

Japan Credit Rating Agency, Ltd. (JCR) announces the following credit rating.

## Teollisuuden Voima Oyj (security code: -)

<Affirmation>

Foreign Currency Long-term Issuer Rating: AA-  
Outlook: Stable

### Rationale

- (1) Teollisuuden Voima Oyj (TVO, Industrial Power Company Corporation) is a Finnish electricity generation company that operates two nuclear power stations (Olkiluoto (OL) 1 and 2, both 880MW) and sells the generated power to its shareholders at cost. The rating is supported by (a) its business model called "Mankala", unique to joint-venture power generators in Finland, (b) the important role it fulfills by providing 17% of the country's total electricity consumption, (c) long-standing solid and stable track records of operating nuclear power stations since 1979 and (d) relatively low generation cost. TVO's Articles of Association obligate its shareholders to pay, in proportion to capital contribution ratio and regardless of the receipt of power, the fixed cost for operating the power plants including the payment of TVO's financial obligations. Should a shareholder miss payments, TVO would be able to recover the cost by selling the suspended power to other shareholders or in the Nordic power market as the current generation cost is lower than the prevailing market prices. Since 2005, the company has been building a new nuclear power plant Olkiluoto 3 (OL3, 1,600MW). OL3's commercial operation date, originally planned in 2009, has been postponed successively and is now scheduled to be in late 2018. The delay has pushed up the construction cost significantly, and arbitration is proceeding with the turn-key-contractors, AREVA-Siemens consortium, regarding who should bear the additional cost. Once OL3 starts operation, the company's average power generation cost will inevitably rise, even if TVO wins the arbitration in light of the current claimed amount. The shareholders' commitment to TVO is based on their long-term perspective and remains solid as demonstrated in their representation in the company's board and the timely provision of shareholders' subordinated loans. That said, the decline in TVO's relative price competitiveness amid the subdued outlook of Nord Pool electricity prices may not only weaken the shareholder's economic incentive but also make it more difficult for TVO to fully recover the generation cost by selling in the market in case of specific shareholders' non-payment. JCR will continue to monitor (i) the price competitiveness of the power generated by TVO, reflecting the developments of OL3's construction and arbitration, vis-à-vis power market prices and (ii) the shareholders' support to TVO, which will be reflected in the rating as needed.
- (2) TVO is a private nuclear power generation company established in 1969. The company's total asset was EUR7.1 billion at the end of 2014 and the annual turnover was EUR327 million in 2014. It has six shareholders including top two electricity companies in Finland. They are (i) Pohjolan Voima Oy, the largest private electricity company in Finland, holding 58.5% of TVO; (ii) Fortum Power and Heat Oy, a subsidiary of the state-run Fortum Oyj, 25.8%; (iii) Oy Mankala Ab, a hydropower company owned by the city of Helsinki through Helen Oy, 8.1%; (iv) EPV Energia Oy, electricity supplier for municipally-owned companies and cities, 6.6%; (v) Kemira Oyj, a water chemistry company, 1.0%; and (vi) Karhu Voima Oy, a power distribution company, 0.1%. TVO's board members are nominated by the major shareholders. The company has been operating two BWR nuclear power plants (880MW each) in Olkiluoto, Finland, since 1979 and 1982 and possesses 45% of the shares of Meri-Pori coal condensing power plant (565MW). The power generation by OL1 and OL2 totaled 14.3TWh in 2015, accounting for 17% of the total domestic consumption in Finland. The current operating licenses for OL1 and OL2 will expire in 2018, which will likely be extended further, given the company's continuous investment for renewal and modernization. In addition, TVO possesses 60% of the shares of Posiva Oy, a company that undertakes final disposal of spent nuclear fuel. The company is also constructing the third nuclear power station (1,600MW EPR nuclear power plant, to be operational in late 2018). Meanwhile, TVO used to have a plan to build the fourth nuclear power plant (1,400~1,750MW), which however halted as it had not applied for a construction license by the application deadline by the end of June 2015.

- (3) TVO is run on the so-called “Mankala” principle, a business model unique to joint-venture power generators in Finland. Specifically, in accordance with the Articles of Association, the shareholders retain the right to receive, based on each shareholding ratio, the generated power at cost price. Meanwhile, they are obligated to pay monthly to TVO (a) the fixed cost (e.g., cost of operation, maintenance and administration, taxes except for those related to power production volume, insurance, financial obligation, depreciation, cost for nuclear waste management) by the 24th of each previous month regardless of the receipt of power and (b) the variable cost (e.g., fuel and other costs related to power production volume) by the due date (normally in each following month) in proportion to the volume they receive. In case a shareholder missed any such payment deadline, TVO would be entitled to immediately suspend the power delivery to such shareholder and sell it to other shareholders or the market at a market price. The company has run the nuclear power stations in a stable and safe manner for more than 35 years. The annual load factor of the existing nuclear power plants has generally stayed extremely high at above 90%. In 2015, the load factor of OL1 registered 96.2% while that of OL2 dropped to 89.2%, slightly below 90%, due to water leakage in its generator. The electricity prices for the Finland region at Nord Pool, the integrated electricity market in Nordic countries, dropped from 36EUR/MWh in 2014 to 30EUR/MWh in 2015. Nevertheless, the charge of the power generated by TVO’s existing two nuclear power plants has been on average at around 20EUR/MWh, still way lower than those prices.
- (4) Operating under the Mankala model where the construction cost is capitalized during the construction period and recovered during the operational period by delivering the power to the shareholders at cost, TVO always registers zero net profit for its power generation business as approved by the Finnish tax authorities. The company is continuously investing in the two existing nuclear power stations so as to maintain 40 years of remaining technical life-time. Also, it has been undertaking the construction of the third nuclear power plant since 2005. For a company that has two 880MW nuclear power stations, financial burden of investing in a new 1,600MW nuclear power plant would certainly be hefty. Under the financial policy to maintain the equity ratio at above 25%, TVO is procuring funds through a mixture of bank loans, corporate bonds and subordinated shareholder loans. At the end of 2014, its equity ratio stood at 31%. To address the mounting liquidity risks associated with refinancing needs amid the soaring financial obligations, TVO keeps adhering to the rules that (a) no more than 25% of outstanding financial obligations will mature during the next rolling 12-month period and (b) more than 120% of financing needs for the next rolling 12-month will be constantly secured by long-term committed credit lines such as syndicated credit facility. At the end of September 2015, the total of undrawn syndicated credit facility and cash equivalents stood at EUR1.64 billion, way higher than the annual aggregate of maturing debt and investment needs.

Satoshi Nakagawa, Haruna Saeki

### Rating

Issuer: Teollisuuden Voima Oyj (TVO)

<Affirmation>

	Rating	Outlook
Foreign Currency Long-term Issuer Rating	AA-	Stable

Rating Assignment Date: February 12, 2016

The criteria used for identifying matters which serve as assumptions for the assessment of the credit status, and the criteria used for setting of grades indicating the results of the assessments of the credit status are published as "Types of Credit Ratings and Definitions of Rating Symbols" (January 6, 2014) in Rating Policies on JCR's website (<http://www.jcr.co.jp/english/>).

Outline of methodology for determination of the credit rating is shown as "JCR's Rating Methodology" (November 7, 2014) and "Electric Power" (April 23, 2015) in Rating Policies on JCR's website (<http://www.jcr.co.jp/english/>).

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## Information Disclosure Form

Japan Credit Rating Agency, Ltd.

### Disclosure Required by Paragraph (a)(1)(ii) of Rule 17g-7

Issuer:	Teollisuuden Voima Oyj
Rating Publication Date:	February 17, 2016

**1** The Symbol, Number, or Score in the Rating Scale used to Denote Credit Rating Categories and Notches and, the Identity of the Obligor or the Identity and a Description of the Security or Money Market Instrument as Required by Paragraph (a)(1)(ii)(A) of Rule 17g-7

- Please see the news release.

**2** The version of the procedure or methodology used to determine the credit rating; as Required by Paragraph (a)(1)(ii)(B) of Rule 17g-7

- Please see the news release.

**3** The Main Assumptions and Principles used in Constructing the Procedures and Methodologies used to Determine the Credit Rating as Required by Paragraph (a)(1)(ii)(C) of Rule 17g-7

- The credit rating methodology assumes, in principle, to be applied to assess the likelihood of a given debt payment in light of its issuer's condition and business environment, etc. in the relevant future. There is certain limitation, however, in the time horizon that the rating foresees.
- The credit rating methodology assumes, in principle, that the factors posted in the below are particularly important for such likelihood to be determined, and that the rating determination is made by evaluating each of them not only quantitatively but also employing qualitative analyses.

A) Business Bases

The likelihood of a given debt payment is highly conditional to its issuer's business bases - how they can be maintained/ expanded into the future and thereby secure earnings and cash flows in adequacy and in a sustainable way.

B) Financial Grounds and Asset Quality

The likelihood of debt payment is highly dependent on the degree of the issuer's indebtedness and loss absorption capacity in terms of equity capital. Also notable is that a financial institution might see a significant loss of financial grounds as a result of changes in value of the assets under its possession.

C) Liquidity Positions

The likelihood of debt payment is highly dependent on the adequacy of the issuer's cash and other sources of repayment (liquidity positions).

D) Related Parties' Status and Stance of Support/ Assistance for the Issuer

The likelihood of debt payment is affected one way or the other by the issuer's related parties such as parent company, subsidiary, guarantor, and the government of the issuer's business domicile, etc. - by their own conditions and/ or position of support/ assistance for the issuer.

E) Order of Seniority in Debt Payment

The likelihood of debt payment can be different between given debts of the same issuer. The likelihood of debt payment for an individual debt is dependent on the issuer's discretion, and/ or its rank relative to other debts of the same issuer in the order of seniority in principal/ interest payment which is determined by design as financial product or by laws, etc.

4 The Potential Limitations of the Credit Rating as Required by Paragraph (a)(1)(ii)(D) of Rule 17g-7

- The credit rating herewith presented by JCR is its summary opinion with regard to the likelihood of given debt payment and hence not necessarily a perfect representation of such likelihood. The credit rating is not intended to estimate the probability of default or the loss on given default, either.
- The objective of the credit rating herewith presented does not include any concerns other than the likelihood of debt payment, such as risks of price changes, market liquidity, etc.
- The credit rating herewith presented is necessary to be reviewed along with possible changes of the issuer of rated objects in its business performance and/ or circumstances which include regulatory environment, and hence subject to possible alteration.

5 Information on the Uncertainty of the Credit Rating as Required by Paragraph (a)(1)(ii)(E) of Rule 17g-7

- The information used for the determination of credit rating as herewith presented is obtained by JCR from the issuer of rated objects and other sources that JCR trusts in terms of accuracy and reliability but possibly contains errors due to human, non-human or other causes. Consequently, the credit rating determined on the grounds of such information does not constitute, explicitly or implicitly, any representation or warrant of JCR on the information itself or any consequences of its use in terms of accuracy, relevance, timeliness, wholeness, market value, or usefulness for any specific purposes.

6 Use of Due Diligence Services of a Third Party in Taking the Rating Action as Required by Paragraph (a)(1)(ii)(F) of Rule 17g-7

- There is no use of any third-party due diligence service in the determination of the credit rating herewith presented.

7 Use of Servicer or Remittance Reports to Conduct Surveillance of the Credit Rating Required by Paragraph (a)(1)(ii)(G) of Rule 17g-7

- There is no use of any servicer or remittance report to conduct surveillance of the credit rating herewith presented.

8 The Types of Data Relied Upon for the Purpose of Determining the Credit Rating as Required by Paragraph (a)(1)(ii)(H) of Rule 17g-7

- The information posted in the below, which includes data, is used for the determination of the credit rating herewith presented.

- A) Audited financial statements presented by the rating stakeholders
- B) Explanations of business performance, management plans, etc. presented by the rating stakeholders

## 9 Overall assessment of the Quality of Information Available and Considered in Determining the Credit Rating as Required by Paragraph (a)(1)(ii)(I) of Rule 17g-7

- JCR holds its basic policies for securing the quality of information as a base of due diligence for the determination of credit ratings. The information used as a base for the determination of credit rating herewith presented satisfies such policies, which include the audit by an independent auditor, the publication by the issuer or some independent media or, otherwise, JCR analyst's scrutiny, etc.
- JCR sees no particular weakness in the quality of information used for the determination of the credit rating herewith presented as compared to the information used in other cases of the credit rating for comparable issuers or ratable objects.

## 10 Information Relating to Conflicts of Interest as Required by Paragraph (a)(1)(ii)(J) of Rule 17g-7

- JCR receives payment of compensation for the determination of the credit rating herewith presented from either one of those parties who are issuer, underwriter, depositor or sponsor.
- JCR did not receive in the last fiscal year in the past payment of compensation from the same party for any kind of JCR's service other than the determination of credit rating, such as one in the ancillary business.

## 11 Explanation or Measure of the Potential Volatility of the Credit Rating as Required by Paragraph (a)(1)(ii)(K) of Rule 17g-7

### A) Business Bases

The credit rating is subject to alteration if there is improvement or deterioration of the issuer's business bases, since its revenue, etc. may improve or deteriorate by the change in its business management policies, clients' preferences, competitive situation, or a technological innovation. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change in the business bases is large.

### B) Financial Grounds and Asset Quality

The credit rating is subject to alteration if the issuer increases/ decreases its debt/ capital or vice versa and thereby makes its individual debt payment liability less or more bearable and its loss absorption capacity into the future decreased or increased. Also, the changes in the quality of asset under the issuer's holding may affect the credit rating, since such changes could raise or lower the likelihood of future loss of the issuer's financial grounds. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change in the financial grounds and/ or asset quality is large.

### C) Liquidity Positions

The credit rating is subject to alteration if there is a change in the issuer's financial management policy or in the relations with fund procurement sources and the change thereby makes its liquidity positions improve or deteriorate. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change is large.

### D) Related Parties' Status and Stance of Support/ Assistance for the Issuer

The credit rating is subject to alteration if there is a change in the issuer's parent company or subsidiary, guarantor or other provider of credit enhancement, or the government of the issuer's

business domicile, or other related parties' own conditions and/ or position of support/ assistance for the issuer, and the change thereby makes its business bases, financial grounds and/ or liquidity positions improve or deteriorate, and/ or making the effectiveness of guarantee and other credit enhancement improve or deteriorate. The resultant alteration of the credit rating is usually a notch, with possibility of a few notches if and when the change is large.

E) Rise and Fall in General Economy and Markets

The credit rating is subject to alteration if there is a rise/ fall in the general economy and/ or the markets inducing the issuer's revenues/ expenses to increase/ decrease and vice versa, etc. The resultant alteration of the credit rating is usually by a notch, with possibility of a few notches if and when the change is exceptionally large.

F) Various Events

The credit rating is subject to alteration on occurrence of various events, such as change in the issuer's major shareholders, M&A and other organizational change, accident, violation of the law, litigation, legal/ regulatory change, natural disaster, etc., which are unforeseeable at the time when the credit rating is determined, causing a significant change on the issuer's business bases, financial grounds, etc. The resultant alteration of the credit rating could be by a notch but more often than not as much as a few notches.

## 12

Information on the Content of the Credit Rating, Including the Historical Performance of the Credit Rating and the Expected Probability of Default and the Expected Loss in the Event of Default as Required by Paragraph (a)(1)(ii)(L) of Rule 17g-7

- Historical records of the credit rating herewith presented are posted in the end of this paper.
- The credit rating herewith presented by JCR is its summary opinion with regard to the likelihood of given debt payment and hence not necessarily a perfect representation of such likelihood. The credit rating is not intended to estimate the probability of default or the loss on given default, either.
- Facts of the probability of default are posted as Form NRSRO Exhibit 1 on the JCR website under the URL:

<http://www.jcr.co.jp/english/nrsro/index.html>

## 13

Information on the Sensitivity of the Credit Rating to Assumptions Made as Required by Paragraph (a)(1)(ii)(M) of Rule 17g-7

A) Business Bases

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's business bases and powers of earning or cash flow generation, etc. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if the development is rapid in improvement or deterioration of the issuer's business bases on some drastic change in the operational environments, etc.

B) Financial Grounds and Asset Quality

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's financial grounds and asset quality. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if the development is rapid in improvement or deterioration of the issuer's financial grounds and/ or asset quality on some drastic change in its business bases.

C) Liquidity Risks

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's liquidity positions. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if the development is rapid in improvement or deterioration of the issuer's liquidity positions on some drastic change in its financial management policy or relations with fund procurement sources, etc.

D) Related Parties' Status and Stance of Support/ Assistance for the Issuer

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the issuer's parent company or subsidiaries, guarantor or other providers of credit enhancement, the government of the issuer's business domicile or other related parties' status and stance of support/ assistance for the issuer. The resultant change of the credit rating is most likely by a notch, as JCR speculates, but possibly as much as a few notches if there is a major change on the part of related parties, such as replacement, disappearance, some drastic improvement/ deterioration of financial grounds/ balances, etc.

E) Rise and Fall in General Economy and Markets

The credit rating herewith presented could be changed if and when the assumptions made at the time of its determination turn out to be inaccurate with regard to the prospects of general economy and markets. JCR expects the change should be most likely by a notch but could be as much as a few notches, should the economy or the markets change so greatly.

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Information on the Representations, Warranties, and Enforcement Mechanisms of an Asset-backed Security as Required by Paragraph (a)(1)(ii)(N) of rule 17g-7

- The credit rating herewith presented is not for an ABS product, and hence no relevant issue.

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## The Historical Performance of the Credit Rating

Issuer Name	Issue Name	Publication Date	Rating	Outlook/Direction
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	March 6, 2003	AA	
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	January 14, 2004	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	November 19, 2004	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	December 19, 2005	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	February 14, 2007	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	January 15, 2008	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	January 21, 2009	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	January 7, 2010	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	February 4, 2011	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	December 27, 2011	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	February 18, 2013	AA	Stable
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	March 28, 2014	AA	Negative
Teollisuuden Voima Oyj	Issuer(Long-term)(FC)	January 21, 2015	AA-	Stable

## Attestation Required by Paragraph (a)(1)(iii) of Rule 17g-7

I, Koichi Fujimoto, have responsibility to this Rating Action and to the best of my knowledge:

- A) No part of the credit rating was influenced by any other business activities.
- B) The credit rating was based solely upon the merits of the obligor, security, or money market instrument being rated.
- C) The credit rating was an independent evaluation of the credit risk of the obligor, security, or money market instrument.



Koichi Fujimoto  
General Manager of International Rating Department

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