



Power Assessment Methodology

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Relevance of Rim Assessment Methodology

The purpose of all price assessments in reports issued by Rim Intelligence is to provide an indication to energy market players as to the levels at which transactions can take place so that trades can be done with high transparency and at reasonable prices. To achieve this purpose, we have set up “General Procedures for Price Assessment” as follows, and “Price Assessment Methodology” for each report. Detailed in the “General Procedures for Price Assessment” and “Price Assessment Methodology” for each report are processes and standards that we deem are necessary to achieve the above purpose. By following these processes and standards in making price assessments, we consider our Assessment Methodology to be appropriate.

Chapter 1: General Procedures for Price Assessment

Article 1: Purpose of price assessment

The purpose of all price assessments in our reports is to provide an indication to energy market players as to the levels at which transactions can take place so that trades can be done with high transparency and at reasonable prices.

Article 2: Conducting price assessment

To achieve the purpose outlined in Article 1, we have set up the following guidelines in our “General Procedures for Price Assessment”, and “Price Assessment Methodology” for each report. We follow these guidelines in making price assessments.

- Trades considered for price assessment
- Assessment window
- Priority in price assessment
- Selection of players providing market information
- Method of information gathering
- Establishment and role of supervisors
- Selection of supervisors
- Maintaining quality of review by supervisors
- Maintaining consistency in price assessment
- Reliability and adequacy of market information
- Making Assessment Methodology available
- Regular reviews of Assessment Methodology
- Amendments to Assessment Methodology
- Changes/Amendments to price assessment
- Quantity
- Reasons for using specific units for quantity (barrel etc.)

Article 3: Trades considered for price assessment

For each price index, our price assessment is based on quantities, delivery period and areas with the most liquidity. Further, details such as the value and quantity on which the assessment is based, market information which is used as a reference, and other platforms such as the Rim Trading Board and specific markets including trades carried out in Exchanges are included in the methodology of each report.

Article 4: Assessment window

For each price index, the time window considered appropriate for our price assessment is that which is deemed to be the most convenient and effective during trading hours in Asia, including Japan.

Article 5: Priority in price assessment

For each price index, among traded prices in transactions that take place between agreed parties or in other markets, bids and offers, the priority as to which price is considered first for assessment is determined and details are given in the methodology of each report.

Article 6: Selection of players providing market information

When selecting players to obtain information from, we take into account the quantity handled and the amount of influence on the market, without any bias towards buyers or sellers. We gather market information from many players including Majors, oil and gas producers, oil companies, traders, dealers and end-users. Each report team determines that there is no bias in the players it obtains information from in terms of area and the type of information they have. Should the player be deemed biased, the reporter and team leader may, after obtaining approval from the president, remove him from the list of players providing market information.

Article 7: Method of information gathering

Our reporters possess suitable quality and skill from a fair and neutral standpoint. Reporters carry out information gathering mainly by telephone but also by email and chat. To ensure the credibility of the player from whom information is gathered, the reporter will call the player's company directly to confirm that the player is indeed working for that company.

Article 8: Establishment and role of supervisor

Two or more supervisors are assigned to each report. Before each report is issued, at least one of the supervisors checks if the price assessment and its basis are in line with the Assessment Methodology and to ensure that consistency is maintained.

Article 9: Selection of supervisors

The supervisor has knowledge and experience in the product and market for which price assessment is conducted. The selection of supervisors requires approval from the board of directors. The supervisor is not involved in price assessment and writing of commentary for the report of which he is in charge.

Article 10: Maintaining quality of review by supervisors

For reports for which the supervisor is not the president, the president conducts regular spot checks to maintain the quality of the supervisor's review. After a spot check, a proof of the spot check will be kept.

Article 11: Maintaining consistency in price assessment

Besides reviews by supervisors, assessment simulation is conducted regularly to maintain consistency among reporters in price assessment.

Article 12: Reliability and adequacy of market information

Each reporter performing price assessment determines whether a trade was done by the parties involved and whether the information was suspicious or unusual by checking with the relevant parties and other multiple parties, with further investigation carried out if necessary. If unusual market information regarding a trade by parties involved or suspicious information is found, additional information gathering will be carried out before making a judgment as to whether or not to remove the information for consideration for price assessment. Major issues are to be reported promptly to the supervisor and the president. Of these, important professional judgments will be recorded in each report team's information gathering memo, assessment process sheet etc. If it is necessary to

check whether the information provided is suspicious, we may consider obtaining information from the back office.

For certain markets with low liquidity, market information for price assessment may be obtained from a single source. Even in such a situation, we follow processes detailed in our Assessment Methodology to determine if such market information can be used for price assessment. We do not disregard the information in making price assessment merely because it is obtained from a single source.

Players giving market information are expected to provide all relevant information that meets the conditions for price assessment stated in our Assessment Methodology, which is published on our website.

Article 13: Making our Assessment Methodology available

The Assessment Methodology approved by two or more members of the board of directors is published on our website, whereby external market players involved in trading, players providing market information and our subscribers can access.

Article 14: Regular reviews of Assessment Methodology

Our Assessment Methodology is reviewed at least once a year (during the board of directors' meeting held in October) or when substantial changes have taken place in the market. After each review, we may consider making amendments to our Assessment Methodology if deemed necessary. When reviewing our Assessment Methodology, we may consider views obtained from external market players and our subscribers.

Article 15: Amendments to Assessment Methodology

If amendments to our Assessment Methodology that affect the price assessment process are deemed necessary, discussions are conducted within each report team and amendments are submitted to two or more members of the board of directors for approval. After the amendments are approved by two or more members of the board of directors, a notice of the amendments and the effective date will be placed in our reports in principle one month before, but at least two weeks prior to the effective date.

After the amendments are approved by two or more members of the board of directors, the Assessment Methodology with the amendments reflected has to be approved by two or more members of the board of directors by the effective date.

When making amendments to our Assessment Methodology that affect the price assessment process, we accept inquiries regarding such amendments from external market players and our subscribers. These inquiries are, in principle, published in our reports or on our website, but if the party making the inquiries requests us not to do so, we may not disclose the details for confidentiality reasons.

For amendments to our Assessment Methodology that do not affect the price assessment process, after approval by two or more members of the board of directors, the amendments will be announced in our reports and effected promptly.

Article 16: Changes/Amendments to price assessment

Price assessments in our reports will not be amended after they are published, except for typing and spelling mistakes.

Chapter 2: Price Assessment Methodology for Power Report

Purpose of price assessment:

The purpose of price assessment is to reflect the actual market in which standard spot buying and selling take place on the day of publication.

Definition of price:

Even if no transactions take place, the value of a commodity may change. The price reflects the changing values of a commodity. The value of a commodity may change depending on supply/demand, production costs, the situation in other markets, and players' perspectives.

Time window:

Rim occasionally divides the time-window month of price assessments into the first-half month and second-half month. In such cases, the first-half month refers to the period from the first day to the 15th of the month and the second-half month refers to the period from the 16th to the last day of the month.

1. Rim Index Day-ahead prices

<Assessment Components>

Rim Index Day-ahead prices are assessed based on traded prices, bids and offers for Day-ahead contracts on the Japan Electric Power Exchange (JEPX) and OTC market in nine areas of Japan (Hokkaido, Tohoku, Tokyo, Chubu, Hokuriku, Kansai, Chugoku, Shikoku and Kyushu). Assessment Window is categorized as 24 hours (0-24 hours), Daytime (8-22 hours), Peak time (13-16 hours) and Night time (0-8 and 22-24 hours).

<Assessment Window>

9:30 to 16:00 hours Tokyo time

<Assessment Method>

- 1) Primarily based on traded prices, bids and offers in nine areas of Japan obtained in the Assessment Window, Rim Index Day-ahead prices are assessed in two regions: East Japan (50Hz frequency region including Hokkaido, Tohoku and Tokyo) and West Japan (60Hz frequency region including Chubu, Hokuriku, Kansai, Chugoku, Shikoku and Kyushu). The order of priority as to which components are more important for assessments is 1. traded prices, 2. firm bids/offers and 3. buy/sell indications. To verify the appropriateness of traded prices, firm bids/offers and buy/sell indications are also considered as important factors.
- 2) In case traded prices vary from region to region due to an occurrence of price divergence by region and other factors, Rim Index Day-ahead prices are assessed in

two regions: East Japan and West Japan by taking the weighted average of traded prices based on the demand for each region. This takes into account the different demand in each region and the impact on prices depending on the size of each region.

- 3) Prices for delivery on Sunday, national holidays in Japan and Monday are all assessed in the first business day after the holidays. In normal cases without any national holidays during the week, prices for delivery on Saturday are assessed on Friday and prices for delivery on three days including Sunday, Monday and Tuesday are assessed on Monday after the weekend. In case of long holidays, for example, when Monday and Tuesday are holidays, prices for delivery on five days including Sunday, Monday, Tuesday, Wednesday and Thursday are assessed on Wednesday after the holidays.

<Standard Size and Price Unit>

All prices are for trading units at 1,000kW or more. The power industry including the wholesale power market and buy tenders typically trades power by using the kW unit, and Rim follows this convention. All price units are in Japanese yen per kW (yen/kW). Trades in smaller volumes are not used for price assessments directly, but may be considered as references for price assessments.

2. Rim Index Forward prices

<Assessment Components>

Rim Index Forward prices are assessed based on traded prices, bids and offers for forward contracts during 24 hours (0-24 hours) for delivery in the designated months in the OTC market.

<Assessment Window>

9:30 to 16:00 hours Tokyo time

<Assessment Method>

- 1) Rim Index Forward prices are assessed primarily based on traded prices, bids and offers obtained in the Assessment Window. The order of priority as to which components are more important for assessments is 1. traded prices, 2. firm bids/offers and 3. buy/sell indications. To justify the appropriateness of traded prices, firm bids/offers and buy/sell indications are also considered as important factors.
- 2) In case there are no transactions, bids and offers, Rim Index Forward prices are assessed based on power generation costs and supply capacity of leading power utilities. Power generation costs are calculated based on fuel forward prices assessed and estimated by Rim as well as forward prices provided by commodity exchanges, with thermal efficiency applied in each case.

<Standard Size and Price Unit>

All prices are for trading units at 1,000kW or more. The power industry including the wholesale power market and buy tenders typically trades power by using the kW unit, and Rim follows this convention. All price units are in Japanese yen per kW (yen/kW). Trades in smaller volumes are not used for price assessments directly, but may be considered as references for price assessments.

<Assessment Month>

Rim Index Forward prices are assessed for 15 designated months including the front-month. During the period from the first day to the 15th of the month, the front-month refers

to the following month of the day of publication. During the period from the 16th to the last day of the month, the front-month shifts to a month after the following month.