

[Unofficial Translation]

Document for Hearing
on
(Draft) Criteria for Determining Utility Green Tariff (UGT)

Part 1: The essence of the (Draft) Criteria for Determining Utility
Green Tariff

Part 2: (Draft) Criteria for Determining Utility Green Tariff

21 February 2023 – 7 March 2023

Energy Innovation and Regulatory Development Department
Office of the Energy Regulatory Commission



PART 1: THE ESSENCE OF THE (DRAFT) CRITERIA FOR DETERMINING UTILITY GREEN TARIFF

BACKGROUND AND IMPORTANCE

1. On 11 December 2010, the 16th United Nations Framework Convention on Climate Change Conference of the Parties (UNFCCC COP), or COP16, adopted the Cancun Agreement, which set the Long-term Global Goal (LTGG) of keeping the average global temperature rise not more than 2 degrees Celsius from that in the pre-industrial period and recognized the need to consider stepping up the LTGG to be not more than 1.5 degrees Celsius, which is expected to occur during the year 2030–2052, according to the best scientific knowledge available in at that time. Later, in September 2014, the RE100 group was formed, which is a group of globally influential and high-energy consumption businesses, with a common goal of becoming companies with 100% renewable electricity consumption by the year 2050. In order to be 100% renewable electricity consumption companies, they must match the total corporate electricity consumption of their global operations with the renewable energy generation.

2. On 12 December 2015, as a result of the COP21, the Paris Agreement was adopted, which has set a target for the international community to jointly limit the increase in global average temperature not to be more than 1.5–2 degrees Celsius by the year 2100.

3. On 11 December 2019, the European Commission published the European Green Deal policy document that sets a goal of achieving zero greenhouse gas emissions for the EU by 2050. Later, on 14 July 2021, the European Union (EU) published a bill on the Carbon Border Adjustment Mechanism (CBAM)—a measure set by the European Commission to reduce EU greenhouse gas emissions in line with international commitments to global warming reduction. The CBAM will adjust the cost of certain imported goods to reflect the real carbon emissions of the manufacturing process of those goods and to prevent imports of products with emissions higher than the EU standards into the EU. In addition, there is a tendency for other countries to introduce similar measures. As a result, electricity consumers, especially in the export industry, demand electricity from renewable energy in a manner that can be used to declare greenhouse gas emissions in accordance with methods and standards consistent with these measures to prevent cross-border carbon fines and to maintain competitiveness.

4. On 10 March 2021, the Office of the Securities and Exchange Commission, Thailand, announced measures to reduce the fee for filing registration statements for securities offerings and annual registration statements for companies that disclose information about greenhouse gas emissions, which is an incentive measure according to the Sustainable Finance Initiatives for Thailand. In addition, the Ministry of Natural Resources and Environment is in the process of



drafting the Climate Change Act, which may require operators of certain types of businesses to report the volume of greenhouse gas emissions to the government, and the Ministry of Finance is undertaking a study to impose a carbon tax, both indirect charge on commodities and direct charge on the manufacturing process to be in line with the practice under the CBAM measure of the EU. All of these undertakings must have a process for monitoring and reporting the amount of greenhouse gas emissions in the manufacturing process in order to forge ahead with the reduction of Thailand's greenhouse gas emissions.

5. On 1 November 2021 and 15 November 2022, at the COP26 conference in Glasgow, United Kingdom, and COP27 in Sharm el-Sheikh, Arab Republic of Egypt, respectively, Thailand pledged its Nationally Determined Contribution with an aim to achieve carbon neutrality by 2050 and zero greenhouse gas emissions by 2065 in all sectors. In this regard, a goal has been set to increase the production of zero-emission vehicles to 30% of the total vehicle production by 2030, to increase the share of renewable energy in electricity generation by at least 50% by 2050 and to support the use of CO₂ capture technologies at a commercial scale before 2040.

6. On 20 and 22 April 2022, the Energy Regulatory Commission (ERC) considered the development of electricity Tariff in the form of Green Tariff for use in general. Later, at its meeting held on 26 October 2022, the ERC passed a resolution, directing the OERC to present the ERC's opinions and recommendations to the National Energy Policy Council (NEPC) for consideration of policy formulation and setting guidelines for determining Utility Green Tariff pursuant to Section 64 of the Energy Industry Act of 2007.

7. The NEPC, at its meeting on 7 November 2022, passed a resolution, approving the guidelines for determining Utility Green Tariff under the retail electricity tariff structure, comprising:

(1) Utility Green Tariff of existing renewable energy (RE) power plants in the electricity system. Under this rate, the Renewable Energy Certificates (RECs) of existing state-owned power plants will be used in providing green electricity in conjunction with the provision of electrical energy services, and electricity consumers do not have to specify the source of electricity and REC when requesting services. There will be an additional service charge (Premium) in addition to the normal electricity tariff, which covers the cost of REC, including other components as may be determined by the ERC in the future.

(2) Utility Green Tariff of new RE power plants and existing RE power plants, both state-owned and private, in the electricity system. Under this rate, the provision of electrical energy and REC comes from the same source and electricity consumers must specify a portfolio of power plants when requesting services; the Tariff will be determined based on the cost of electricity

services and REC of each portfolio, including other components as may be determined by the ERC in the future.

With regard to the determination of the components and structure of the two UGT rates, including the allocation of service costs to general electricity consumers to cover public costs and related implementation methods and conditions, the ERC will further consider the regulation of those issues under the Energy Industry Act of 2007 to ensure transparency and fairness to all power consumer categories. (Details are shown in Figure 1.)

8. The ERC, at its meetings held on 1 and 15 February 2023, considered the (Draft) Criteria for Determining Utility Green Tariff pursuant to Section 65 of the Act and gave consent to having the OERC arrange a hearing to obtain opinions for further ERC consideration.

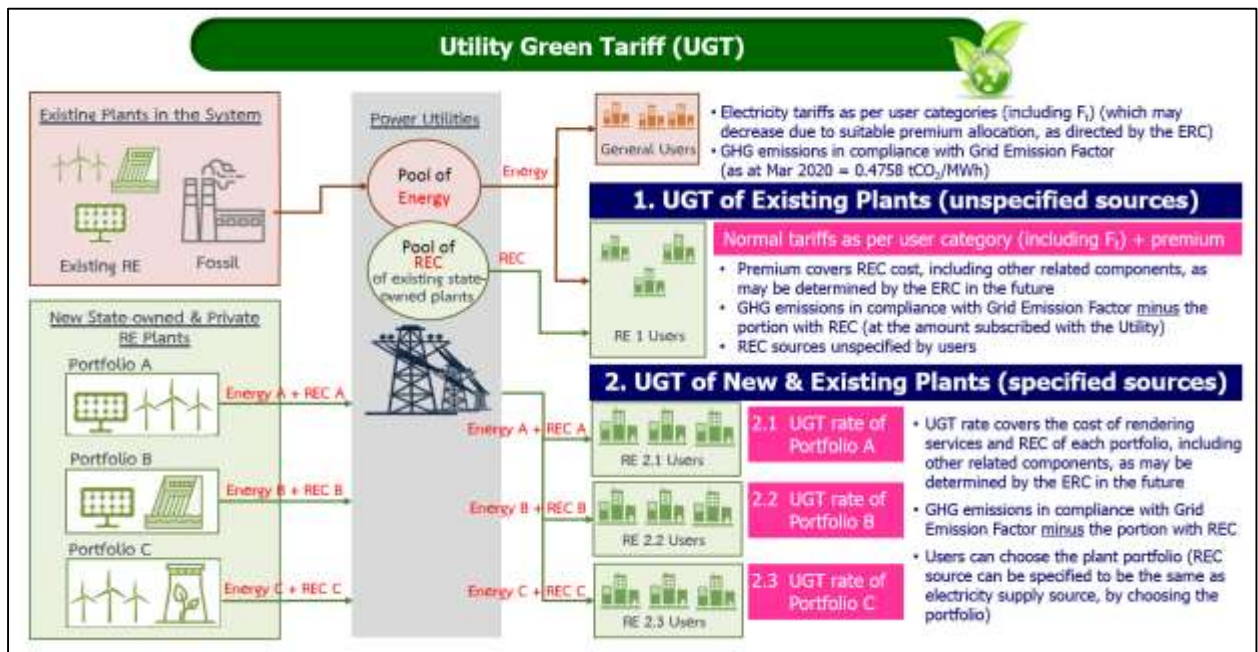


Figure 1: NEPC resolution (7 Nov 2022) regarding the guidelines for determining Utility Green Tariff

OBJECTIVES

1. To provide an option for power consumers who want to declare the use of electricity generated from renewable energy to increase their competitiveness and to request benefits from concerned agencies, and to drive the goal to reduce greenhouse gas emissions of the organizations, of Thailand and of the world.

2. To maintain Thailand's comparative advantage in attracting foreign investment to achieve sustainable development goals.

3. To set electricity Tariff that reflect the cost of services based on the principle of proportionality and the beneficiaries pay principle as well as to reduce the burden of promoting renewable energy in the power system in the long run.

PRINCIPLES

1. The Cabinet, at its meeting on 9 September 2003, stipulated that Thailand's electricity industry structure be of the Enhanced Single Buyer (ESB) model, with the Electricity Generating Authority of Thailand (EGAT) being responsible for the generation and transmission of electricity and being the sole purchaser of electricity, sending electricity to the Distribution Utilities, i.e. the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA). On 23 February 2021, the Cabinet announced the National Reform Plan (revised edition) and relevant agencies have been studying the restructuring of the entire electricity industry and competition enhancement, of which the determination must be carefully considered in order to ensure energy security, fairness and to maintain the comparative advantage of the country. As a result, while pending the electricity industry restructuring, the provision of green electricity services in Thailand that complies with international standards will be operated by the three Power Utilities (Utility Scale).

2. Utility Green Tariff with Unspecified Sources (UGT1) and with Specified Sources (UGT2) have different principles for setting Tariff with the use of Renewable Energy Certificates (RECs) as follows:

UGT1 involves the service provision relating to procuring and claiming REC from existing power plants in the system, in addition to the normal electricity service provision. The Utilities will collect purchase orders from each power user without specifying the source, which may start at 100 kWh, to procure REC (1 REC = 1,000 kWh) that covers the orders of all power consumers combined before delivering electricity with a proper REC claim to each power user according to the ordered amount; the commitment term under the contract is short (0–1 year). Therefore, the additional service that UGT1 users will receive from the Utilities is related to REC only, and hence the premium will involve only this part and will be an additional item on the normal electricity bill, according to the Beneficiaries Pay Principle. With this type of service provision, retail power consumers will have access to green electricity services, and the electricity tariff structure is still the same as the normal structure of each power consumer category pursuant to the policy which stipulates that power users under the same category use electricity at the same rate throughout the country (Uniform Tariff).

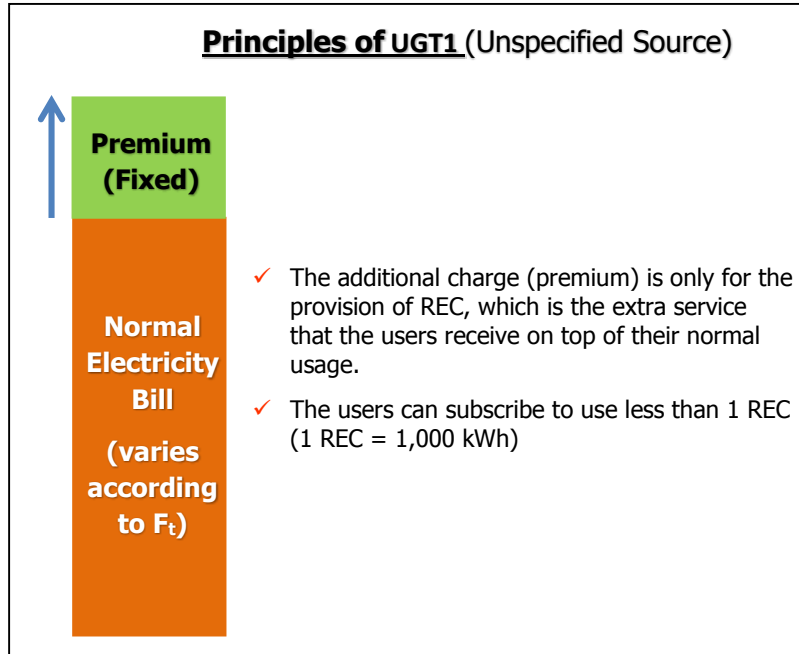


Figure 2: Principles for making the (Draft) Criteria for Determining Utility Green Tariff with Unspecified Source (UTG1)

UGT2 provides an opportunity for power consumers with large-scale energy requirements who want to drive an increase in the RE proportion in the power system to take on the burden of developing new RE power plants in the portfolio that has been chosen to provide services so that other electricity users would not have to bear those burdens. The Power Utilities will provide services relating to the execution of contracts according to the Sleeved PPA principle and manage the matching of electricity together with REC from RE power plants with electricity demand of each power user for each portfolio; the contract term is 10-25 years. Therefore, for this type of electricity Tariff, the tariff structure is designed differently from other electricity tariff structures because the duration of electricity generation from the portfolio is uncertain. The setting of tariff rates will be based on the principle of separating the cost of rendering services into the portion that electricity users still receive from the power system like other power users and the portion that is switched to be provided by the selected portfolio, which consists of the utility avoided cost and the cost of rendering services in addition to normal services. So, the UGT2 rate of each portfolio will be different from others, i.e. not a Uniform Tariff, and reflects the Ramsey pricing principle.

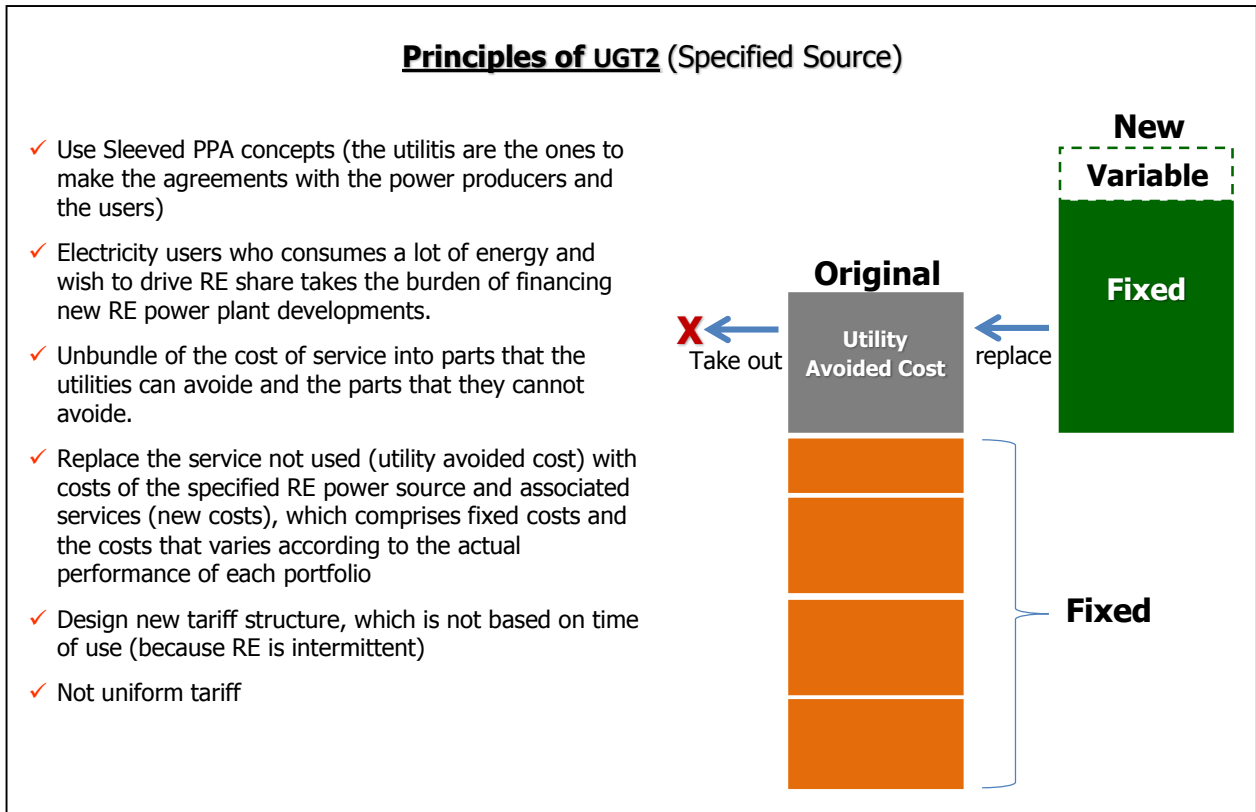


Figure3: Principles for making the (Draft) Criteria for Determining Utility Green Tariff with Spicified Source (UGT2)

HEARING PROCEEDINGS AND IMPLEMENTATION PLAN

1. Hearing Proceedings

1.1 Arrange a hearing from the general public via the OERC website (www.erc.or.th) from 21 February 2023 to 7 March 2023. Interested individuals can express their opinions via the message box on the hearing page on the website or send an email to sarabun@erc.or.th by addressing to the Director of Energy Innovation and Regulatory Development Department and clearly specifying the hearing topic.

1.2 Arrange a seminar to provide clarification and obtain opinions in the form of Conference Call via online meeting applications on 2 March 2023.

1.3 Arrange Focus Group hearings on specific issues, to be scheduled on a case-by-case basis, from 21 February 2023 to 7 March 2023.

2. Implementation Plan

Activity	Timeline
1. Hearing on (Draft) Criteria for Determining Utility Green Tariff (UGT)	21 February 2023 – 7 March 2023
2. Deliberation on the Criteria for Determining UGT	by March 2023
3. Power Utilities propose their UGT rates	by May 2023
4. Hearing on the UGT rates and deliberation on the UGT rates	by June 2023
5. Power Utilities announce their UGT rates and open for requests for service	by July 2023

PART 2: (DRAFT) CRITERIA FOR DETERMINING UTILITY GREEN TARIFF

1. CRITERIA FOR DETERMINING UTILITY GREEN TARIFF WITH UNSPECIFIED SOURCES (UGT1)

1.1 Define UGT1 as an electricity tariff pursuant to the notification of the normal electricity tariff structure, including the electricity tariff according to the automatic tariff adjustment formula (F_t), plus a "Premium," which consists of two parts—one for the cost of Renewable Energy Certificate (REC) of the existing state-owned power plants in the system (P_{REC}) and the other for the administrative cost (P_A).

UGT1 = Normal electricity bill (including F_t) + Premium

Premium (P) = REC Market Price (P_{REC}) + Administrative cost (P_A)

P_{REC} = Market price of REC

P_A = Administrative cost and operating remuneration of each Power Utility relating to REC

1.2 Terms of Service

1.2.1 A power consumer who wants to use the UGT service can choose to receive the service in blocks of which the size is specified by the service provider under the Electricity Supply Agreement (ESA) between the power consumer and the Power Utility that is his service provider, e.g. 100 kWh per block, or choose to use renewable electricity at the amount equal to his electricity consumption each month (100%).

1.2.2 Application for the UGT service and the service duration will be as defined in the ESA.

1.2.3 Green electricity service providers will deliver electricity together with REC to users of this form of UGT according to the amount they apply for service each month, but must not exceed the amount of electricity consumed each month. The applicant will not be able to choose the proportion of each type of renewable energy or specify the source of renewable energy generation.

1.3 The Premium is considered as income under regulation and the Premium configuration shall be reviewed to reflect actual costs and efficient operations as well as to promote renewable energy use, at the end of the calendar year to be applied in the following year.



2. CRITERIA FOR DETERMINING UTILITY GREEN TARIFF WITH SPECIFIED SOURCES (UGT2)

2.1 Define the UGT2 structure at the wholesale level as not being a time-of-use tariff, consisting of (1) Fixed Rate, i.e. Generation Charge (G), Transmission Charge (T) and Administrative Charge at the wholesale level (A_W); and (2) Variable Rate, i.e. Policy Expense at the wholesale level (PE_W) and Adjustment Factor at the wholesale level (AF_W), which are adjustments to the G values of each portfolio at the wholesale level (AF_W).

$$\text{UGT2 (Wholesale)} = \text{Fixed Rate (Wholesale)} + \text{Variable Rate (Wholesale)}$$

$$\text{Fixed Rate (Wholesale): } F_W = G + T + A_W$$

$$\text{Variable Rate (Wholesale): } V_W = PE_W + AF_W$$

Where:

- G Generation Charge is determined by (1) the costs of electricity and REC procured from renewable power plants in each portfolio, taking into account the transmission loss, which is determined by the targeted loss rate for the transmission system (t); and (2) the cost of capacity and energy that the power system has to provide in order to support reliable green energy delivery to the customers.
- T Transmission Charge is determined by the allowed revenue of the transmission system business, referring to transmission charges in the wholesale electricity tariff structure, which is reviewed periodically according to the regulatory period of the base tariff structure.
- A_W Administrative Charge (Wholesale) is determined by wholesale costs of different portfolio administration and management fee, which is reviewed periodically according to the regulatory period of the base tariff structure.
- PE_W Policy Expense (Wholesale) is determined by expenses arising from implementation of government policies at the wholesale level, which is adjusted every 4 months according to the F_t adjustment round.
- AF_W Adjustment Factor (Wholesale) is determined by the difference between the actual green energy purchase cost, plus the cost of capacity & energy services from the power system for each portfolio; and the pre-determined costs of G at the wholesale level, which is adjusted every 4 months according to the F_t adjustment round.

2.2 Define the UGT2 structure at the retail level as not being a time-of-use tariff, consisting of (1) Fixed Rate, i.e. the costs of procuring energy in relation to Fixed Rate (Wholesale), Distribution Charge (D) and Administrative Charge at the retail level (A_R); and (2) Variable Rate, i.e. Policy Expense at the retail level (PE_R) and Adjustment Factor at the retail level (AF_R), which are adjustments to the G values of each portfolio at the retail level (AF_R).

$$\text{UGT2 (Retail)} = \text{Fixed Rate (Retail)} + \text{Variable Rate (Retail)}$$



$$\text{Fixed Rate (Retail); } F_R = F_W(1+d) + D + A_R$$

$$\text{Variable Rate (Retail); } V_R = V_W(1+d) + PE_R + AF_R$$

Where:

- d Distribution Loss Rate is determined by the targeted loss rate for the distribution system
- D Distribution Charge is determined by the allowed revenue of the distribution system business, referring to distribution system charges in the retail electricity tariff structure, which is reviewed periodically according to the regulatory period of the base tariff structure.
- A_R Administrative Charge (Retail) is determined by the costs of providing retail services, including the costs of different portfolio administration at the retail level and operating remuneration, which is reviewed periodically according to the regulatory period of the base tariff structure.
- PE_R Policy Expense (Retail) is determined by expenses arising from implementation of government policies at the retail level, which is adjusted every 4 months according to the F_t adjustment period.
- AF_R Adjustment Factor (Retail) is determined by the difference between the actual green energy purchase cost, plus the cost of capacity & energy services from the power system for each portfolio at the retail level, and the pre-determined costs of G, which is adjusted every 4 months according to F_t adjustment period.

In this connection, the same conditions of Power Factor charges in the wholesale and retail electricity tariff structures also apply to UGT2.

2.3 Terms of Service

2.3.1 UGT2 is an optional tariff for Large General Service (Category 4) and Specific Business Service (Category 5) customers with a maximum 15-minute integrated capacity demand from 1,000 kW up, or with the average energy consumption in the last 3 consecutive months of over 250,000 kWh per month.

2.3.2 Subscription for service duration is 10-25 years and subject to conditions as specified in the Electricity Supply Agreement (ESA).

2.3.3 The green energy providers will deliver electricity with REC to the subscribed customers according to the conditions specified in the ESA.

2.3.4 The Utilities' revenues from UGT2 are regulated revenues.

3. UTILITY GREEN TARIFF PROPOSAL

3.1 The Electricity Generation Authority of Thailand (EGAT) shall be the responsible entity to propose the UGT1 rate, including the wholesale Premium for UGT1 and the Fixed Rate (Wholesale) for each portfolio under UGT2 at the initial stage and for each period of the base tariff structure review, and to propose the UGT2 rate in the part of the Variable Rate (Wholesale) for each portfolio at the initial stage and every 4 months according to the F_t adjustment period. The proposals have to contain all of the assumptions, information and calculation details, including the draft Wholesale Electricity Supply Agreements (Wholesale ESA).

3.2 The Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA) shall be the responsible entities to submit proposals on the retail Premium for UGT1, and the UGT2 rates, including the Fixed Rate (Retail) for each portfolio at the initial stage and for each period of the base tariff structure review, and the Variable Rate (Retail) at the initial stage and every 4 months according to the F_t adjustment period. The proposals have to contain all of the assumptions, information and calculation details, including the draft Retail Electricity Supply Agreements (Retail ESA).