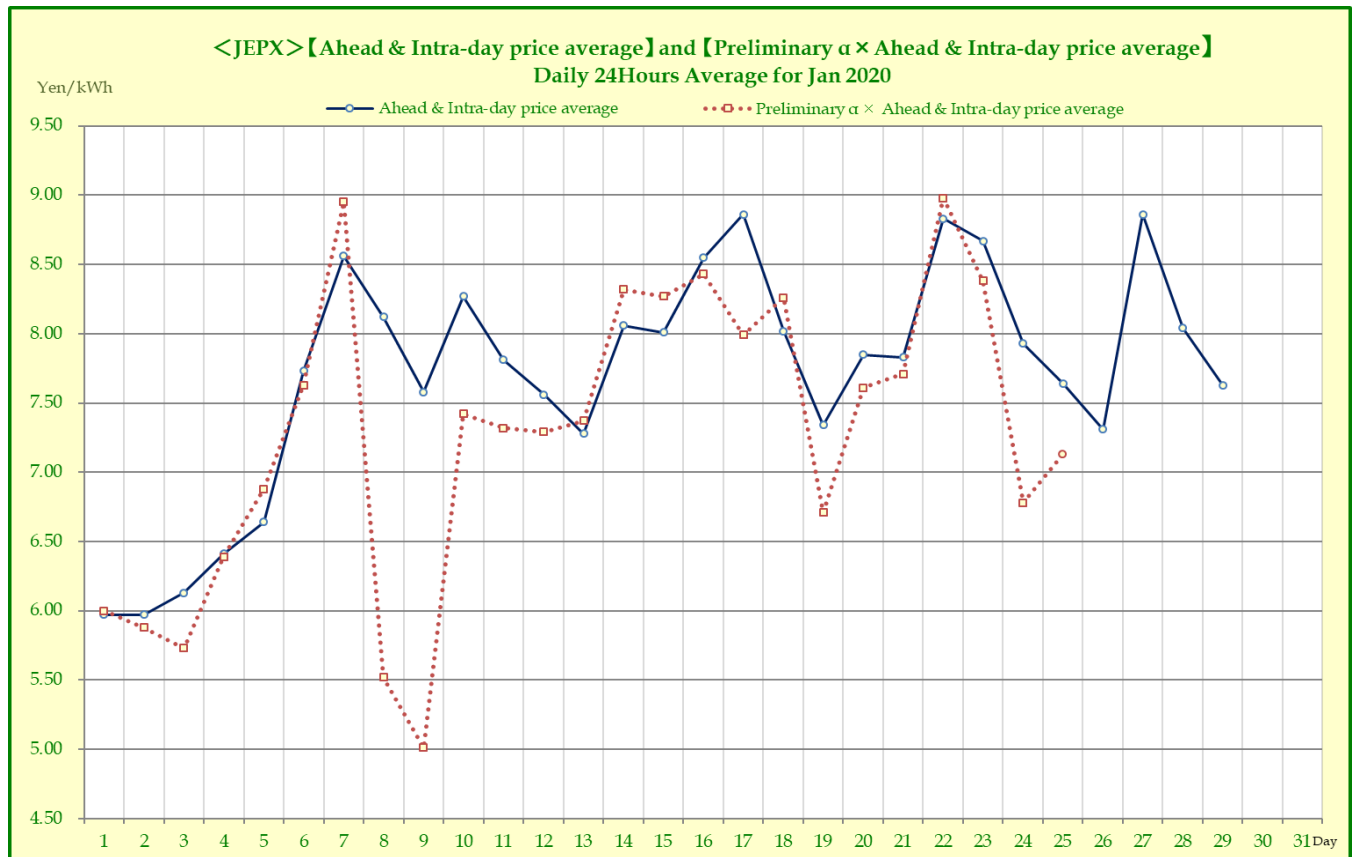
OJan Delivery • 24Hours

The average price and preliminary alpha factor based on the data obtained on Jan 1-25

*Ahead & Intra-day price average shown for Jan 1-29

Ahead & Intra-day price average (1/1-25)		Preliminary $\alpha \times$ Ahead & Intra-day price average (1/1-25)		Preliminary α (1/1-25)		※Ahead & Intra-day price average (1/1-29)	
24Hours	7.66	24Hours	7.28	24Hours	0.95	24Hours	7.70
Day time	7.96	Day time	7.44	Day time	0.94	Day time	8.05
Peak time	6.74	Peak time	6.39	Peak time	0.95	Peak time	6.88
Night time	7.25	Night time	7.04	Night time	0.97	Night time	7.22

yen/kWh



Otentative Monthly Imbalance Rates by 9 Regions (Jan)

Tentative Monthly Imbalance Rates as of Jan 1-25

Unt : 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)	7.28								
β (Median of difference of area price and system price in each month)	1.36	0.19	0.19	-0.01	-0.01	-0.01	-0.01	-0.01	-0.80
K (Incentive index for shortage)	2.98	0.59	0.64	0.27	0.28	0.28	0.28	0.28	0.43
Imbalance fees for shortage ($X+\beta+K$)	11.62	8.06	8.11	7.54	7.55	7.55	7.55	7.55	6.91
L (Incentive index for surplus)	-1.49	-0.20	-0.17	-0.68	-0.68	-0.69	-0.68	-0.68	-0.83
Imbalance compensation for surplus ($X+\beta+L$)	7.15	7.27	7.30	6.59	6.59	6.58	6.59	6.59	5.65

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)

©JEPX Day-Ahead Spot Prices Monthly Transaction
O2020 Dec delivery

[High] 30.00yen/kWh(1/20:Hokkaido) **[low]** 0.01yen/kWh(1/1-5, 9, 10, 21: Kyushu)

[Index Price Monthly Ave.]

24Hours: 7.68yen/kWh(MoM -0.54) Day Time: 8.02yen/kWh(MoM -0.66)

Peak time: 6.82yen/kWh(MoM -0.61) Night time:7.21yen/kWh(Mom -0.36)

[Sell] Monthly Total: 32,288.74 mil kWh (up 4.9% on month/up 7.3% on year, **record high**)

Daily Average:1,041.57 mil kWh (up 4.9% on month/up 7.3% on year, **record high**)

Daily Max: 1,162.26 mil kWh (Jan 1, **record high**), Daily Min: 989.34 mil kWh (Jan 22)

[Buy] Monthly Total: 32,298.54 mil kWh (up 0.5% on month/up 7.2% on year)

Daily Average: 1,041.88 mil kWh (up 0.5% on month/up 7.2% on year)

Daily Max: 1,131.84 mil kWh (Jan 27), Daily Min: 865.07 mil kWh (Jan 1)

[Volume] Monthly Total: 26,793.52 mil kWh (up 0.2% on month/up 8.1% on year)

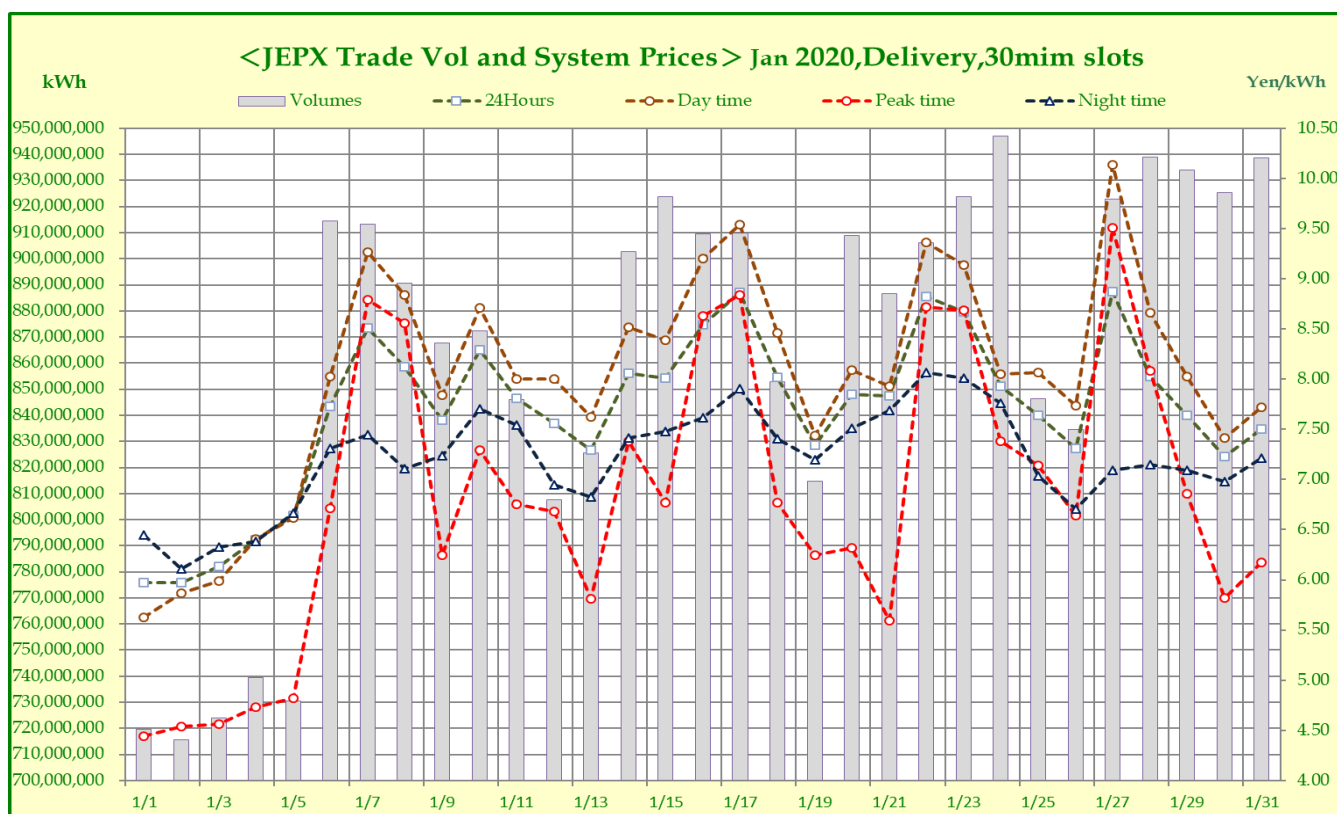
Daily Average: 864.30 mil kWh (up 0.2% on month/up 8.1% on year)

Daily Max: 947.14 mil kWh (Jan 24), Daily Min: 715.58 mil kWh (Jan 2)

[Forward Delivery Transaction] In the forward market for January delivery, two deal were clinched for the monthly 24 hours contract in Tokyo. Another deal materialized for the Weekly 24 hours contract in Kansai.

Area	Deliverly	Price	Volume	Date	Area	Deliverly	Price	Volume	Date
Tokyo	Jan-2020 Monthly	11.09	1	4-Sep-19	Kansai	1/25~1/31 24 hours	8.68	5	15-Jan-20
	24 hours	10.48	4	4-Sep-20	Total	-	8.68	5	-
Total	-	10.60	20	-					

Unit:Price(Yen/kWh), Volume(kWh), Total Prices(The volume weighted average price)



©Weekly Temperature and Weather Forecast at Main Cities
○Jan 31-Feb 6 Forecast by Meteorological Agency as of Jan 30 11:00
<Temperatures>

In North Japan, both highest and lowest temperatures will be similar or higher than the average year in the first half of the period. But the temperatures are expected to be flat or colder than the average year in the latter half of the period. In East and West Japan, the temperatures are forecast to be flat or above the average year.

<Weather>

In all parts of North Japan as well as East to West Japan alongside the Sea of Japan, the weather will be mostly cloudy, snowy or rainy because of low atmospheric pressure and cold air. In North Japan, low atmospheric pressure was expected to strengthen toward Jan 31 and cause rough seas conditions in some regions. From East to West Japan alongside the Pacific Ocean, high atmospheric pressure will set in and widely bring sunny days in the first half of the period. But the weather is forecast to turn cloudy due to pressure troughs and humid air in the latter half of the period.

City	31-Jan minimum temperature	31-Jan highest temperature	Weather	City	4-Feb minimum temperature	4-Feb highest temperature	Weather
Sapporo	0.0	2.0		Sapporo	-8.0	-2.0	
Sendai	3.0	9.0		Sendai	0.0	7.0	
Niigata	5.0	7.0		Niigata	1.0	6.0	
Tokyo	6.0	12.0		Tokyo	3.0	11.0	
Nagoya	5.0	10.0		Nagoya	2.0	11.0	
Toyama	3.0	6.0		Toyama	1.0	8.0	
Osaka	6.0	10.0		Osaka	3.0	11.0	
Hiroshima	4.0	10.0		Hiroshima	1.0	10.0	
Takamatsu	5.0	9.0		Takamatsu	2.0	10.0	
Fukuoka	7.0	11.0		Fukuoka	3.0	10.0	
City	1-Feb minimum temperature	1-Feb highest temperature	Weather	City	5-Feb minimum temperature	5-Feb highest temperature	Weather
Sapporo	-6.0	-1.0		Sapporo	-9.0	-4.0	
Sendai	2.0	8.0		Sendai	-1.0	6.0	
Niigata	2.0	6.0		Niigata	0.0	6.0	
Tokyo	3.0	11.0		Tokyo	3.0	11.0	
Nagoya	3.0	10.0		Nagoya	2.0	11.0	
Toyama	1.0	6.0		Toyama	0.0	8.0	
Osaka	5.0	10.0		Osaka	3.0	11.0	
Hiroshima	2.0	11.0		Hiroshima	1.0	11.0	
Takamatsu	4.0	10.0		Takamatsu	1.0	11.0	
Fukuoka	5.0	13.0		Fukuoka	4.0	11.0	
City	2-Feb minimum temperature	2-Feb highest temperature	Weather	City	6-Feb minimum temperature	6-Feb highest temperature	Weather
Sapporo	-7.0	1.0		Sapporo	-8.0	-3.0	
Sendai	0.0	8.0		Sendai	-1.0	6.0	
Niigata	2.0	8.0		Niigata	1.0	5.0	
Tokyo	2.0	11.0		Tokyo	2.0	10.0	
Nagoya	2.0	11.0		Nagoya	2.0	11.0	
Toyama	0.0	9.0		Toyama	0.0	7.0	
Osaka	3.0	12.0		Osaka	3.0	11.0	
Hiroshima	2.0	12.0		Hiroshima	1.0	12.0	
Takamatsu	2.0	12.0		Takamatsu	2.0	11.0	
Fukuoka	5.0	12.0		Fukuoka	4.0	12.0	
City	3-Feb minimum temperature	3-Feb highest temperature	Weather				
Sapporo	-5.0	0.0					
Sendai	1.0	9.0					
Niigata	1.0	9.0					
Tokyo	3.0	12.0					
Nagoya	2.0	12.0					
Toyama	2.0	10.0					
Osaka	4.0	12.0					
Hiroshima	3.0	10.0					
Takamatsu	3.0	12.0					
Fukuoka	5.0	11.0					

◎9 Area Power Data and Chart
○9 Area Peak Capacity and Rim 24Hours Average Prices
Jan 31 Supply and Demand forecast

Area	Supply Capacity	Peak demand	Reserve rate	Usage	Peak demand time	Temperature forecast(Low/High)
Hokkaido	523	468	11.8%	89.5%	17~18:00	0.0 / 2.0
Tohoku	1,379	1,190	15.9%	86.3%	17~18:00	3.0 / 9.0
Tokyo	4,863	4,224	15.1%	86.9%	17~18:00	6.0 / 12.0
East Japan total	6,765	5,882	15.0%	86.9%	-	3.0 / 7.7
Chubu	2,315	2,045	13.2%	88.3%	09~10:00	5.0 / 10.0
Hokuriku	498	444	12.2%	89.2%	09~10:00	3.0 / 6.0
Kansai	2,461	2,110	16.6%	85.7%	17~18:00	6.0 / 10.0
Chugoku	1,032	934	10.5%	90.5%	09~10:00	4.0 / 10.0
Shikoku	477	405	17.8%	84.9%	18~19:00	5.0 / 9.0
Kyushu	1,347	1,230	9.5%	91.3%	18~19:00	7.0 / 11.0
West Japan total	8,130	7,168	13.4%	88.2%	-	5.0 / 9.3
9 Area total	14,895	13,050	14.1%	87.6%	-	4.3 / 8.8

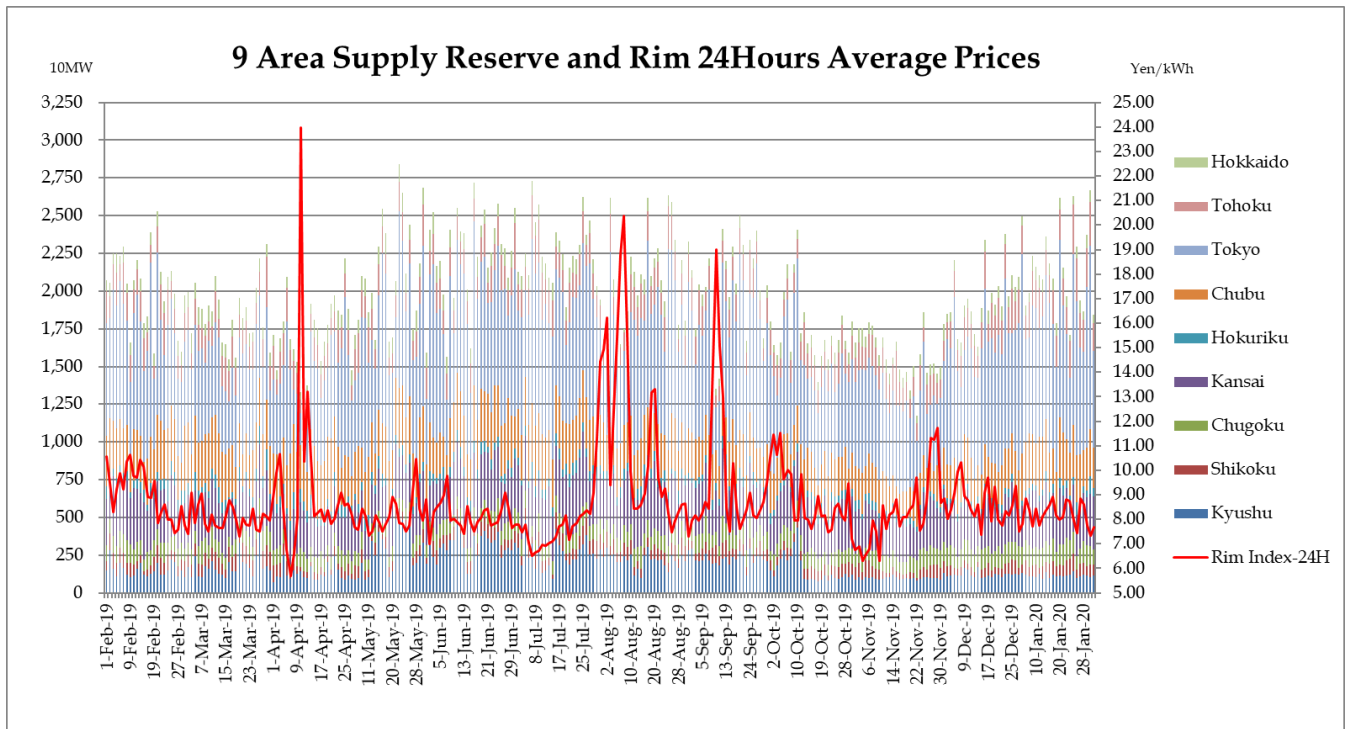
Unit:10MW, Temperature °C

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

Jan 31, Suppy Reserve Forecast

※Unit : 10MW,DoD

	Total	Hokkaido	Tohoku	Tokyo	Chubu	Hokuriku	Kansai	Chugoku	Shikoku	Kyushu
Supply reserve	1,845(-824)	55(-26)	189(-99)	639(-574)	270(-45)	54(-62)	351(+4)	98(-25)	72(-8)	117(+11)



©Latest Status of Thermal Power Stations
○Operation Updates as of Jan 30

Company	Plant	Area	Fuel	Unit	Output (kW)	Outage	Period	Restart	Update
JERA	Futtsu	Tokyo	Gas	No.2-5	160,000	Planned	26-Jan-20 19:00	03-Feb-20	30-Jan-20 15:18
JERA	Yokkaichi	Chubu	Gas	No.4-5	117,000	Planned	01-Feb-20 0:00	02-Feb-20	30-Jan-20 14:22
Kansai Electric Power Company	Ako	Kansai	Oil	No.2	600,000	Planned	29-Jan-20 9:00	31-Jan-20	29-Jan-20 18:35

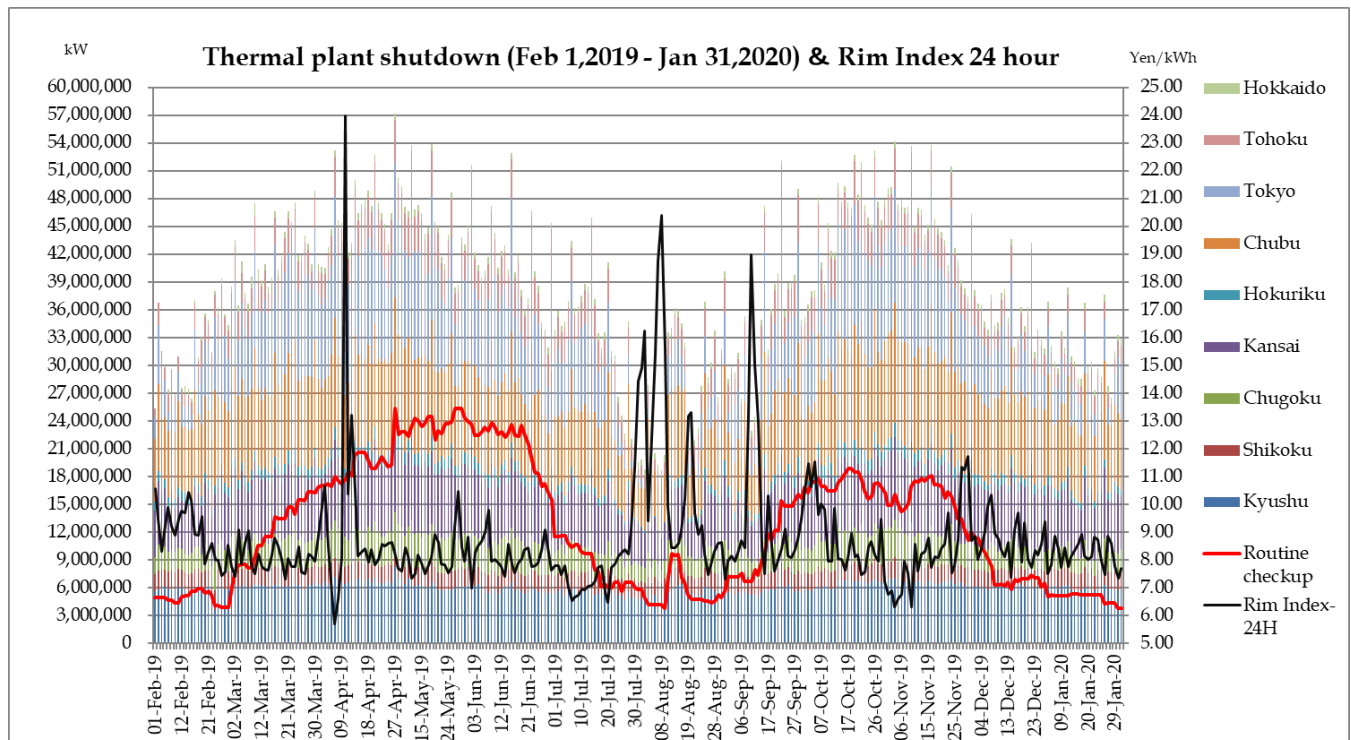
Facilities related to major power companies

Joban Joint Power Co., L t d	Nakoso	Tokyo	Coal	No.10	250,000	Planned	04-Sep-19 22:01	30-Jan-20	30-Jan-20 14:32
Wakayama Kyodo Power Company	Wakayama Kyodo	Kansai	Byproduct Gasses	New No.1	148,000	Planned	30-Jan-20 14:51		30-Jan-20 16:20

Facilities of independent power companies

JFE Steel	Higashi Nihon Steel Plant	Tokyo	Gas	Combined Power Center	149,000	Planned	31-Jan-20 22:00	03-Feb-20	30-Jan-20 13:48
JFE Steel	Higashi Nihon Steel Plant	Tokyo	Gas	Combined Power Center	149,000	Planned	14-Feb-20 22:00	17-Feb-20	30-Jan-20 13:50
East Japan Railway Company	Kawasaki	Tokyo	Gas	No.3	198,400	Planned	21-Feb-20 0:00	21-Feb-20	25-Sep-19 20:11

Nine power utilities in Japan are expected to suspend thermal units with a combined capacity of 32.83 mil kW as of January 31, Friday. Nearly 3.74 mil kW will be off line for planned maintenance while unplanned shutdowns account for a loss of the remaining 29.09 mil kW. In the corresponding point a year before, a combined 25.29 mil kW was idled as of February 1 2019, Friday, including nearly 4.92mil kW for planned maintenance and nearly 20.38 mil kW for unplanned suspensions.



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

Rim Index (yen/kWh Jan.31)								
24h	DT	Peak	Night					
7.68	8.02	6.51	7.20					
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	21,953	23,813	3.56	+4.12	+4.46	+2.95	+3.64
	50.00			3.14	+4.54	+4.88	+3.37	+4.06
	59.00			2.66	+5.02	+5.36	+3.85	+4.54
Coal	40.50	8,575	9,945	3.44	+4.24	+4.58	+3.07	+3.76
	45.00			3.10	+4.58	+4.92	+3.41	+4.10
Imported CFO	38.40	59,826	59,826	13.61	-5.93	-5.59	-7.10	-6.41
Domestic CFO								
0.3% sulfur	38.40	63,500	63,500	14.45	-6.77	-6.43	-7.94	-7.25
3.0% sulfur	38.40	46,300	46,300	10.54	-2.86	-2.52	-4.03	-3.34
Crude	38.40	47,880	50,680	12.06	-4.38	-4.04	-5.55	-4.86

*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 March delivery published in Rim LNG Report. Coal is a yen-based conversion from a sum of FOB Newcastle prices for February loading and freight rates. Imported CFO is a yen-based conversion from CFR Japan FO 0.3% S prices published in Rim Japan Products Report. Domestic CFO is the average of East Japan prices and West Japan prices for February delivery published in Rim Japan Products Report. Crude Oil is a yen-based conversion from the CIF import price for February 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/\$ (Jan.29)※
	Jan-31	7.68	8.02	6.51	7.20	110.08

	RIM Index		Thermal	Fuel Cost Netback (DES, CIF)				Fuel Prices※4		Margin
	(Yen/kWh)		Efficiency※3	\$/mt	\$/mmBtu	\$/bbl	Yen/kl	Jan-29	Unit	
LNG	24h	7.68	44.10%	449.74	8.70			3.85	\$/mmBtu	4.85
			50.00%	512.17	9.90				\$/mmBtu	6.05
			59.00%	607.41	11.75				\$/mmBtu	7.90
	Day time	8.02	44.10%	470.40	9.10				\$/mmBtu	5.25
			50.00%	535.60	10.36				\$/mmBtu	6.51
			59.00%	635.04	12.28				\$/mmBtu	8.43
	Peak time	6.51	44.10%	378.65	7.32				\$/mmBtu	3.47
			50.00%	431.57	8.35				\$/mmBtu	4.50
			59.00%	512.30	9.91				\$/mmBtu	6.06
	Night time	7.20	44.10%	420.58	8.13				\$/mmBtu	4.28
			50.00%	479.11	9.27				\$/mmBtu	5.42
			59.00%	568.39	10.99				\$/mmBtu	7.14
Coal	24h	7.68	40.50%	189.27	7.78			77.90	\$/mt	111.37
			45.00%	211.68	8.70				\$/mt	133.78
	Day time	8.02	40.50%	198.20	8.14				\$/mt	120.30
			45.00%	221.60	9.10				\$/mt	143.70
	Peak time	6.51	40.50%	158.54	6.51				\$/mt	80.64
			45.00%	177.54	7.29				\$/mt	99.64
	Night time	7.20	40.50%	176.66	7.26				\$/mt	98.76
			45.00%	197.67	8.12				\$/mt	119.77
Imported CFO	24h	7.68	38.40%	287.53	7.15			529.00	\$/mt	-241.47
	Day time	8.02	38.40%	301.53	7.50				\$/mt	-227.47
	Peak time	6.51	38.40%	239.38	5.95				\$/mt	-289.62
	Night time	7.20	38.40%	267.78	6.66				\$/mt	-261.22
Crude	24h	7.68	38.40%	276.05	7.18	42.58		70.50	\$/bbl	-27.92
	Day time	8.02	38.40%	289.44	7.52	44.64			\$/bbl	-25.86
	Peak time	6.51	38.40%	230.00	5.98	35.48			\$/bbl	-35.02
	Night time	7.20	38.40%	257.16	6.68	39.66			\$/bbl	-30.84
Domestic CFO 0.3% sulfur	24h	7.68	38.40%				33,751	63,500	Yen/kl	-29,749
	Day time	8.02	38.40%				35,245		Yen/kl	-28,255
	Peak time	6.51	38.40%				28,609		Yen/kl	-34,891
	Night time	7.20	38.40%				31,642		Yen/kl	-31,858
Domestic CFO 3.0% sulfur	24h	7.68	38.40%				33,751	46,300	Yen/kl	-12,549
	Day time	8.02	38.40%				35,245		Yen/kl	-11,055
	Peak time	6.51	38.40%				28,609		Yen/kl	-17,691
	Night time	7.20	38.40%				31,642		Yen/kl	-14,658

*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 March delivery published in Rim LNG Report.

Coal is a yen-based conversion from a sum of FOB Newcastle prices for February loading and freight rates. Imported CFO is a yen-based conversion from CFR

Japan FO 0.3%S prices published in Rim Japan Products Report. Crude Oil is a yen-based conversion from the CIF import price for February delivery

estimated by Rim. Domestic CFO is the average of East Japan prices and West Japan prices for December 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)
Kyushu	*	8,166,138	3,100	30.0	2019/10/1-2020/9/30	11.6	94,784,694
Kyushu	*	1,562,856	1,197	14.9	2019/11/1-2020/10/31	14.4	22,450,356
Kyushu		335,400	214	17.8	2019/10/1-2020/9/30	14.0	4,680,689
Kyushu		519,800	400	14.8	2019/10/1-2020/9/30	14.3	7,458,212
Kyushu		181,400	136	15.2	2019/10/1-2020/9/30	14.5	2,625,880
Kyushu		1,741,670	730	27.2	2019/10/1-2020/9/30	12.8	22,341,893
Kyushu		8,104,000	1,750	52.7	2019/10/1-2020/9/30	10.5	84,770,625
Kyushu		8,800,000	2,012	49.8	2019/10/1-2020/9/30	10.5	92,082,188
Kyushu		5,685,650	1,265	51.2	2019/10/1-2020/9/30	10.9	61,709,735
Kyushu		2,050,000	520	44.9	2019/10/1-2020/9/30	12.1	24,830,301

◎Japan Power Demand by Region
○Jan 29 2020

※Power demand graphs every Friday

Japan power demand by region Jan.29 2020						
Area	MW	on prev day	on year	MWh	on prev day	on year
Hokkaido	4,857	3.6%	2.8%	105,682	3.2%	0.0%
Tohoku	11,851	-3.7%	-10.6%	253,661	-3.4%	-12.5%
Tokyo	40,852	-19.0%	-11.1%	833,437	-17.0%	-11.3%
Chubu	19,252	-6.2%	-13.9%	396,256	-5.4%	-14.5%
Hokuriku	4,064	-2.2%	-17.8%	88,671	-2.1%	-16.8%
Kansai	19,872	-0.1%	-15.3%	414,156	-1.1%	-14.4%
Chugoku	8,523	-4.4%	-10.2%	180,491	-2.9%	-10.4%
Shikoku	3,670	-5.1%	-12.4%	79,116	-3.4%	-9.9%
Kyushu	11,572	0.0%	-8.8%	249,330	0.1%	-6.0%
Total	124,514	-8.7%	-11.7%	2,600,800	-7.6%	-11.6%

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

Total Japan Power Output The totals from Jan 1 to 29			
Area	output	year ago	on year
Hokkaido	2,935,179	3031947	-3.2%
Tohoku	7,259,491	7,816,662	-7.1%
Tokyo	24,574,452	25,402,659	-3.3%
Chubu	10,919,053	11,626,968	-6.1%
Hokuriku	2,465,320	2,708,415	-9.0%
Kansai	11,780,475	12,617,522	-6.6%
Chugoku	5,150,708	5,391,598	-4.5%
Shikoku	2,262,141	2,359,075	-4.1%
Kyushu	7,089,570	7,369,152	-3.8%
Total	74,436,390	78,323,998	-5.0%

Unit:MWh

◎Market News
○Fuel
Benchmark Crudes: Brent, Brent, WTI drop on weak US Dow Futures

Benchmark Brent crude future fell on Thursday. The March Brent crude oil futures contract in after-hours trading at 15:30 Tokyo time was at \$59.20 per barrel (bbl), down 61cts from the closing price of the previous day. The March WTI contract in overnight NYMEX ACCESS trade was \$52.83/bbl, down 50cts from the previous day. Meanwhile in the Dubai OTC market, the March cash Dubai was quoted at \$57.63/bbl, down \$1.99 from the same time the previous day.

Brent and WTI crude contracts weakened. US Dow Futures fell due to concerns of spreading new corona virus, which triggered selling in the crude oil market.

Meanwhile, regarding the outlook for the front-month Brent crude contract, a corporate sales manager at a major commodity broker, said, the market would fall further and prices would fall toward \$57. The new corona virus outbreak showed no signs of stopping, and concerns over the economic slowdown would continue to weigh on the crude oil futures, he pointed out. Meanwhile, Saudi Arabia said the Organization of the Petroleum Exporting Countries (OPEC) would consider additional supply cuts in the general meeting to be held in March. "The remarks could stem the sharp price fall in crude prices but would not be bullish enough to buoy the crude oil futures," he added..

Nine power utilities finalize preliminary fuel cost adjustment for March

Nine power utilities in Japan finalized the fuel cost adjustment for March 2020, but the adjustment factors were mixed from utility to utility amid directionless movements of the average fuel prices. Crude oil and LNG increased for a first month in six and four, respectively, while coal declined for 12 straight months.

The three-month fuel price average over Oct-Dec 2019, a criterion to determine fuel cost adjustment for nine power utilities in March 2020, gained Yen 300 from Sep-Nov for Hokkaido and Yen 200 for Tokyo. But the three-month fuel price average declined by Yen 200 for Kyushu and by Yen 100 for Kansai and Shikoku, while the average remained unchanged for Tohoku, Chubu, Hokuriku and Chugoku. Tokyo and Hokkaido rose for a first month in 12 and six, respectively. Kansai and Kyushu dropped for 12 consecutive months. Shikoku fell for a seventh straight month. Hokuriku was down for a first month in six. Meanwhile, Tohoku and Chubu ceased the 11-month losing streak until February, while Chubu's fall came to a lull for a first month in four.

The three-month price average for each fuel was at Yen 44,927 per kiloliter for crude oil, increasing for a first month in six by Yen 1,039 from the previous month. LNG was up for a first month in four by Yen 119 to Yen 52,985 per ton. Coal sank by Yen 242 at Yen 10,502 per ton, falling for a 12th straight month.

According to revised preliminary trade statistics for December 2019 released by the Japan's Ministry of Finance, crude oil was up Yen 1,567 from the previous month to Yen 45,995 per kiloliter, posting a month-on-month gain for three consecutive months. LNG increased for a second straight month by Yen 208 to Yen 53,338 per ton. Coal dropped for two consecutive months by Yen 421 to Yen 10,160 per ton, marking the lowest level since Yen 8,901 in November 2016.

Among nine power utilities, TEPCO Fuel & Power said its average fuel prices over Oct-Dec 2019 was at Yen 35,000, up Yen 200 from Sep-Nov 2019 but down Yen 9,200 from the base prices. The fuel cost adjustment unit prices for March 2020 were at minus Yen 2.13/kWh for low voltage power, up Yen 0.05 from the previous month, minus Yen 2.06/kWh for high voltage power, up Yen 0.05, and minus Yen 2.03 for extra high voltage power, up Yen 0.05. 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, Mar-20									
	Average Fuel Prices			Fuel Cost Adjustment					
	Oct 19 - Dec 19	vs Sep 19 - Nov 19	vs Base Prices	Low Voltage Power	MoM	High Voltage Power	MoM	Extra-High Voltage Power	MoM
Hokkaido	29,400	300	-7,800	-1.54	+0.06	-1.47	+0.06	-1.44	+0.05
Tohoku	27,300	0	-4,100	-0.91	0.00	-0.87	0.00	-0.84	0.00
Tokyo	35,000	200	-9,200	-2.13	+0.05	-2.06	+0.05	-2.03	+0.05
Chubu	31,100	0	-14,800	-3.45	0.00	-3.30	0.00	-3.26	0.00
Hokuriku	22,400	0	500	0.08	0.00	0.08	0.00	0.08	0.00
Kansai	26,700	-100	-400	-0.07	-0.02	-0.06	-0.01	-0.06	-0.01
Chugoku	24,200	0	-1,800	-0.43	0.00	-0.42	0.00	-0.41	0.00
Shikoku	23,400	-100	-2,600	-0.51	-0.02	-0.49	-0.02	-0.48	-0.02
Kyushu	21,400	-200	-6,000	-0.82	-0.03	-0.78	-0.03	-0.77	-0.03
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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