

Guideline for Corporate Renewable Energy Procurement in Korea





Corporate Renewable Energy Initiative (CoREi)

Corporate Renewable Energy Initiative^{CoREi} was launched in 2020 by Korea Sustainability Investing Forum^{KoSIF}, United Nations Global Compact Network Korea, WWF–Korea with the intention to create an internal drive towards energy transition within companies in Korea through direct engagement and workshops, and create a favorable policy environment for companies willing to procure clean energy. Altogether, these activities aim to help establish and reach renewable energy–related goals amongst companies and create an Ambition Loop between policy makers and corporates to accelerate the energy transition.



Korea Sustainability Investing Forum (KoSIF) www.kosif.org

Korea Sustainability Investing Forum^{KoSIF} was founded in 2007 with the mission of promoting sustainable finance in Korea. Our efforts are mainly focused on two areas; 1) to make investors, including pension funds, consider ESG factors in their investment decision–making process and 2) to make companies disclose their ESG information. KoSIF has been involved in various legislation activities and policy engagement, leading to the amendment of three acts(National Pension Act, Financial Investment Services and Capital Markets Act, and Korea Investment Corporation Act). KoSIF has also constructed a broad range of networks with investors, companies, government officers, and NGOs, thanks to its role as a local partner of CDP(formerly Carbon Disclosure Project) since 2008.



WWF–Korea www.wwfkorea.or.kr

WWF is one of the world’s most respected and experienced conservation organizations, with over 5 million supporters and a global network active in more than 100 countries. WWF’s mission is to stop the degradation of the planet’s natural environment and to build a future in which people can live in harmony with nature. WWF’s national office in South Korea (WWF–Korea) has been focused on activities to decarbonise our economies quickly enough to limit climate disruptions to acceptable levels and adapt to unavoidable impacts.



UN Global Compact Network Korea unglobalcompact.kr

Established in September 2007, the UN Global Compact Network Korea^{GCNK} is a local chapter of the UN Global Compact^{UNGC} with a wide membership of around 300 companies, civil societies and academic institutions. The GCNK supports its members to implement the UNGC Ten Principles by providing various symposiums, workshops, conferences, research on UNGC/CSR/ESG, policy proposals, networking and dialogue, and projects related to the Sustainable Development Goals^{SDGs} and the internalization of ESG strategies to corporate management. This year, the GCNK launched the Climate Ambition Accelerator^{CAA} program to provide education and support for member companies to establish science–based targets^{SBT} aligned with the 1.5°C pathway, setting them on a path towards net– zero emissions by 2050.

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List of Abbreviations

EAC	Energy Attribute Certificate	KEPCO	Korea Electric Power Cooperation
FIT	Feed-in-tariff	KPX	Korea Power Exchange
GENCOs	Generation Companies (subsidiaries of KEPCO)	LCOE	Levelized Cost of Electricity
GHG	Greenhouse Gas	NDC	Nationally Determined Contribution
GO	Guarantee of Origins	PPA	Power Purchase Agreement
IPP	Independent Power Plant	RE	Renewable Energy
K-ETS	Korea Emissions Trading Scheme	REC	Renewable Energy Certificate
KEA	Korea Energy Agency	RPS	Renewable Portfolio Standard
		SMP	System Marginal Price

Renewable Energy and Corporate Climate Change Strategies

Use of Renewable Energy Emerging as a Key Factor for a Greenhouse Gas (GHG) Emissions Reduction and Corporate Competitiveness

Companies are more interested in purchasing renewable energy than ever before. In response to the climate crisis, countries are participating in the global goal of achieving net-zero before 2050¹. Such actions lead to greater demand for companies to reduce GHG emissions through laws and systems. Enterprises have recognized renewable energy as a key tool to reduce GHG emissions and achieve their net-zero goals, and have begun to purchase Renewable Energy. 99% of companies participating in RE100 (Renewable Electricity 100%), a global initiative for using 100% renewable electricity, identified GHG management as the main motive behind using renewable energy.

Companies are rushing to undertake renewable energy transition not just to comply with laws and regulations, but also to meet the demands of their stakeholders, such as customers and investors, who consider the corporate response to climate crisis as a key factor in determining corporate competitiveness. In 2015, Apple introduced the Supplier Clean Energy Program which requires suppliers to use renewable energy. Global automakers such as BMW and Volvo have also increased their demand by encouraging their sup-

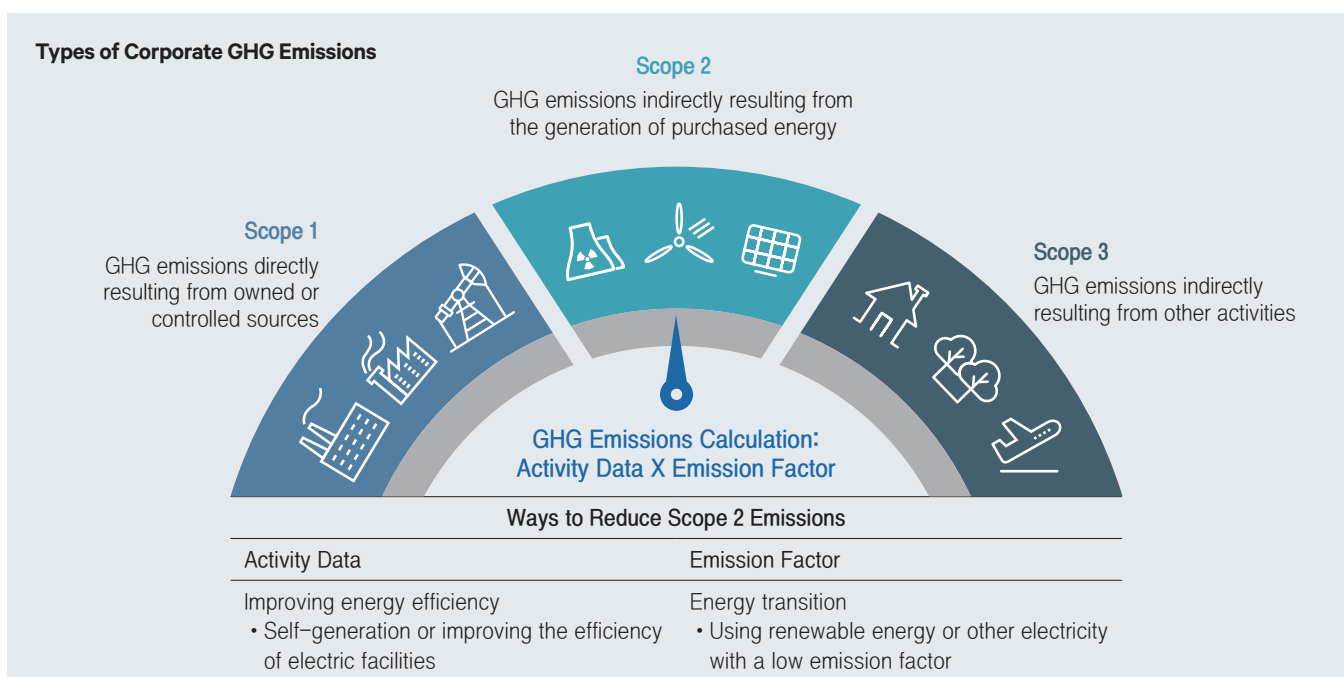
pliers to use renewable energy. According to the 2021 RE100 annual report, 77 participating companies demanded that supply chain partners participate in renewable energy use, and 35 companies were expected to introduce the requirement within two years.

The demand from the financial side is also increasing. The finance sector has recently been showing the most active response to the climate crisis. Each financial sector such as banks, insurance companies, asset managers, and asset owners has created net-zero financial initiatives, all of which require the management of portfolio emissions (or financial emissions), which are emissions by companies invested or financed by financial institutions. Moreover, as financial regulators consider portfolio emissions a key factor in managing climate risks, financial institutions requiring companies to reduce GHG emissions and use renewable energy when investing or making loans are expected to grow continuously.

Renewable Energy and Calculation of Scope 2 GHG Emissions

As a global standard for corporate GHG emissions calculation, the GHG Protocol classifies GHG emissions into categories of Scope 1, 2, and 3. Scope 1 is defined as the GHG emitted directly by the assets or facilities owned or controlled by

1. Net-zero declarations have been made by 136 countries, accounting for 83% of total GHG emissions worldwide as of September 1st, 2022 (Net Zero Tracker, <https://zerotracker.net/>).



the enterprise. Scope 2 refers to the GHG generated by the electricity or steam purchased and used by the enterprise, and Scope 3 emissions indicate the total GHG generated throughout the enterprise's value chain. Renewable energy is directly related to the emissions generated by using electricity, i.e., Scope 2 emissions. Scope 2 emissions from electricity use are calculated by multiplying the use of electricity (activity data) by the emission factor (the amount of GHG emitted when producing 1kWh of electricity). To reduce Scope 2 emissions, an enterprise may either reduce the amount of electricity used (e.g., improve energy efficiency) or use electricity that emits less greenhouse gas. Corporate renewable energy use pertains to the latter, i.e., using electricity with a low emission factor.

Methods to reduce the use of electricity—for instance by changing facilities—are relatively less cost-effective, and considering the recent trend of electrification, it is not easy to reduce the absolute magnitude of electricity use. Therefore, many enterprises have chosen to switch to renewable energy as a means to reduce Scope 2 emissions. In response to this trend, in 2015, the GHG Protocol announced the “GHG Protocol Scope 2 Guidance” which includes the calculation and reporting of Scope 2 emissions when using renewable energy. The criteria for most corporate renewable energy initiatives, including RE100, are based on the GHG Protocol Scope 2 Guidance.

The GHG Protocol divides the calculation methods for Scope 2 emissions into location-based and market-based methods. The location-based method uses the average emission factors of the electricity grids in the region where the enterprise

is located. The factor often used is the national emission factor of the country. The market-based method uses the actual GHG emissions from the generation of electricity used by an enterprise, i.e., the actual emission factor. An enterprise should be able to select an electricity source of their choice to use the market-based method. For example, if an enterprise purchases 100MWh of renewable power with an emission factor of 0 from a specific market, the GHG emissions, according to the market-based calculation, would be 0. An enterprise that applies the market-based method must also calculate and report the Scope 2 emissions according to the location-based method because the difference between the two corresponds to the enterprise's performance on GHG emissions reduction.

Cases of GHG Emissions Reduction by Procuring Renewable Energy

Major global companies have reduced GHG emissions significantly by procuring renewable energy sources. All FAANMG² companies, representing the US IT industry, have set the goal of using 100% renewable energy. An analysis of the 2020 emissions, reported by four companies from FAANMG that disclosed both location-based and market-based Scope 2 emissions, revealed that they reduced 89% of the total Scope 1+2 emissions on average by using renewable energy. In addition to IT companies, manufacturers such as BMW, Intel, and HP are reducing their GHG emissions substantially by using renewable energy.

Enterprises consuming renewable energy are growing globally. According to Bloomberg New Energy Finance^{NEF3}, corporate renewable energy procurement through power purchase agree-

2. Facebook, Amazon, Apple, Netflix, Microsoft, Google (Alphabet)
3. <https://about.bnef.com/blog/corporate-clean-energy-buying-tops-30gw-mark-in-record-year/>

Global Companies Reducing GHG Emissions through Renewable Energy*

Company	Scope 1 (tCO ₂ e)	Scope 2, Location-based (tCO ₂ e)	Scope 2, Market-based (tCO ₂ e)	GHG emission reduction through RE (tCO ₂ e)	Percentage of GHG Emission Reduction through RE (%)	Emission Reduction Target	RE Target
Facebook (Meta)	28,707	2,747,681	8,887	2,738,794	99%		RE 100% since 2020
Amazon	9,623	-	5,265	-			RE 100% by 2025
Apple	47,430	-	0	-		61.7% reduction by 2030 (base year 2019)	RE 100% since 2018
Netflix	30,883	28,585	141	28,444	48%	46.2% reduction by 2030 (base year 2019)	RE 100% since 2019
Microsoft	118,100	4,102,445	228,194	3,874,251	92%	75% reduction by 2030 (base year 2013)	RE 100% since 2014
Google (Alphabet)	38,694	5,865,095	911,415	4,953,680	84%	100% reduction by 2025 (base year 2015)	RE 100% since 2017
Intel	1,973,000	3,700,000	909,000	2,791,000	49%	19% reduction by 2030 (base year 2019)	RE 100% by 2030
IBM	90,906	828,794	530,365	298,429	32%	40% reduction by 2025 (base year 2005)	RE 75% by 2025, RE 90% by 2030
BMW	642,885	1,250,572	84,257	1,166,315	62%	80% reduction by 2030 (base year 2019)	RE 100% by 2050
BT Group	171,422	624,729	262	624,467	78%	42% reduction by 2031 (base year 2017)	RE 100% since 2020
HP Inc	50,600	203,600	120,400	83,200	33%	60% reduction by 2025 (base year 2015)	RE 100% by 2025

* Table based on data disclosed through CDP and sustainability reports of 2021

Renewable Energy and Corporate Climate Change Strategies

ments^{PPA} has increased more than 6.6 times in six years, from 4.7 GW in 2015 to 31.1GW in 2021. In 2021, the renewable energy procured by corporates increased 10.8-fold to 8.7GW over the same period in Europe, the Middle East, and Africa^{EMEA} and increased 4.2-fold to 2.1 GW in Asia and the Pacific^{APAC}.

Carbon Neutrality and Renewable Energy

The role of renewable energy is expected to expand further with more countries recently declaring net-zero goals. According to the Net Zero Tracker, as of September 2022, 136 countries representing 83% of global emissions have declared net-zero targets. Moreover, as of 2020, 151 countries have specified the renewable energy expansion policy for energy transition in their Nationally Determined Contributions^{NDCs}. At the recent 26th UN Climate Change Conference in Glasgow (COP26), 196 countries stated the necessity of phased reduction of fossil fuels in the COP26 decision⁴.

Energy transition is a prerequisite for achieving carbon neutrality. According to “Net Zero by 2050” published by the International Energy Agency^{IEA}, coal’s share of electricity and heat generation needs to be reduced from 26% in 2020 to 12% by 2030 and 1% by 2050, to achieve global net-zero. In contrast, the proportion of renewable energy needs to increase from 17% in 2020 to 44% in 2030 and 77% in 2050. Royal Dutch Shell, which is ranked 19th in Fortune 500 (as of 2021) and one of the world’s largest oil companies, is also looking to expand renewable energy. According to Shell’s internally developed SKY scenario, to achieve the Paris Agreement goal, the share of fossil fuels in the global energy mix will need to decrease from 72% in

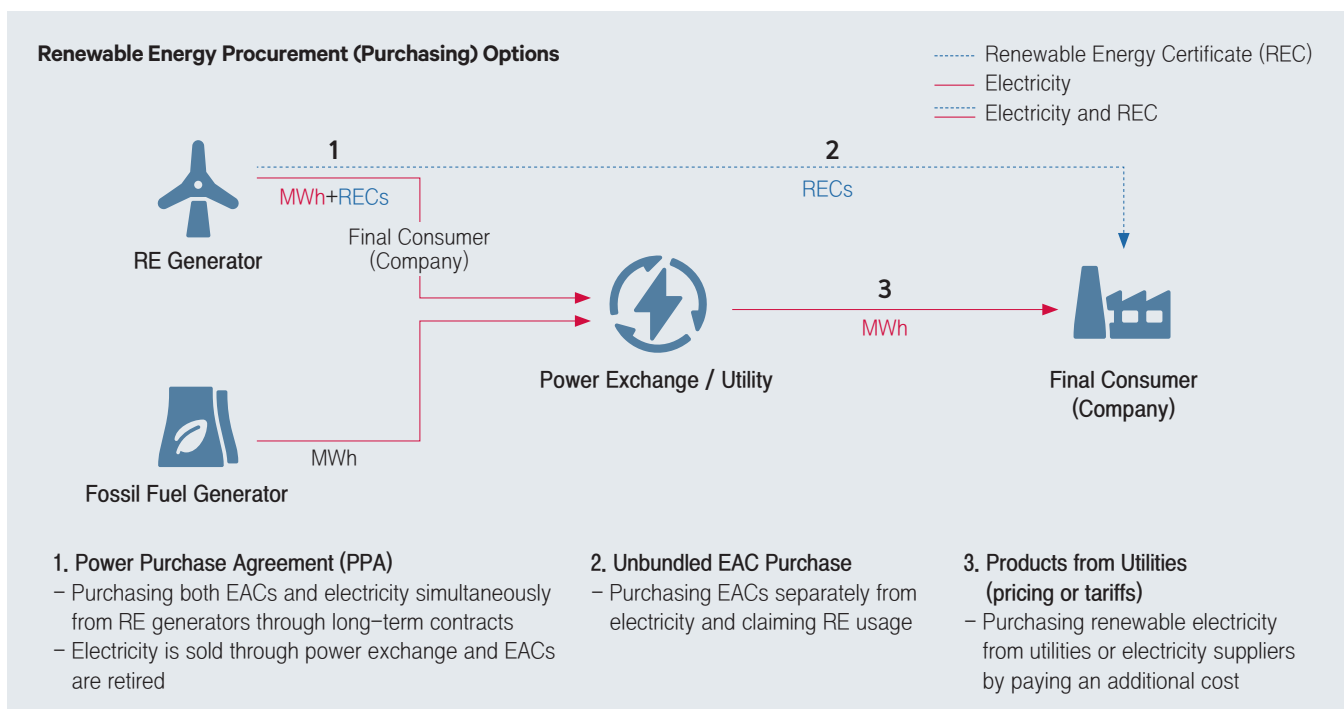
2020 to 40% in 2040, while the share of renewable energy⁵ should increase from 28% to 60%.

Enterprises are also actively declaring carbon neutrality goals. More than 7,000 companies worldwide have participated in the Race to Zero campaign by the United Nations and pledged to set net-zero targets. According to the “SBTi Corporate Net-Zero Standard” from Science-based Target Initiative^{SBTi}, enterprises should establish emission targets for all Scopes 1, 2, and 3. Accordingly, companies that have established net-zero targets are expected to not only expand the use of renewable energy internally but also require suppliers in their supply chain to use more renewable energy. The recent wave of mandatory climate-related information disclosures is also seen to significantly impact corporate demand for renewable energy. The Task Force on Climate-related Financial Disclosures^{TCFD}, the new climate disclosure rules by the US Securities and Exchange Commission^{SEC}, the EU’s Corporate Sustainability Reporting Directive^{CSRD}, and the Sustainability Disclosure Standards by the International Financial Reporting Standards^{IFRS} Foundation’s International Sustainability Standards Board^{ISSB} all include Scope 3 emissions disclosure. Therefore, companies subject to these reporting requirements must also calculate and manage their suppliers’ emissions regardless of whether they have established net-zero targets. In this case, companies are likely to choose the relatively easy option of using renewable energy to reduce GHG emissions. On the other hand, it has become inevitable for small and medium-sized enterprises^{SMEs} associated with large companies to expand their use of renewable energy. As a result, corporate demand for renewable energy is expected to grow continuously.

4. <https://ukcop26.org/cop26-presidency-outcomes-the-climate-pact/>, p6

5. Biofuels, biomass, hydro, geothermal, solar, wind, other renewables

6. SBTi is a jointly run initiative by CDP, WWF, World Resource Institute (WRI), and United Nations Global Compact (UNGC) and a partner in the Race to Zero campaign. It provides the world’s only detailed criteria for net-zero goals at the corporate level.



RE100 Accredited Energy Sources

- Solar
- Sustainably sourced biomass
- Hydropower
- Wind
- Tidal
- Geothermal

Corporate Procurement of Renewable Energy

The Meaning of Using Renewable Energy and Energy Attribute Certificates^{EAC}

When a company is considering the use of renewable energy or renewable electricity, the initial concern on the stability of the electricity power supply rises. Stable power supply and voltage maintenance are directly related to the production quality of companies. The most common concern with renewable energy is the issue of volatility. For example, suppose there is a company that purchases and uses electricity generated from wind. The concern is that if the wind suddenly stops and interrupts power generation, it may also interrupt power supplied to companies or spontaneously lower the voltage, disrupting production. However, such concerns arise from misconceptions about how companies make use of renewable energy.

Corporate use of renewable electricity is not necessarily synonymous with using the actual electricity created from renewable energy sources. Electricity is the energy created by the movement of electrons. The properties of electricity produced from either coal-fired power generation or renewable energy sources are identical. It is physically impossible to separate the sources of electricity from the electricity grid unless a single electric line directly connects a particular power plant to its user. A company using renewable electricity does not necessarily use the renewable electricity per se; rather, the company uses the Energy Attribute Certificate^{EAC}, also called the certificate, which is issued along with the electricity generated from renewable energy sources.

When electricity is produced from renewable energy sources, the certificate is issued for various purposes. The name of the certificate issued varies from region to region. Generally, a certificate issued at the national level is referred to as the Renewable Energy Certificate^{REC} or the Guarantee of Origins^{GO}. RECs are often issued to cover the high cost of renewable energy generation, and GOs are mostly issued to ensure the electricity consumers' right to know. Voluntary certificates such as the international REC^{IREC} or the Tradable Instruments for Global Renewables^{TIGR} have recently been introduced. To receive a renewable energy certificate, it is essential to establish a system that tracks the transfers of certificates from their production to final use. Companies can sell the certificates they acquire or use them as proof of renewable energy use. It should be noted that a certificate is retired after it is used to prove the use of renewable energy.

Therefore, the use of renewable electricity itself does not make any physical difference at the pro-

duction site. Just like using electricity generated from any other energy source, power is supplied by the same grid connected to the facility. As so, there are no changes except for administrative matters, such as the price of electricity used or how the electricity charges are calculated. When companies increase their use of renewable energy by acquiring certificates, the demand for certificates in the market also increases. When demand increases, supply follows. Since certificates are only issued according to the amount of electricity generated from renewable energy, renewable power generation must increase to meet the increased demand. In other words, corporate use of renewable energy increases the percentage of renewable energy across the power grid.

Procuring Renewable Energy

A company can procure renewable energy in two ways. First, the company can install renewable energy facilities on its premises and directly use the electricity produced. However, the amount of renewable energy that can be produced and used directly is substantially limited due to siting and economic factors. For example, even if a company produces and uses renewable electricity, it cannot claim to have used renewable energy if it had sold the certificate issued for renewable energy. As mentioned above, using renewable energy is equal to using the renewable energy certificate issued to the user when the renewable electricity is generated, not the electricity itself at the physical level.

Second, the company can purchase renewable energy. There are three types of renewable energy procurement methods depending on how and from whom the power and certificate are purchased: 1) power purchase agreement, 2) green pricing, and 3) unbundled EAC purchase.

1. Power Purchase Agreement^{PPA}

Power purchase agreement^{PPA} is a method wherein a power-consuming company enters into a direct purchase agreement with a renewable energy-generating company to purchase both the electricity and the certificate simultaneously. The contract terms, such as the duration and price, are determined by the signing parties, and long-term contracts of 15 years or more are commonly made. This is because renewable energy producers are incentivized to initially invest large amounts of capital only when stable long-term contracts are signed. Prices are often subject to fixed prices throughout the entire contract period. Renewable energy generation may take place on-site or off-site of the consumer company, with the contract stipulating matters related to the electricity bill, electricity supply schedule, and certificate transfers. Companies that have purchased renewable energy through PPA must contract with the power transmission and distribution providers of the area.

The price offered by the utility company, i.e., the power-selling company, includes not just the actual price of electricity but also the fee for the electrical transmission and distribution. Since the PPA is a contract only for the purchase of electricity and renewable energy certificates, an additional contract for transmission and distribution is thus necessary. PPA has many advantages such as improved cost-effectiveness and reduced fluctuation of electricity costs, but significant expertise and administrative know-how are necessary to reach the agreement as it requires participation from the early stages of the project. Therefore, many companies use the strategy of directly purchasing unbundled renewable energy certificates or using renewable energy plans provided by utilities in the early stages of renewable energy procurement while increasing the proportion of PPAs on a mid to long-term basis.

PPAs can be classified into a physical PPA and a virtual PPA depending on whether the company that purchased the electricity and the renewable energy producer that sold it are located within the same power grid or “power system”. In the case of a physical PPA, the power generated from the renewable energy source is added to the power system where the company purchasing electricity is located.

A virtual PPA, on the other hand, only transfers renewable energy certificates when a company purchases renewable power through a PPA. It does not provide additional physical electricity to the grid where the company is located. The electricity produced with renewable energy sources is supplied to the grid of the renewable energy producer, i.e., the area where the power plant is located, not where the company purchasing renewable energy is located. In a way, virtual PPA is a method of offsetting between power systems where the renewable energy purchaser and the renewable energy producer are located and can only be applied when both systems allow the use of virtual PPA.

2. Green Pricing

Green pricing is a way of purchasing renewable energy products from a power-selling company (retail, a utility company). Utility companies first obtain renewable energy certificates through direct production or external purchases and then use those certificates to create renewable electricity plans or products. When a company purchases a renewable electricity plan or product from a utility company, the utility company supplies both the electricity and the certificate simultaneously to the company.

Some utility companies may supply renewable energy from projects specified by consumers and offer customized products that reflect the condi-

tions agreed upon in advance between the consumer and the generator. This is called a contract pricing system (third-party green power purchase agreement or green tariff). As a relatively long-term contract with the advantage of negotiable rates, it is a method designed as an alternative to PPAs in areas where it is not available.

Green pricing requires only the selection of products from existing utility companies, making the purchase process simpler than other methods. A company applying for green pricing pays a premium for the amount of renewable energy requested on the utility bill, in addition to the electricity charges. It is a relatively easy way to procure renewable energy because the company can make purchases on a monthly basis or by an absolute amount. On the other hand, the downside to this method is that the product uses contract pricing where additional fees are constantly charged to the existing electricity bill. Not only companies but individuals eager to take climate action also frequently use green pricing.

3. Unbundled EAC Purchase

A company can also purchase unbundled renewable energy certificates apart from the physical electricity produced by renewable energy generators. In this case, companies purchase only the environment-friendly attributes of the renewable energy certificates while maintaining their usual power procurement methods. Companies that are new to renewable energy procurement most often start with this option. They may contract at a certain percentage of their monthly or annual power consumption, or at a long-term fixed price. The advantage of this option is that there is no need to make separate contracts with renewable energy generators, and the ease of procurement leads to enhanced market efficiency and scalability. However, the additional cost of having to purchase certificates on top of existing electricity costs reduces the ability to hedge against electricity price fluctuations.

RE100⁷ and Principles of Renewable Energy Procurement

Although previously renewable energy procurement methods have been categorized into three main types, the actual renewable energy procurement scheme would take various forms depending on the power market structures, laws and regulations of each country. Therefore, understanding the basic principles of renewable energy procurement should come before reviewing individual systems that exist in various forms. As a leading global initiative related to corporate renewable energy procurement, the RE100 initiative is based on the following renewable energy procurement standards.

The RE100 states that for companies to declare

7. RE100 is the global corporate renewable energy initiative bringing together businesses committed to 100% renewable electricity. RE100 was launched in 2014 as part of an effort to support the adoption of the Paris Agreement. It is led by the Climate Group in partnership with CDP, as a part of the We Mean Business Coalition.

the use of renewable energy, they must procure renewable energy in ways that meet the following criteria. All forms of renewable energy procurement, including PPA and renewable energy plans (green pricing), consist of renewable energy attribute certificate transactions. In other words, companies must be able to track the ownership of renewable energy rights from the power generation stage to the final consumption stage to determine whether the electricity they consume is renewable. Accordingly, the following six criteria have been established:

First, there must be a reliable system that can trace renewable electricity from generation to consumption. The renewable energy certificate used in the tracking system must contain information related to renewable energy generation (renewable energy source, location, date of generation, etc.).

Second, the renewable energy certificate should possess ownership of all environmental and social attributes associated with the renewable energy generation that can be owned, and none of these attributes should have been sold off, transferred, or claimed elsewhere.

Third, exclusive ownership of RE generation attributes consists of legal enforceability, tracking (exclusive issuance, trading, and retirement), and exclusive sales and delivery so that the user/consumer can claim RE usage which is substantiated by attributes that have been reliably tracked from a generator to a consumer.

Fourth, renewable energy certificates cannot be claimed by more than one entity at a time to prevent double counting (exclusive claims).

Fifth, attributes (and certificates) must be sourced and purchased from within the same defined geographic region that constitutes a “market” for the purpose of transacting and claiming attributes.

Sixth, the certificate should specify the issuance date and the expiration date of the certificate, and the company procuring renewable energy should use the certificate issued in the year reasonably close to the reporting year.

Eligibility of Renewable Energy

RE100 considers the following as renewable energy: solar, hydro, wind, geothermal, tidal energy sources, and sustainably sourced biomass. Hydropower and biomass are only recognized when it is sustainable. It is recommended that sustainability be proven through third-party certifications such as ISO 13065:2015, Green-e Renewable Energy, and Low Impact Hydropower Institute^{LHI}.

The core of RE100 is the expansion of renewable energy supply through corporate renewable energy demand. Hence, reflecting a country’s renewable energy mix as the default to a company’s renewable energy target is only acceptable if the corporate demand no longer contributes to the expansion of renewable energy in the market (for instance, when the renewable energy share accounts for over 95% of the market).

Making Credible RE Usage Claims for RE100



Credible generation data

Third-party verification and tracking system for RE generation facilities, quantity of generation, etc.

Attribute aggregation

RE usage claim requires ownership of all environmental and social attributes associated with the generation that can be owned, and none of these attributes should have been sold off, transferred, or claimed elsewhere (e.g. EACs and GHG emissions-related attributes (carbon offsets) cannot be issued simultaneously from the same facility).

Exclusive ownership (no double counting) of attributes

Attributes associated with the generation for RE from a specific facility and time cannot be owned by multiple entities at once.

Exclusive claims (no double claiming) on attributes

An EAC cannot be claimed for usage or retired by two or more entities. When EACs are sold separately from electricity, the electricity buyer does not have an exclusive RE usage claim unless they own and retire the certificates.

Geographic market limitations of claims

EACs must be sourced and purchased from within the same defined geographic region that constitutes a “market” for the purpose of transacting and claiming attributes (market boundary). Research on international transactions of RECs is being conducted.

Vintage limitations of claims

The vintage of the generation must be reasonably close to the reporting year of the electricity consumption to which it is applied (e.g. Green-e requires a 21-month vintage eligibility window for certified sales of RE in a given year).

Korea's Electricity Market and the Renewable Energy Procurement Scheme

K-RE100 Accredited Energy Sources

Solar
Wind
Bioenergy
Hydropower
Geothermal

Structure of Korea's Electricity Market Before the Introduction of the Renewable Energy Procurement Scheme

Corporate renewable energy procurement schemes are closely linked to the electricity market. Electricity is one of the most important commodities of public interest. The electricity markets of each country have a certain degree of specificity, reflecting public opinion and national policies. Therefore, one must first understand the unique characteristics of a country's electricity market to fully understand its renewable energy procurement scheme.

Korea's electric power industry prior to the introduction of the corporate renewable energy procurement scheme had the following structure:

Electricity Market Structure: Korea established a basic plan for restructuring the electric power industry in 1999 and sought to gradually introduce a competitive system to the industry; Phase 1: Status quo → Phase 2: Introduce competition in electricity generation → Phase 3: Introduce competition in wholesale → Phase 4: Introduce competition in retail. However, the restructuring process was suspended in Phase 2, and the structure still remains in place as of now. Thus, under the Korean electricity market, electricity generation is characterized by a competition system wherein private operators can participate, but a public utility company, Korea Electric Power Corporation^{KEPCO}, has a monopolistic position in the transmission & distribution, wholesale, and retail markets. Korea Power Exchange^{KPX} was established as a result of the Phase 2 restructuring process and is responsible for operating the electricity market and the power grid. Six power generation subsidiaries wholly owned by KEPCO - Korea South-East Power^{KOEN}, Korea Midland Power^{KOMIPO}, Korea Western Power^{KOWEPO}, Korean Southern Power^{KOSPO}, Korea East-West Power^{EWPP}, and Korea Hydro & Nuclear Power^{KHNP} - and many private power plants sell electric power to KEPCO through KPX.

Classification of Electric Operators and the Principle of Prohibiting Concurrent Businesses: The *Electric Utility Act* classifies business entities related to electricity into eight categories, including electricity generators, electric transmission operators, electric distribution operators, and electricity sellers. In principle, no entity is permitted to operate two or more types of electric businesses

(Clause 3 of Article 7). It is commonly called the "principle of prohibiting concurrent businesses." However, a Presidential Decree made an exception to KEPCO so that it can carry out power transmission, distribution, and sales businesses simultaneously, except for power generation. Also, the electric vehicle charging business is exempted from the definition of "electric sales business," and thus is not subject to the principle of prohibiting concurrent businesses.

Principle of On-the-market Exchange: The *Electric Utility Act* requires all operators to trade electricity only through the electricity market established by KPX, and outside-market transactions are prohibited in principle (Article 31 Clause 1 and Article 32). This is called the "Gross Pool Principle" or "Principle of on-the-market exchange" and constitutes an electricity market in the form of a Cost-based Pool^{CBP}. KEPCO owns all electricity transmission and distribution networks in Korea. KEPCO also has a monopoly over demand in the electricity bidding market and buys all winning bids. KEPCO determines the purchase price based on the most expensive variable cost of generators, i.e., the most expensive fuel cost of the generators that have participated in the bidding process at the same time slot. This is known as the System Marginal Price^{SMP}. In Korea, LNG is the most expensive fuel source of domestic power generation fuels, and thus the SMP is usually linked to international LNG prices. The SMP can be understood as the wholesale price of electric power sold by power generators to KEPCO.

Determining Electricity Charges: The *Electric Utility Act* requires the electricity seller, KEPCO, to obtain the approval of the Minister of Trade, Industry, and Energy to determine electricity costs and the terms and conditions of electricity supply. In other words, it is impossible to change the level of electricity charges without governmental authorization. KEPCO applies different electricity rates depending on the purpose of electricity use, such as residential, industrial, general, and agricultural purposes, as well as different seasons (rates differ for summer, spring/fall, and winter). Moreover, it applies the progressive charge system for residential use depending on the level of electricity consumption. For industrial and general uses, it allows customers to select plans charging different basic fees and usage fees depending on the voltage and usage time.

FIT and RPS Schemes: In 2002, Korea introduced the Feed-in-tariff^{FIT} program that mandated fixed-price purchases of renewable electricity to promote renewable energy use. Although FIT played an important role in the initial expansion of renewable energy supply, it was replaced by the Renewable Portfolio Standard^{RPS} in 2012 due to excessive financial burdens. The current FIT system is the <Korean FIT system> introduced temporarily in 2018 to support the operation of small-scale solar power generators with a capacity less than 30kW or 100kW (threshold differs according to the operator).

The RPS scheme obligates power companies with power generation facilities over a certain capacity (500 MW) to supply new⁸ or renewable energy by at least a certain percentage of their total power generation (excluding power generated from renewable energy). As of 2022, 24 power generation companies are subject to the RPS, and they should supply 12.5% (58,749 MWh) of their total power generation with renewable energy. The mandatory supply ratio is expected to expand gradually to 25% by 2026. The companies subject to the RPS can fulfill their obligations by securing Renewable Energy Certificates^{RECs}. Korea Energy Agency^{KEA} is responsible for operating the RPS and the Korean FIT system.

REC: A tracking system is essential to renewable energy supply and the management of governmental policies supporting renewable energy. KEA is dedicated to the operation of the REC scheme, which is a tracking system for the production, trade, and use of renewable energy. Renewable energy generators can receive RECs by registering their facilities at KEA and can sell the certificates to power generation companies subject to the RPS in order to earn extra profit besides selling electricity (SMP). RECs are issued according to the REC multiplier scheme with different multipliers assigned to different types

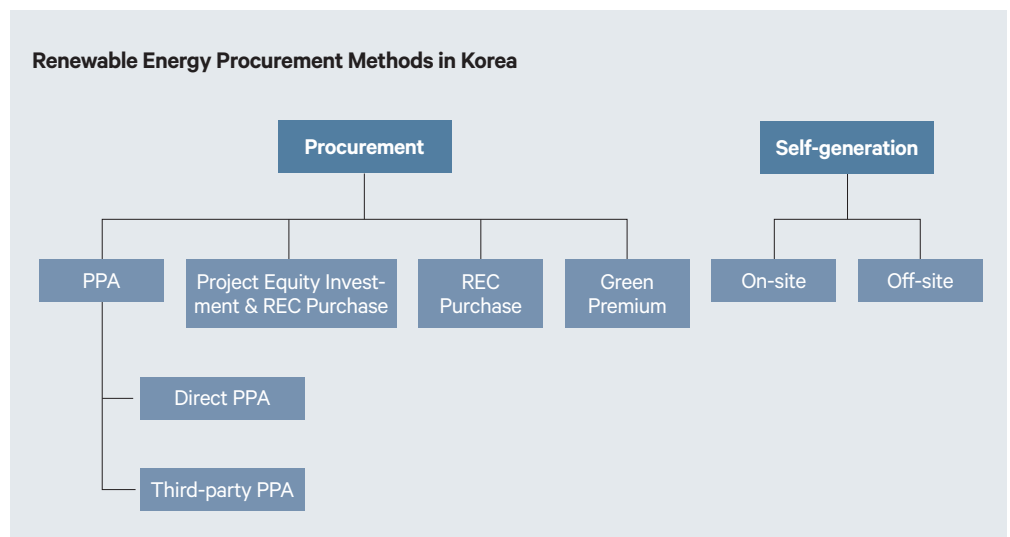
of power generation businesses. In other words, even if the same amount of renewable electricity is produced, 2 RECs or 0.5 RECs per 1MWh may be issued depending on the business type. RECs are traded either through the REC exchange market established by KPX or KEA's long-term fixed-price bidding scheme. However, until recently, it was impossible for general companies to buy RECs since only power generation companies subject to the RPS were qualified to participate in the market.

Due to the nature of the Korean power industry, until 2020, Korean companies could not use renewable energy procurement methods commonly available overseas for the following reasons:

PPA: Due to the article banning concurrent business operations and the principle of on-the-market exchange stipulated in the *Electric Utility Act*, renewable energy generators could not sell electricity directly to companies. The Korean power industry is structured in a way that all electricity generated is gathered in a single electricity market to be sold to KEPCO. Therefore, it was impossible to separate renewable energy power from other power sources. Also, companies generating renewable energy could not sell electricity directly to companies as it was considered an electricity sales business and consequently constitutes a violation of the principle prohibiting concurrent businesses.

Green Pricing: KEPCO, which monopolizes the retail sales of electricity in Korea, did not offer separate renewable electricity plans or products.

Direct Purchase of Unbundled Certificates: The operating regulations of KPX qualified only utilities with generators over 500MW subject to the RPS as eligible participants in the REC market. As a result, general companies using electricity could not purchase RECs through the REC market.



8. According to the Act On The Promotion Of The Development, Use And Diffusion Of New And Renewable Energy, 'New energy' refers to the following:
 - Hydrogen energy
 - Fuel cells
 - Energy from liquefied or gasified coal, and energy from gasified heavy residual oil which fall within the criteria and scope prescribed by Presidential Decree
 - Other energy prescribed by Presidential Decree, other than petroleum, coal, nuclear power, or natural gas

Korea's Electricity Market and the Renewable Energy Procurement Scheme

Background to the Discussion of a Renewable Energy Procurement Scheme in Korea and its Legislation

2018: Beginning of the Discussion for Introducing a Corporate Renewable Energy Procurement Scheme

In 2016, Samsung SDI received a request from BMW to use renewable energy and requested the Ministry of Trade, Industry, and Energy to introduce a renewable energy procurement scheme. The Ministry then proposed an amendment to the *Electric Utility Act*, which included legislations on renewable energy PPA. At that time, however, since the issue of privatizing the electricity market was prominent and the additional demand for renewable energy use from other corporate clients were absent, the renewable energy PPA agenda did not receive much attention. It was 2018 when practical discussions on introducing a corporate renewable energy procurement system began in earnest in Korea. Green Peace, a global environmental NGO, started to demand Samsung Electronics to switch to 100% renewable energy. Apple and other global automakers also increased their demand that Korean companies use renewable energy throughout their supply chain, creating a consensus on the need for the adoption of a renewable energy procurement scheme in Korea. The New and Renewable Energy Forum of the National Assembly, Korea Sustainability Investing Forum^{KoSIF}, the Korean partner of CDP, Korean Federation for Environmental Movement^{KFEM}, United Nations Global Compact Network Korea^{UNGCNK}, Greenpeace, and the WWF-Korea launched the “Initiative for the Right to Choose Renewable Energy” and led the discussion on the introduction of the renewable energy purchasing scheme. Companies such as Samsung Electronics and SK Hynix

also participated in the initiative and pledged to expand the use of renewable energy following the introduction of the purchasing scheme.

Representative Lee Won-wook, the Chairman of the National Assembly's New and Renewable Energy Forum, proposed an amendment to the *Act on the Promotion of the Development, Use, and Diffusion of New and Renewable Energy* and the *Electric Utility Act* in June and December 2018. With the proposal, related parties such as the Ministry of Trade, Industry, and Energy, KEA, KEPCO, and KPX began to design a corporate renewable energy procurement scheme and continuously consulted with lawmakers and NGOs participating in the “Initiative for the Right to Choose Renewable Energy”.

2019, 2020: Formalizing the Adoption of a Corporate Renewable Energy Procurement Scheme

In June 2019, the introduction of a corporate renewable energy procurement scheme was formalized with the RE100 policy being mentioned in the Third Energy Master Plan. In November of the same year, the pilot project for the renewable energy use recognition scheme, a voluntary tracking system for renewable energy use, began with the participation of 23 companies. In 2020, the plan of implementation methods for RE100 member companies was included as one of the Green New Deal projects, and the *Enforcement Decree of the Electric Utility Act* was amended to introduce the third-party PPA. In July 2020, an amendment of the *Electric Utility Act* was proposed to allow electricity users, including corporate users, to contract power purchase agreements directly with renewable energy suppliers without going through KEPCO.

Timeline for the Introduction of Renewable Energy Procurement Scheme in Korea

Date	Content
2021.10	Enforcement of the direct PPA scheme
2021.08	REC exchange market established for RE100 companies
2021.07	Second bid for the Green Premium
2021.03	The amendment of the <i>Electric Utility Act</i> (PPA Act) passed at the National Assembly
2021.02	The amendment of the <i>Electric Utility Act</i> (PPA Act) passed at the National Assembly Standing Committee
2021.02	First bid for the Green Premium
2021.01	The <i>Enforcement Decree of the Electric Utility Act</i> for the third-party PPA amended
2020.09	A policy meeting for the Green New Deal
2020.07	The amendment of the <i>Electric Utility Act</i> (PPA Act) proposed (chief author: Representative Kim Seong-hwan)
2020.07	RE100 policy included in the Green New Deal

Date	Content
2019.11	Pilot project for the renewable energy use recognition scheme launched
2019.07	The amendment of the <i>Electric Utility Act</i> (PPA Act) proposed (chief author: Representative Kim Seong-hwan)
2019.06	RE100 policy mentioned in the Third Energy Master Plan
2018.12	The amendment of the <i>Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy</i> and the <i>Electric Utility Act</i> proposed (chief author: Representative Lee Won-wook)
2018.11	The “Initiative for the Right to Choose Renewable Energy” launched by the National Assembly's New and Renewable Energy Forum and six civil society organizations
2018.02	The National Assembly's New and Renewable Energy Forum hosts a policy meeting to institutionalize RE100
2017.12	Introduction of RE100 policy mentioned in the Renewable Energy 3020 Implementation Plan

2021: Sequential Implementation of the Corporate Renewable Energy Procurement Scheme and the Passing of the Direct PPA Bill

In 2021, the corporate renewable energy procurement scheme was sequentially implemented. In December 2020, the amendment of the *Regulations on the Support, etc. of New and Renewable Energy Facilities* provided the institutional grounds for the voluntary use of the renewable energy tracking system and the Green Premium. In 2021, the Green Premium was launched as the first corporate renewable energy procurement method, and 37 companies participated in the first bidding held in February. In August, a separate REC trade platform was opened for companies to participate. The pilot project for the REC trade platform was executed for two months, from February to the end of March. The user-friendliness of the trade platform was improved after collecting feedback from 38 renewable energy consumer companies and 259 renewable energy suppliers participating in the pilot project. To introduce the third-party PPA option, the amendment of the *Enforcement Decree of the Electric Utility Act*, which allowed the trade of electricity outside the wholesale market through contracts between third parties, was passed by the State Council, and a detailed guidance on third-party PPAs was announced in June. In the case of direct PPA, the amendment of the *Electric Utility Act* proposed by Representative Kim Seong-hwan was passed by the National Assembly in June 2021, and the public notice with a detailed guidance on direct PPAs has been finalized by the Ministry of Trade, Industry, and Energy in September 2022.

The Structure of Korea's Electricity Market After the Introduction of the Renewable Energy Procurement Scheme

The overall policy package related to the Korean corporate renewable energy procurement scheme is called "K-RE100". The following laws, enforcement rules, and enforcement decrees were amended to introduce the renewable energy procurement scheme:

Common: *Regulations on the Support, etc. of New and Renewable Energy Facilities / Rules on the Issuance of Renewable Energy Certificates^{RECs} and the Operation of Transaction Markets from the New and Renewable Energy Center*

PPA: *Electric Utility Act, its Enforcement Decree and Enforcement Rule*

REC: *Korea Power Exchange^{KPX} Rules for the Operation of the Electricity Market*

Green Premium: *KEPCO Basic Terms and Conditions for Electricity Supply*

Renewable Energy Use Recognition Scheme (Voluntary Tracking System for Renewable Energy Use)

All procurement methods such as the Green Premium, PPA, and certificate purchases are based on the "renewable energy use recognition scheme" to track companies' voluntary use of renewable energy. This scheme utilizes the REC system introduced to manage the mandatory implementation of the existing RPS system and uses the reengineered REC system to suit the voluntary market.

The existing REC system has been managing the registration of most renewable energy facilities and the transfer of certificate ownership in Korea. When an enterprise secures a REC through PPA, Green Premium, or direct purchases for voluntary use, the "renewable energy use recognition scheme" converts it into a Confirmation of Renewable Energy Use. In other words, it adds a new route that enables the tracking of voluntary uses in the existing REC system. For PPAs, once a renewable energy generating facility is registered to KEA, which operates the REC system, the Confirmation of Renewable Energy Use is issued immediately, bypassing the REC issuance procedure. Companies can prove their use of renewable energy by securing a Confirmation of Renewable Energy Use converted from a REC and retiring the REC.

The "renewable energy use recognition scheme" is similar to and based on the existing REC system for the RPS, but there are some differences.

The first difference is the REC multiplier. The existing REC system applies different multipliers according to the type of energy source, so generating 1MWh of electricity may result in the issuance of 2 RECs or 0.7 RECs. However, the "renewable energy use recognition scheme" is based on the "1 MWh = 1 certificate" principle, just like the RE100 initiative. For example, if a company purchases a REC in a project with a multiplier of 2, 1MWh generated would be equal to 2 REC. However, in this case, since 1 REC accounts for 0.5 MWh of renewable electricity, only a 0.5 certificate of the Confirmation of Renewable Energy Use is issued as the multiplier is excluded in the conversion process. On the other hand, if the multiplier is 0.5, the 0.5 REC accounting for 1MWh will be converted into 1 certificate of the Confirmation of Renewable Energy Use.

The second difference pertains to the recognized renewable energy sources. The "renewable energy use recognition scheme" recognizes the same energy sources accredited by the global RE100 standard (including solar, wind, hydro, marine, geothermal, and biomass). RECs issued on new energy⁹ and waste cannot be converted into

9. As defined by the Act On The Promotion Of The Development, Use And Diffusion Of New And Renewable Energy Article 2 Clause 1

Korea's Electricity Market and the Renewable Energy Procurement Scheme

Confirmation of Renewable Energy Use. RECs for the RPS are valid for three years and when it is not converted before the expiration date, the Confirmation of Renewable Energy Use is issued automatically by the New and Renewable Energy Center. Only Confirmation of Renewable Energy Use issued and used in the reporting year is accredited under Korea's Emissions Trading Scheme^{K-ETS}.

Green Premium

KEPCO's Green Premium scheme allows consumers (companies) to purchase renewable electricity by voluntarily paying additional fees. Consumers (companies) paying a premium can receive a Confirmation of Renewable Energy Use which is accredited by RE100. KEPCO's Green Premium is a competitive bid scheme, unlike the usual green pricing in other countries. KEPCO announces its Green Premium bidding semiannually, and companies bid on the amount and price of renewable electricity they want to purchase. The winning bids are based on the highest price suggested. The Renewable Energy Use Review Committee determines matters related to the auction, such as the lowest bidding limit and purchase limits per company. Currently, the lowest bidding limit is 10 won/kWh, and the average winning price is slightly above 10 won/kWh. The premium of the winning bid for renewable electricity is divided into 12 months and charged to the electricity bill each month. KEPCO transfers all income from the Green Premium scheme to KEA each month and KEA issues the Confirmation of Renewable Energy Use to KEPCO every quarter. The funds collected through the Green Premium scheme are used by KEA to reinvest in renewable energy.

KEPCO uses the RECs supplied through the RPS to operate the Green Premium scheme. Since KEPCO settles the costs of the REC purchased by the power generation companies subject to the RPS, the ownership of RECs is eventually transferred to KEPCO. KEPCO then separates the energy sources among the obtained RECs that meet the criteria of the "renewable energy use recognition scheme" and sells them to the consumers in the form of the Green Premium scheme. At this point, the final ownership of renewable energy is transferred to the consumer.

Direct Purchase of RECs

A company may directly buy an unbundled REC separated from the electric power and then convert it into a Confirmation of Renewable Energy Use to have its use of renewable energy declared. In the past, only the parties subject to the mandatory RPS could purchase RECs, but it is now available to businesses and other electricity consumers as well. RECs intended for RE100 or voluntary renewable energy use are traded at the Korean RE100 management system operated by

KEA, not KPX. Over-the-counter transactions and long-term transactions are also available in addition to spot transactions. The REC is retired when a company converts a REC purchased through the REC exchange market into a Confirmation of Renewable Energy Use. The REC is converted into a Confirmation of Renewable Energy Use without applying the REC multiplier. Compared to other certificate purchasing methods from other countries, this method directly uses the REC from the RPS market and hence is comparably more likely to lead to additional renewable energy production (additionality), and the price of the REC is also higher. The price of RECs that companies voluntarily purchase is the same as those of RECs in the existing mandatory RPS market.

PPA

PPA schemes are categorized into direct PPA and third-party PPA. A direct PPA is a form wherein an electricity consumer signs a contract with a power supplier for direct power purchase, whereas in a third-party PPA, KEPCO mediates an agreement between the power supplier and the power consumer. The introduction of the third-party PPA was promoted considering that the National Assembly was not likely to pass the amendment of the Electric Utility Act to allow direct PPAs, but the legislation introducing the direct PPA scheme was also passed, thus making both schemes now available. Direct PPA and third-party PPA work in very similar ways except for KEPCO's mediation. The public notice on direct PPAs from the Ministry of Trade, Industry, and Energy has been finalized in September 2022.

Target electricity generation companies:

Renewable energy generation companies with power generation facilities equal to or more than a total of 1MW

Target electricity users: General or industrial electricity users with contracted electricity equal to or more than 300kW

Contract period: At least one year (usually a long-term contract of 10 to 20 years)

Contract Unit: Electricity users purchase electricity from renewable energy generation companies.

PPA price: Renewable energy contract unit price (SMP+REC) agreed upon between contract parties + incidental expenses (transmission and distribution cost (basic charge + usage fee), supplementary settlement fee, transaction fee, electricity-based fund, etc.)

Rate calculation method: Real-time basis (monthly/annual aggregate calculations can be made for third-party PPAs)

Additionality of Renewable Energy in Korea

Additionality refers to the circumstance where a corporate purchase of renewable energy leads to additional renewable energy production. In general, non-subsidized projects are considered to have higher additionality than subsidized projects, and PPAs are deemed to have greater additionality than directly purchasing unbundled certificates. Renewable energy subsidies are introduced to supplement the economic disadvantages of renewable energy generation. The supply of renewable energy increases in proportion to the level of government subsidies regardless of a company's voluntary purchase agreement. Therefore, a company purchasing renewable energy through an already subsidized project is considered to have less additionality than non-subsidized ones. PPA is deemed to have higher additionality than procuring through EACs or green pricing because it is mostly contracted for new projects. Therefore, the company's purchase becomes a critical factor in deciding whether to proceed with a new project. On the other hand, an unbundled EAC purchase or green pricing uses certificates issued from existing projects, contributing less to adding renewable energy generation capacity.

Korea's Green Premium scheme is considered to have a relatively low level of additionality since it is a scheme wherein KEPCO settles the cost of RECs purchased by the power generation companies subject to the RPS and transfers the rights to the renewable energy to the final power-consuming companies. In other words, renewable energy would have been produced to fulfill the RPS obligations anyway, regardless of the company's Green Premium purchase. However, to complement the lack of additionality, Article 71 of the *Regulations on the Support, etc. of New and Renewable Energy Facilities* stipulates that the Green Premium proceeds be utilized for projects that support the installation of renewable energy facilities and construction of renewable energy infrastructure.

The additionality of South Korea's direct and third-party PPA is very high. Since PPAs are typically contracted with new projects, a company's purchase agreement directly leads to the construction of a new renewable energy plant. Moreover, in the case of Korea's PPA, if a renewable energy generating company enters a PPA contract with a corporate power consumer, the renewable generating company cannot issue RECs for the corresponding generation. In other words, all PPA projects in Korea are non-subsidized. Renewable energy generation companies should choose between the RPS mandatory implementation or the voluntary corporate demand; the choice to contract with a company leads to a decrease in the amount of renewable energy supplied to fulfill

RPS obligations. Thus, the additionality of Korea's PPA would be 100% since the decreased amount of renewable energy to implement RPS requirements caused by the increase in PPAs ultimately leads to additional projects to fulfill the RPS requirement.

The additionality of Korea's direct REC purchase scheme is also as high as the additionality of PPAs. This is because the RECs used by the RPS are purchased by companies and converted into Confirmation of Renewable Energy Use. In other words, companies utilize RECs used in the mandatory supply market. Generally, the price of certificates purchased by companies for voluntary use is lower than that of certificates in the mandatory market, but in Korea, the two prices are the same. Corporate purchases of RECs lead to a shortage of certificates in the mandatory market, which in turn prompts additional production to fulfill RPS obligations. Although some time is needed for corporate purchases to induce new renewable energy facility constructions, in the long-term, the additionality can be considered close to 100% like that of PPAs.

In general, the additionality of direct unbundled REC purchase is considered very low not only because it uses certificates already issued from existing projects, but also because it mostly uses underutilized certificates or certificates issued from subsidized projects. In some states in the United States, for example, companies purchase certificates produced beyond the RPS mandatory quota and utilize them for voluntary use of renewable energy. In the EU, since companies use Guarantees of Origins^{GOs} which are issued along with subsidies for voluntary renewable energy use, the additionality of GOs traded in most EU countries, except for Germany and some other countries, is not considered high.

In the case of the GO system, in particular, the background to its introduction is of relevance; in 2001, the system was introduced in the EU to track renewable energy use to secure electricity consumers' rights to know. Until 2021, each country had different conditions for issuing GOs to power generation companies. In Germany and France, GOs were not issued for power plants that received FIT subsidies, but the Netherlands and the United Kingdom issued GOs to power plants that received government subsidies as well. In the case of Germany, GOs were issued to facilities when subsidies were no longer granted. After the European Commission adopted "FIT for 55" in 2021, issuing GOs became mandatory for all EU member states with or without subsidies.

Korea's Electricity Market and the Renewable Energy Procurement Scheme

Korea's Corporate Renewable Energy Purchase Scheme and GHG Emissions Calculation

Korea's corporate renewable energy purchase scheme is a procurement means recognized by the RE100 initiative and conforms to the criteria of the GHG Protocol. In other words, if a company calculates its GHG emissions according to "the GHG Protocol Corporate Accounting and Reporting Standard", the emissions can be calculated as zero.

The problem, however, arises when companies subject to Korea's GHG Emission Trading Scheme or the Target Management System calculate GHG emissions using the *Guidance on the Report and Certification of Emissions under the Emission Trading Scheme*. Korea's Emissions Trading Scheme^{K-ETS} deals with more than 70% of Korea's GHG emissions and functions as a foundation for reducing GHG emissions in Korea. When allocating emission caps, the K-ETS covers corporate indirect emissions (Scope 2) from the use of power. Since the government, not the market, determines the electricity price, the demand-supply mechanism does not apply in Korea. Therefore, companies with electricity demand are also required to cut the emissions from electrical power generation. Whereas, the EU's ETS does not include companies' indirect emissions in its emissions allocation.

As the agency responsible for the operation of the K-ETS, the Ministry of Environment only recognizes emissions reduced through solar and wind power when companies use renewable energy via PPAs or direct purchases of certificates. In this case, the emission factor of "0" can be applied when calculating emissions. The Ministry plans to announce the emission factor applicable to biomass through further research. On the other hand, purchasing renewable energy using the Green Premium is not recognized as an emissions reduction.

The concept behind the Green Premium is to transfer the RECs used to meet RPS obligations back to electricity users. If the Green Premium is recognized as an emissions reduction of the electricity user, it will be difficult for the Korean government to achieve the national GHG emissions reduction goal. Although the mandatory RPS requirements to supply RECs are not recognized as emissions reduction, the reductions made through the RPS are already covered by the national reduction roadmap. In other words, only the national government can declare the emissions reduction through the mandatory REC supply under the RPS. If the Green Premium is recognized as GHG emissions reduction for each company, it would constitute a double recognition since the GHG emissions reduction would already

be declared at the national level. For that reason, the Ministry of Environment does not recognize the Green Premium as a means of GHG emissions reduction.

However, this regulation applies only to companies subject to the K-ETS or the Target Management System. Other companies are free to report their use of the Green Premium as a way of reducing emissions. Moreover, if seen from the perspective that all corporate GHG emissions reduction activities in a country should be naturally attributed to the national level reduction in the end, the state of affairs would be that no party has exclusively declared the right to the reductions made through the mandatory supply of RECs under the RPS in Korea. Therefore, corporate declarations of emissions reduction through the Green Premium are seen as consistent with the principles of the RE100 initiative and the GHG Protocol since the companies have received the right to renewable energy by purchasing the Green Premium.

Calculation of Residual Mix and GHG Emissions

The use of renewable energy is a matter of defining who gets the rights to the renewable electricity in the power system. Renewable energy emits little to no GHG, so a company that uses renewable energy also takes the rights to the reduced GHG emissions. In other words, if an entity acquires the attributes of the renewable electricity in the power system, the others must use a higher emission factor than when the attributes were not acquired by a specific entity. For example, suppose a power system has electric power of 100, 10 of which are generated from renewable energy. Also, assume that the average power emission factor under the condition where no entity exclusively takes the right to renewable energy is 1. In this case, if one of the power-consuming companies takes the exclusive right by purchasing half the amount of renewable energy (5 out of 10) in the grid, the power emission factor for the remaining electricity users would increase to a factor higher than 1. Here, the emission factor applied to the remaining electricity users is called the residual mix.

When a renewable energy purchase scheme is adopted, electricity users who do not purchase renewable energy must provide the residual mix used to calculate GHG emissions. However, the residual mix is neither calculated nor provided in Korea yet. One of the reasons is that the management system in Korea is divided between two ministries where the Ministry of Industry, Trade, and Energy manages energy issues including renewable energy, and the Ministry of Environment manages climate change issues including GHG emissions. Therefore, the discussion on residual mix that deals with both renewable energy and GHG emissions has not been very active.

Economic Evaluation of Each Procurement Method

Economic evaluation refers to analyzing the costs and benefits of a project to decide whether to proceed with the project or not. Economic evaluation is crucial when companies build their renewable energy procurement portfolio, including the procurement method, period, quantity, etc. This part of the guideline will look through elements required for analysis when conducting an economic evaluation.

One of the biggest benefits a company can earn from procuring renewable energy is the non-financial benefit, which includes better relationships with corporate clients, positive effect on marketing and branding, effective handling of non-tariff barriers, and more. As the amount of non-financial benefit varies from company to company, it is difficult to apply a single formula to every situation. Accordingly, the following economic evaluation will focus on financial costs and benefits.

As the interest of Korean companies procuring renewable energy has emerged from the request of their corporate clients, non-financial benefits still stand important. As so, it is strongly recommended for companies to include non-financial factors in their internal economic evaluation. For example, when deciding the period of renewable energy procurement, as time passes the cost of procurement will decline following the decreasing levelized cost of electricity^{LCOE} of renewable energy. In such case, for the economic evaluation,

it can be assumed that the leadership effect of procuring renewable energy will also decrease.

Economic Evaluation – Green Premium

Green Premium is a renewable energy procurement method where an additional premium is paid on top of the existing electricity charge from KEPCO. For Green Premium, an additional cost is constantly required per the payment of electricity bills and the risk of the fluctuating premium price exists as it is determined through auctions. However, it is more accessible compared to other procurement methods.

Cost: Winning bid price of Green Premium

Benefit: -

Economic Evaluation - REC Purchase

REC purchase refers to purchasing RECs separately, while continuing to pay KEPCO for electricity. The Ministry of Environment recognizes REC purchases as GHG emissions reduction under the K-ETS.

Since RECs are recognized under the K-ETS, companies required to participate in the K-ETS can calculate the benefits of REC purchases compared to carbon purchases. As the carbon price increases compared to the REC price, companies earn more benefits in purchasing RECs. Additional benefits can be considered for long-term REC purchase contracts with fixed price as the risk of carbon price volatility can be avoided.



Korea's Electricity Market and the Renewable Energy Procurement Scheme

Cost: REC purchase price (Market price/Long-term fixed price)
Benefit: Carbon price offset

Economic Evaluation - Direct/Third-party PPA
 PPA refers to companies purchasing electricity and attributes of renewable energy (REC) from renewable energy generators at once.

The PPA contractual price is seen to be directly affected by the supply and demand situation of the RPS market in the short-term but is predicted to follow the projection of the LCOE of renewable energy in the long-term.

According to Korea Energy Economics Institute¹⁰, the LCOE of large-scale solar is estimated to decrease to 94.2KRW/kWh by 2030. BloombergNEF, a global energy research institute, predicted Korea to reach grid parity¹¹ by 2027.

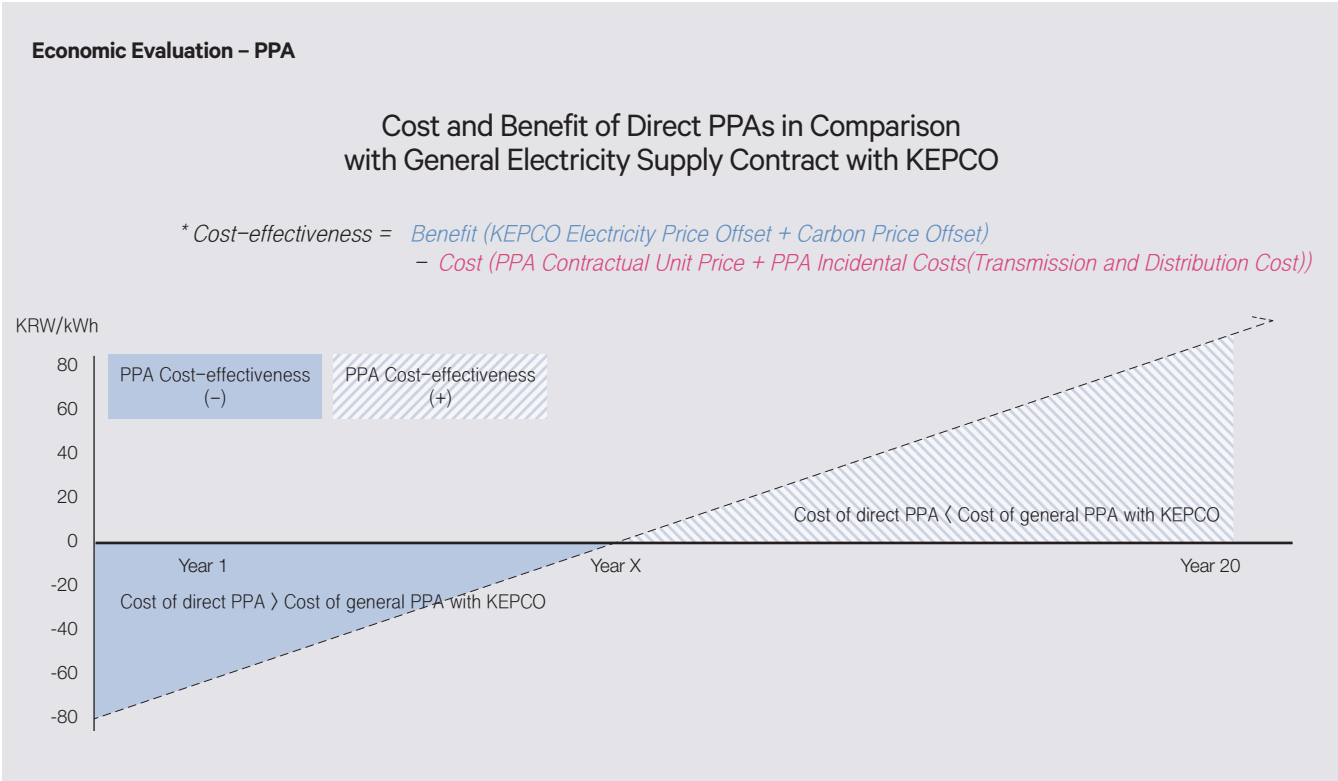
Existing general PPAs with KEPCO includes the transmission and distribution cost and other incidental costs. However, for PPAs, companies need a separate contract with KEPCO and pay such costs when using KEPCO's grid.

A 20-year-long fixed price term is usual for PPAs. Accordingly, the aggregated cost and benefit of the 20 years should be considered for an economic evaluation. The estimated KEPCO electricity price and the carbon price are the most important factors for an economic evaluation along with the PPA contractual price. As PPAs offset the existing KEPCO electricity price and carbon price, the benefit of PPAs compared to general PPAs with KEPCO increases as the KEPCO electricity price and carbon price rise.

Due to climate change and escalating energy prices, it is widely predicted for electricity price and carbon price to increase continuously in the long-term. KEPCO is planning to increase the electricity price by 17% maximum compared to the previous price starting from October 2022.

Cost: PPA contractual unit price¹² + Incidental costs (Transmission and distribution cost, etc.)
Benefit: KEPCO Electricity price offset + Carbon price offset

10. Korea Energy Economics Institute (KEEI), "Establishment and Operation of Long-Term LCOE Forecast System for Expansion of Renewable Energy," (2020.12)
 11. Grid parity refers to the point when the LCOE of renewable energy becomes equal to or less than the price of using power from conventional energy sources such as fossil fuels.
 12. The contractual unit price of a PPA is set upon the agreement of the electricity consumer with the renewable electricity generating company or the utility company. For the profit of the generating companies, the contractual unit price is usually higher than the LCOE when making an agreement.

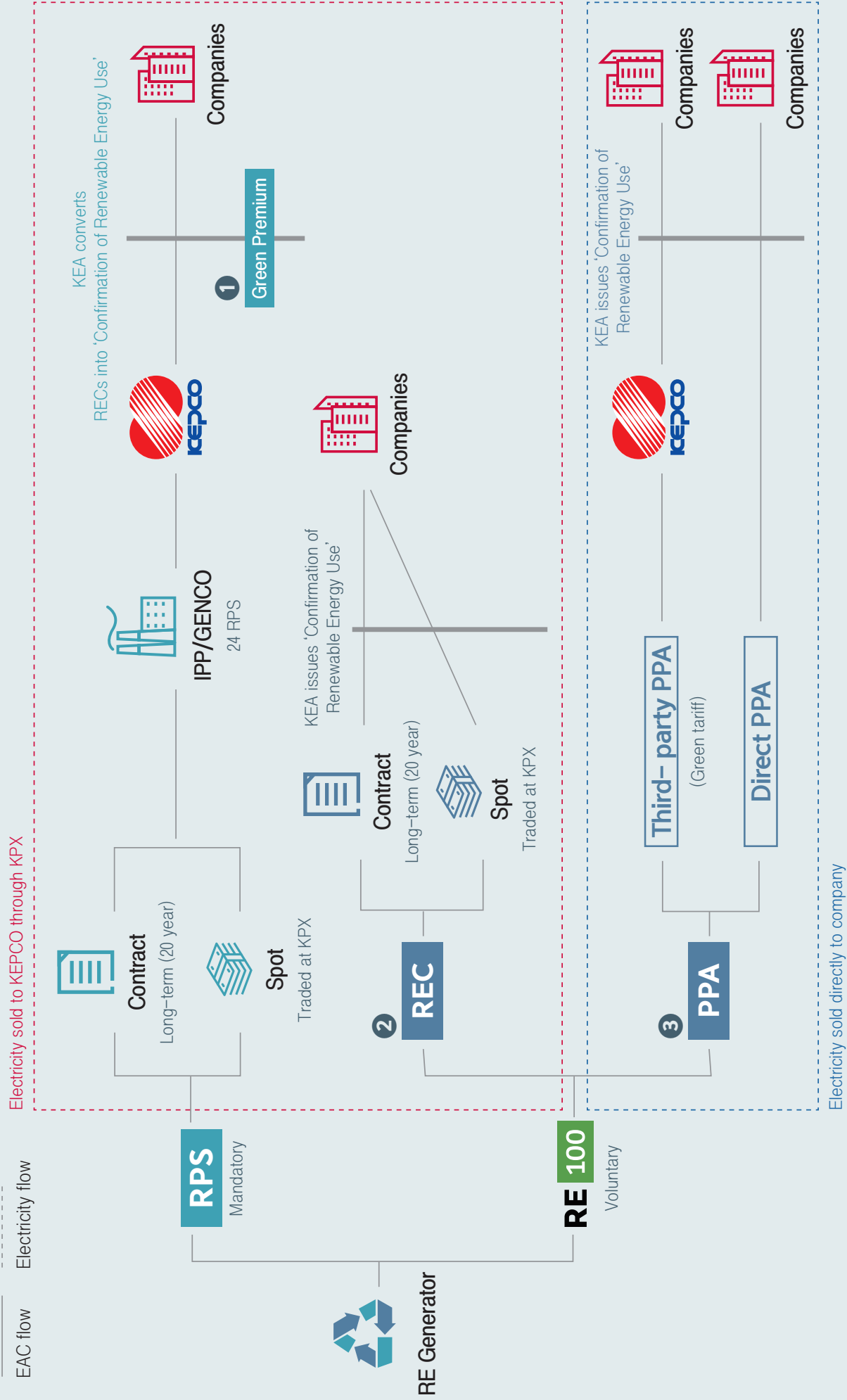


Legislations for Korea's Renewable Energy Use Recognition Scheme

	Classification	Level	Laws and Regulations	Administrative Agency
Common	Operation of the scheme	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 61	
	Recognition of GHG emissions reduction	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 70	
	Registration and certificate issuance	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 64	
	Certificate exchange market	Rule	(Notice by the Renewable Energy Center) Rules on the Issuance of Renewable Energy Certificates (RECs) and the Operation of Transaction Markets Chapter 11	
PPA	PPA	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities Article 66	Korea Energy Agency (KEA)
	Clause on the direct sales of renewable energy by electricity providers	Law	Electric Utility Act Articles 2, 7(2), and 16(5)	
		Law	Enforcement Decree of the Electric Utility Act Article 20	
		Law	Enforcement Rule of the Electric Utility Act Article 17(4)	
	Matters pertaining to the electricity supply targets, methods and procedures of the direct PPA	Public Notice	Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers	
	Third-party PPA	Law	Enforcement Decree of the Electric Utility Act Article 19(1), Section 3	
Guidance		Guidance on the Third-party PPA of Electricity Generated from New and Renewable Energy		
Project Equity Investment	Signing of purchase agreement through equity participation	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 68	
Self-generation	Facilities for self-consumption	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 69	
REC Exchange	Purchase of RECs	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 67	
	Exchange parties, methods, cycle, price, etc.	Rule	(Notice by the Renewable Energy Center) Rules on the Issuance of Renewable Energy Certificates (RECs) and the Operation of Transaction Markets	
	Expansion of targets for settling costs for mandatory RPS implementation	Rule	Korea Power Exchange (KPX) Rules for the Operation of the Electricity Market	
Green Premium	Use of financial resources	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 71	Korea Electric Power Corporation (KEPCO)
	Exclusive Institutions	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 62	
	Payment of the Green Premium	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 65	
	Renewable Energy Use Review Committee	Regulation	Regulations on the Support, etc. of New and Renewable Energy Facilities (Ministry of Trade, Industry and Energy Notice No. 2021-66) Article 72	
	Charging of expenses besides electricity costs	Term	Korea Electric Power Corporation (KEPCO)'s Basic Terms and Conditions for Electricity Supply Article 82	
	Renewable electricity use	Rules for operation	Rules for the operation of Korea Electric Power Corporation (KEPCO)'s Basic Terms and Conditions for Electricity Supply (September 1st, 2022) Article 83	

* Laws and regulations are as of September 2022

Corporate Renewable Energy Procurement Scheme in Korea





Practical Guideline for Each Procurement Type

01 How to Use the Platform

02 Green Premium

03 REC Purchase

04 PPA

05 Self-generation

Practical Guideline for Each Procurement Type

How to Use the Platform

① Energy Marketplace of Korea Electric Power Corporation (KEPCO) EN:TER

KEPCO's Energy Marketplace provides service related to the Green Premium and the third-party PPA. Electricity users willing to participate in the Green Premium system should register their company account on the Energy Marketplace¹.

<https://en-ter.co.kr/main.do>

<Energy Marketplace>



Companies can participate in the Green Premium auctions after registering the company account and the business registration/customer number. In the case of third-party PPAs, companies can use the Energy Marketplace by registering their company account and their electricity user information. The following are the prerequisites for account registration:

<Green Premium>

- Mobile phone number of the responsible staff in the company for identity verification
- Business registration number and joint certificate for the company/organization
- Certificate of Business Registration
- KEPCO customer number²

<Third-party PPA>

- Mobile phone number of the responsible staff in the company for identity verification
- Business registration number and joint certificate for the company/organization
- Certificate of Business Registration
- KEPCO customer number

The step-by-step manual for registration is provided at the location indicated below.

- Green Premium: "Renewable Energy Trade" tab on the website > Green Premium > Bid Announcements and Application > "Online Bidding Application Manual"

- Third-party PPA: "Renewable Energy Trade" tab on the website > Third-party PPA > Notice > "Guide on Third-party PPA for Information Electricity Suppliers and Consumers"

1. Pursuant to Article 62 of *Regulations on the Support of New and Renewable Energy Facilities*, the New and Renewable Energy Center of Korea Energy Agency (KEA) is responsible for schemes relevant to the consumption and verification of renewable energy, and Korea Electric Power Corp. (KEPCO) is responsible for the operation of the power purchase agreement (PPA) scheme and the Green Premium system.

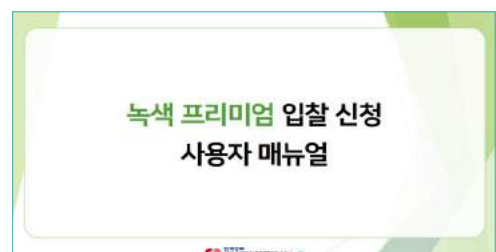
2. Customers that receive electricity from regional electricity suppliers besides KEPCO or businesses that are tenants to properties of third parties and do not have direct contract with KEPCO should register their KEPCO customer number at the application page for Green Premium bids.

Account registration for the Energy Marketplace is processed immediately without any delay.

<Manual for K-RE100 Account Registration>



<Manual for Green Premium Auction Application>



2 K-RE100 Management System of Korea Energy Agency (KEA)

Electricity consumers are required to register their company account at the K-RE100 Management System of KEA to apply for the K-RE100 system, manage records of RE100 accredited procurements, and make REC purchases.

<https://nr.energy.or.kr/RE/CST/login.do>

<Korea Energy Agency's RE100 Management System>

공지사항	현물거래현황	관련법령
K-RE100 참여 유역사항(REC 매수, 자기설비 등록 등)		2021-12-02
발전사업자 RE100 거래시장 참여 유역사항		2021-08-06
RE100 인증서(REC) 거래시장 연내(매수자, 매도자 거래 절차 매뉴얼)		2021-07-30
[수정] 자기소비 재생E 실적 및 실적 등록 안내(22.7.1. 업데이트)		2021-05-11
K-RE100 시스템 등록 안내(매수자, 자기설비 등록)		2021-05-10

The following are the prerequisites for account registration:

- Business registration number and joint certificate for the company/organization
- Certificate of Business Registration
- Evidentiary documents for KEPCO customer number (e.g., bill)
- Company logo file

In principle, the application should be made under the name of the representative company; however, a company is allowed to apply by respective subordinate businesses if it wishes to issue certificates for each individual business operation site under the same corporate body. Furthermore, businesses sharing the same business registration number are allowed to sign in using the shared number and can register their respective business operation site.

When registering a representative business operator with a single business registration number, the company can use the management system and be issued a Confirmation of Renewable Energy Use. A Confirmation of Renewable Energy Use is issued to a single address for the registered business. If a company wishes to register self-generation facilities and obtain a Confirmation of Renewable Energy Use for each operation site, the company must register subordinate businesses and add their operation sites respectively.

- * When business registration numbers for each operation sites are different: Register subordinate businesses
- ** When there are multiple operation sites under a single business registration number: Add individual operation sites
- *** When the representative business registers renewable energy procurement records collectively, it is possible to add individual operation sites even if each sites have different business registration numbers (In such case, individual operation sites are not allowed to respectively purchase RECs and register renewable energy procurement records; only the representative business is authorized to do so)

The subscription manual for the K-RE100 Management System is provided at the location indicated below. [K-RE100 Management System website](#) > Notice > “Guide to the K-RE100 System Registration (registering purchaser information and self-generation facilities)”

The K-RE100 Management System is available for use only after the company account is approved by the New and Renewable Energy Policy Office³ of KEA.

3. RE100 Operation Team, New and Renewable Energy Policy Office, Korea Energy Agency
Phone No. 052-920-0902 ~ 0905

Practical Guideline for Each Procurement Type

Green Premium

Configuration of Costs
Basic charges
Electricity charges
Green Premium
Operational fees

Procurement Procedures for the Green Premium



1 Bidding

Green Premium operates via a bidding system, and electricity consumers for general, industrial and educational use who are registered enterprise members of the Energy Marketplace are allowed to apply for the Green Premium auctions (includes joint electricity users (businesses that are tenants to properties of third parties and do not have direct contract with KEPCO) and electricity users of regional electricity suppliers). In principle, the auction is held once a year; however, additional bidding may take place if there are remaining quantities. Announcements for bids and relevant manuals are provided at the location indicated below.

Sign into EN:TER Energy Marketplace > New and Renewable Energy > Green Premium > Announcement for bids and application
<https://en-ter.co.kr/ft/gp/prm/applUse/list.do>

<Bid Announcement>

Bidding prerequisites

- KEPCO customer number
- Business registration number
- Corporate registration number
- Joint certificate for the company/organization
- Documents
- Certified copy of corporate registry
- Certificate of business registration
- Letter of business size verification (for small and medium enterprises (SMEs) and middle market enterprises only)

Online Bidding and Submission of Documents

The bidding screen is displayed only during the period of the bidding announcement, and the applicant should upload the required documents in PDF format after making the application online. Consumers using electricity without an agreement directly with KEPCO are also eligible to submit a bid if they use electricity provided for general, industrial or educational use. In such cases, corporate electricity consumers can participate in the bidding process by making use of the KEPCO customer number of the parent company under the parent company's verification. Electricity consumers using electricity from regional electricity suppliers may also put in a bid upon verification of the information on electricity consumption by the regional electricity supplier.

<Application for Green Premium Bidding>

The screenshot shows a web form for applying to a Green Premium Bidding system. The form is titled "참여기업 정보 및 제출 서류" (Participant Information and Submission Documents). It includes several sections:

- Company Information:** Fields for company name, business registration number, representative name, and address.
- Electricity Consumption Table:** A table with columns for '입력구분' (Input Category), '고객번호' (Customer Number), '계약종별' (Contract Type), '납기일' (Due Date), '사용장소' (Usage Location), '납부확인서' (Payment Confirmation), '사용량' (Usage), and '관리' (Management). The '사용량' column shows '0 kWh'.
- Bidding Details:** Fields for '구매물량(연간)' (Annual Procurement Quantity) in MWh and '프리미엄가격' (Premium Price) in KRW/kWh.
- Document Submission:** Sections for '법인등기부등본' (Corporate Registry), '사업자등록증' (Business Registration Certificate), and '기업규모확인서' (Company Size Confirmation Certificate), each with a '파일선택' (File Selection) button.

 At the bottom, there are two questions with radio button options:

- 녹색프리미엄 참여기업(기관)의 기업(기관)명, 구매물량, 프리미엄 가격 등 상기 참여기업 정보에 대한 국외의 자료 요구시 한전이 해당 자료를 국외에 제출함을 동의하십니까? (Do you agree to KEPCO submitting data to foreign countries when requested?) with options '동의함' (I agree) and '동의하지 않음' (I do not agree).
- 신재생에너지 설비의 지원 등에 관한 규정 제2조제23호에 따른 재생에너지 사용 관리시스템(https://nr.energy.or.kr/RE/CST/login.do)에 기업명이 공개됨을 동의하십니까? (Do you agree to your company name being disclosed on the Renewable Energy Management System?) with options '동의함' (I agree) and '동의하지 않음' (I do not agree).

The applicant should enter the KEPCO customer number, annual electricity consumption, contract type (general, industrial or educational), annual procurement quantity (in MWh), and the bid on the premium price (in KRW/kWh). The applicant should attach a certified copy of corporate registry⁴ and the certificate of business registration. Middle market enterprises or SMEs are required to submit a letter of business size verification⁵, but if it is unavailable, companies can still participate in the bid by checking “absent” on the relevant box.

2 Bid Winning and Signing of Contract

The winning bid is determined according to the following order:

- highest bid price (among customers whose submitted premium prices are greater than the lowest bidding limit);
- largest procurement quantity (if the submitted bid for the premium price is equal);
- earliest application (if the procurement quantity is equal);
- manufacturing industry (electricity consumers for industrial use), in accordance with the major classification of the Korean Standard Industrial Classification, is prioritized. If the application date is the same, the bid is awarded to the bidder in order of the manufacturer with the least power consumption in the previous year (indicated in the bidding application).

Bid awarding is notified to the responsible staff indicated in the application form via mobile phone (text message) and e-mail. The contract is signed automatically unless the bid winner signifies any intention to cancel the contract no later than three business days since the notification (fill in “no intention to sign a contract” at the Green Premium bidding system). The contract period begins on the date of the contract signed and ends on December 31st of the same year.

Below are the conditions for bidding disqualifications:

- The bidding applicant has not signed a contract for electricity consumption with KEPCO;
- The applicant’s contract type for bidding is neither general, industrial nor educational use;
- The applicant bids for a price less than the lowest bidding limit; and
- The bid application fails to be submitted before 18:00 of the closing date.

4. “Public organizations and academic organizations” which do not have a corporate registration number and a certified copy of corporate registry can submit a bid by checking “absent” at the bidding application page.

5. Information available at: Information Center of Middle Market Enterprises (https://www.mme.or.kr), Small Business Status Information System (SMINFO) (https://sminfo.mss.go.kr)

Practical Guideline for Each Procurement Type

Green Premium

③ Payment of Green Premium

Green Premium (winning bid price) and operational fees (50KRW/MWh) including value-added tax (10%) are billed on a monthly basis. The bill for the premium (downloaded from the system) is forwarded separately from the electricity bill. A tax invoice is e-mailed to the responsible staff on a monthly or quarterly basis by correspondingly dividing the total annual premium amount. The premium is billed separately from the electricity bill because users that have not signed a contract for electricity consumption with KEPCO and thus without a customer number are also eligible to apply for bids.

④ Issuance of Confirmation of Renewable Energy Use

Confirmation of Renewable Energy Use is issued by KEPCO on a quarterly basis based on the amount of green premium paid by a company. In principle, it is issued to each contract party, but if the party is a corporate body, it is possible to get certificates issued to individual electricity consumption sites used by the party, with the total premium amount paid as the limit. For certificates to be issued per site, the KEPCO customer numbers of each individual electricity consumption site must be indicated in the contract. The Confirmation of Renewable Energy Use can be issued in English as well. It is issued for all renewable energy procurement types including self-generation in Korea; however, Confirmation of Renewable Energy Use issued via the Green Premium cannot be used to receive credits for GHG emissions reduction under the Korea Emission Trading Scheme (K-ETS).

<Guidance on the Report and Certification of Emissions under the Emission Trading Scheme>

Article 18. Exclusion from Calculating Emissions

⑥ If the target company for assignment uses electricity generated from renewable energy sources such as solar power, wind power, and hydropower pursuant to Article 27 of the Act on the Promotion of the Development, Use, and Diffusion of New and Renewable Energy ("Act on Promotion") and Regulations on the Support, etc. of New and Renewable Energy Facilities ("Regulations") via methods enumerated below, and obtains a confirmation of renewable energy use to utilize it as GHG emission reduction records, indirect GHG emissions may be excluded from the renewable energy electricity consumption. However, this is applicable only for Renewable Energy Certificates (RECs) that are not used to implement the mandatory requirements under the Renewable Portfolio Standard (RPS).

1. Signing of power purchase agreement (PPA) via an electricity supplier
2. REC procurement pursuant to Article 12(7) of the Act on the Promotion of the Development, Use, and Diffusion of New and Renewable Energy
3. Signing of agreement on electricity and REC procurement through equity participation

The Confirmation of Renewable Energy Use issued by procuring renewable energy through the Green Premium contains information on the amount of renewable energy used, period of use, and energy sources. Energy sources that can be indicated in the Confirmation of Renewable Energy Use include solar power, wind power, hydropower, and bioenergy.

<Confirmation of Renewable Energy Use⁶>

[별지 제3호 서식] 재생에너지 사용 확인서

확인서번호 : 제 호

재생에너지 사용 확인서

1. 소비자명 :
 2. 주소 :
 3. 대표자명 :
 4. 사용내용
 - 사용수단 :
 - 사용량 : (MWh)
 - 사용기간 :
 - 생산기간 :
 - 대상전원 :
 - 지역구분 :

위와 같이 재생에너지를 사용(구매)하였음을 확인합니다.

년 월 일

한국에너지공단 신·재생에너지센터 소장 (인)

※ 제63조제1항 각 호외 수단에 따라 확인시켜 포함되는 내용은 아래와 같음.
 1. 녹색프리미엄 : 사용량, 사용기간, 대상전원
 2. 인증서구매, 민간인증사업자 등 한 전량구매계약, 직권발매 : 사용량, 생산기간, 사용기간 (REC구매분 제외), 대상전원, 인증서(REC) 유효기간
 3. 저가용 재생에너지 원비 절지 : 사용량, 사용기간, 대상전원, 지역구분
 ※ 재생에너지 사용량(MWh)의 소수점 내제자리 이하는 원사하고 발급한다.
 ※ 재생에너지 사용 확인서를 발급받은 경우 발급 즉시 해당 공급인증서(REC)는 폐기함

[서식] Confirmation of Renewable Energy Use

No. 00000000

Confirmation of Renewable Energy Use

1. Consumer Name : Korea Energy Agency
 2. Address : 323, Jongga-ro, Jung-gu, Ulsan, Republic of Korea
 3. Owner Name : Hong gil-dong
 4. Details of Use
 - Method : Renewable Energy Certificate(REC) Purchase
 - Amount : 0.000 MWh
 - Period of Use : 2021-03-01 ~ 2021-03-31
 - Period of Production : 2021-03-01 ~ 2021-03-31
 - Energy Source : Solar Energy(PV)
 - Region : Seoul, republic of Korea

This is to confirm that the renewable energy has been used as stated above.

(year). (month). (date).

**KOREA ENERGY AGENCY
 NEW & RENEWABLE ENERGY CENTER**

※ Direct GHG Emission Factor of Renewable Energy(gCO₂e / kWh) :

Energy Source	Direct emissions
Solar PV, Concentrated Solar Power, Hydropower, Windfarm, offshore, Geothermal, Ocean	0
Biomass	n.a.

* IPCC 5th assessment report Annex 3 (Technology-specific Cost and Performance Parameters)

Public Notice and Terms & Conditions of the Green Premium

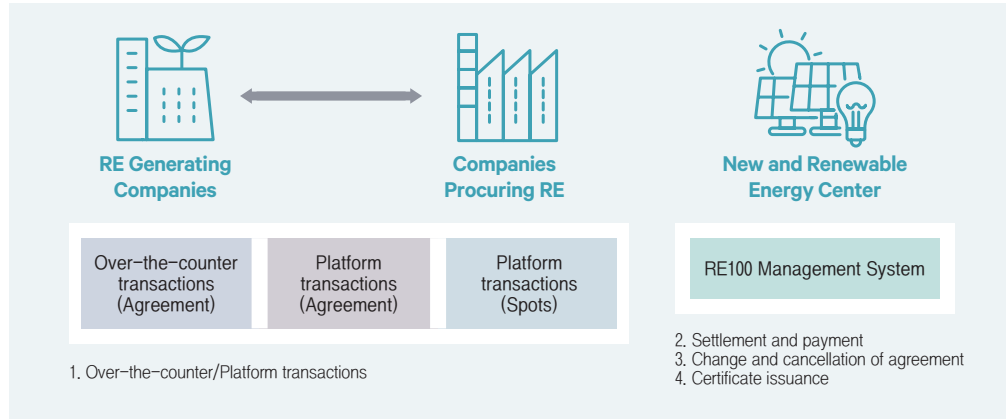
	Classification	Description
Public Notice of the Ministry of Trade, Industry, and Energy <Regulations on the Support, etc. of New and Renewable Energy Facilities>	Exclusive institutions, etc. (Article 62)	The exclusive institution responsible for renewable energy use and verification: New and Renewable Energy Center The executive agency of the Green Premium system: Korea Electric Power Corporation (KEPCO)
	Payment of the Green Premium (Article 65)	Compliance with the payment duties of the premium pursuant to the administration criteria of the executive agency (KEPCO)
	Use of proceeds from the Green Premium (Article 71)	Proceeds of the Green Premium to be invested in renewable energy projects
	Renewable Energy Use Review Committee (Article 72)	Establishing and operating a Renewable Energy Use Committee by the exclusive institution
Korea Electric Power Corp. <Basic Terms and Conditions for Electricity Supply>	Charging of fees besides electricity costs (Article 82)	Green Premium can be billed together with electricity bills
Korea Electric Power Corp. <Rules for the Operation of Basic Terms and Conditions for Electricity Supply>	Use of renewable electricity	Compliance with the <i>Regulations of Support, etc. of New and Renewable Energy Facilities</i> (Public Notice of the Ministry of Trade, Industry, and Energy) on detailed regulations for the Green Premium

6. Attachment 3 of the Ministry of Trade, Industry, and Energy Public Notice *Regulations on the Support, etc. of New and Renewable Energy Facilities*

Practical Guideline for Each Procurement Type

REC Purchase

REC Purchase Procedures



① Over-the-counter/Platform Transactions of REC

Electricity users (general/industrial) and consumers using electricity via a separate contract such as a rental agreement with electricity users, (e.g., tenant businesses) are qualified to purchase RECs. The users willing to purchase RECs should be registered in the K-RE100 Management System. RECs can be purchased through over-the-counter transactions and platform transactions. The resale of RECs purchased from transaction markets is not allowed⁷.

Over-the-counter Transaction

Over-the-counter transactions are made in the following sequence: **Conclusion of an agreement** → **Payment** → **Transfer of REC ownership**. When making an agreement for an ownership transfer or consenting on the termination of an agreement, the following formats are available from the *Rules on the Issuance of Renewable Energy Certificates (RECs) and the Operation of the Transaction Markets*: Attachment Form 17 or 18 (“Sales Agreement of REC”), Form 19 (“Changed Sales Agreement of REC”), and Form 20 (“Consent on Agreement Termination”).

Prerequisites

- Joint certificate for the company/ organization

〈Sales Agreement of REC〉

공급인증서 매매계약서 (계약)			
매수자	상호명	사업자등록번호	
	대표자	전화번호	
	주소		
	발전소명	사업자등록번호	
매도자	대표자	전화번호	
	주소		
	에너지원		
	설비설비용량	kW	
현황	소재지	(우편번호) (주소) (상세주소) (지역 (예:전남))	
	가종치		
계약내용	계약기간(발전월)	계약월로부터 ~ 년 월까지	
	계약단가	원/REC	원/MWh
	계약매매량 (예상)	총 REC REC/월(예상)	총 MWh MWh/월(예상)
* 추가협의사항 기재			
계약보증금	금	원정 (₩)	(종류: , 면제사유:)
공급인증서 매수자와 매도자는 「공급인증서 발급 및 거래시장 운영에 관한 규칙」에 따라 계약대상 발전설비에 대해 발급된 공급인증서를 계약내용에 따라 판매 및 구매할 것을 약속하며 이 계약의 증거로서 계약서를 작성하여 당사자가 기명날인한 후 각각 1통씩 보관한다.			
년 월 일			
매수자 (인)			
매도자 (인)			
* 첨부서류: 계약 일련조건 등 발주자의 규정에 의한 필요서류			

공급인증서 매매계약서 (현물)			
매수자	상호명	사업자등록번호	
	대표자	전화번호	
	주소		
매도자	발전소명	사업자등록번호	
	대표자	전화번호	
	주소		
설비	에너지원		
	설비용량	kW	
현황	소재지	(우편번호) (주소) (상세주소) (지역 (예:전남))	
	가종치		
계약단가	원/REC	원/MWh	
계약매매량	REC	MWh	
공급인증서 매수자와 매도자는 「공급인증서 발급 및 거래시장 운영에 관한 규칙」에 따라 계약대상 발전설비에 대해 발급된 공급인증서를 계약내용에 따라 판매 및 구매할 것을 약속하며 이 계약의 증거로서 계약서를 작성하여 당사자가 기명날인한 후 각각 1통씩 보관한다.			
년 월 일			
매수자 (인)			
매도자 (인)			
* 첨부서류: 계약 일련조건 등 발주자의 규정에 의한 필요서류			

7. Article 59 of the Rules on the Issuance of Renewable Energy Certificates (RECs) and the Operation of the Transaction Markets of the New and Renewable Energy Center

The following information must be included in the agreement:

1. Quantity of RECs and their unit price
2. Amount of electricity and its unit price
3. REC multiplier

As for over-the-counter transactions, the sales agreement of REC using the Attachment Form 17 of the *Rules on the Issuance of Renewable Energy Certificates (RECs) and the Operation of Transaction Market* should be registered in the transaction system no later than 14 days since the sales agreement is made. Parties to the agreement should execute electronic signing on the agreement by making use of joint certificates for the company/organization.

While over-the-counter transactions can be made anytime, platform transactions are limited to a specified period of time. Refer to the “K-RE100 Management System Manual (for buyers)” for details on how to make REC transactions.

You can find the manual on:

[K-RE100 Management System website](#) > [Notice](#) > [Guide to the RE100 Accredited Certificate \(REC\) Transaction Market \(Manual\)](#)

<Guide to the RE100 Accredited Certificate (REC) Transaction Market (Manual)>

공지사항	현물거래현황	관련법령
K-RE100 참여 유의사항(REC 매수, 자가설비 등록 등)		2021-12-02
발전사업자 RE100 거래시장 참여 유의사항		2021-08-06
RE100 인증서(REC) 거래시장 안내(매수자, 매도자 거래 절차 매뉴얼)		2021-07-30
[수정] 자가소비 재생E 설비 및 실적 등록 안내(22.7.1. 업데이트)		2021-05-11
K-RE100 시스템 등록 안내(매수자, 자가설비 등록)		2021-05-10

K-RE100 기업 등록 매뉴얼

다운로드 →

REC 거래절차 (매수자) 매뉴얼

다운로드 →

K-RE100 거래절차 (매도자) 매뉴얼

다운로드 →

자가설비 등록 실적 제출 매뉴얼

다운로드 →

FAQ

바로가기 →

Platform Transactions

Platform transactions are made in the following sequence: [Order filled](#) → [Conclusion of agreement](#) → [Payment](#) → [Certificate issued](#). The transaction platform uses the K-RE100 Management System of the New and Renewable Energy Center.

[Sign in](#) > [Register a purchase order or select a selling order \(spots or agreement\)](#) > [Request to fill an order \(spots or agreement\)](#)

The operating hours for transactions are from 10:00 to 16:00 every first and third Friday of each month. To purchase RECs, it is required for purchasers to register order information containing the following when the market is open:

1. Quantity or period of transaction
2. Price of RECs being purchased
3. Energy sources

Practical Guideline for Each Procurement Type

REC Purchase

Orders can be registered starting from 10 minutes prior to the operating hours for transactions on the day the transaction market is opened. Amendments of orders can only be made until 10 minutes before the end of the operating hours for transactions. Note, however, that amendments are not allowed when a sales order has already been filled using the initially registered information.

REC purchase orders can be made using the unit of 1MWh. The electric power price of the purchase order using the 1MWh unit is converted into the price of REC and indicated to the seller.

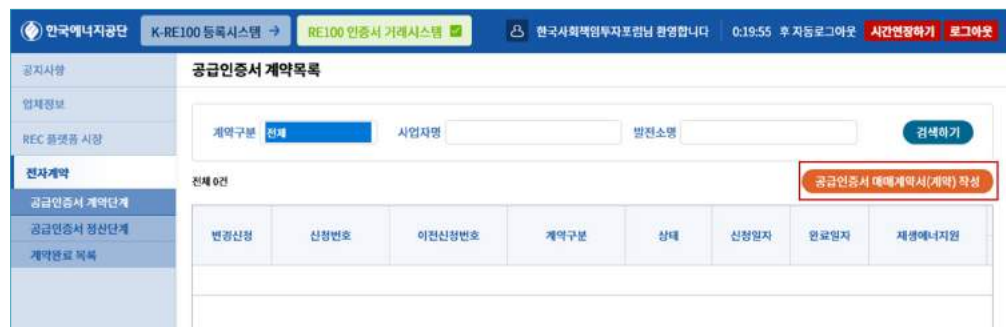
<Example of REC Transaction Price Conversion Between Purchases and Sales>

Seller	Power generated	Certificate (REC)	Multiplier	Unit price (KRW/REC)	Total (KRW)
	20MWh	30REC	1.5	40,000	1,200,000
Purchaser	Electric power (MWh)	Unit price (KRW/MWh)	Total (KRW)		
	20MWh (= 30 REC ÷ 1.5)	60,000 (= 40,000 X 1.5)	1,200,000		

If the same REC is traded in both the RPS market and the REC platform (double transaction), only the initial transaction is considered valid.

Agreements of platform transactions can be made through the confirmation and e-signing by the parties who have filled the order on the platform. Then the agreement is completed with the confirmation of KEA.

<E-agreement in the K-RE100 Registration System>



② Settlement of Costs and Transfer of RECs

The seller who has signed an agreement should give notice on the details of the billing to the purchaser in accordance with the terms and conditions of the agreement, and the purchaser should make the payments to the seller no later than 14 days since the billing date. Both parties to the agreement should execute e-signing on the transaction system in accordance with the settlement results, no later than 7 days after completing the settlement.

REC ownership is transferred upon the confirmation from the New and Renewable Energy Center after the results of cost settlement are registered by both parties of the agreement. If the New and Renewable Energy Center can make a final confirmation of the settlement results, REC ownership can be transferred to the purchaser even in cases where any of the parties fail to register the settlement results.

③ Change and Cancellation of Agreement

Any party to an agreement is entitled to change or cancel the agreement for reasons identified below:

- Changes in the details of the agreement upon consent between the parties;
- Changes in the terms and conditions of the agreement to reflect variations of the REC multiplier; and
- Termination of the agreement upon consent between the parties.

Besides the abovementioned reasons, the agreement may also be changed or canceled due to other causes recognized by the New and Renewable Energy Center such as transaction system errors.

To change or cancel an agreement, parties to the agreement should submit a letter of agreement on the change or termination of the agreement on the platform using Attachment Form 19 ("Changed Sales Agreement of REC") or Form 20 ("Consent on Agreement Termination") stipulated in the *Rules on the Issuance of Renewable Energy Certificates (RECs) and the Operation of Transaction Markets of the New and Renewable Energy Center*.

④ Certificate Issuance

If the electricity consumer does not request to convert the purchased REC to a Confirmation of Renewable Energy Use before the expiration date, the head of the New and Renewable Energy Center may issue a Confirmation of Renewable Energy Use as of the day after the expiration date.

If the agreement is concluded and the settlement information is registered successfully, even when the purchased REC expires, such transaction is recognized as valid and a Confirmation of Renewable Energy Use will be issued as of the day after the completion of the settlement. The REC will be retired immediately after the Confirmation of Renewable Energy Use is issued.

<Contract for Changed Sales Agreement of REC>
[별지 제19호서식]

공급인증서 매매 변경계약서(계약)			
발주자	상 호 명	사업자등록번호	
	대 표 자	전 화 번 호	
계약자	주 소		
	발 전 소 명	사업자등록번호	
상대자	대 표 자	전 화 번 호	
	주 소		
상대자	설 비 용 량	kW	
	가 능 지		
	구 분	당 초	변 정
계약내용	계약기간(발전월)		
	계약단가	원/MWh 원/REC	원/MWh 원/REC
	계약매매량(예상)	총 MWh, MWh/월 총 REC, REC/월	총 MWh, MWh/월 총 REC, REC/월
* 추가협의사항 기재			
공급인증서 매수자와 매도자는 「공급인증서 발급 및 거래시장 운영에 관한 규칙」에 따라 변경계약대상 발전설비에 대해 발급된 공급인증서 전량을 판매 및 구매할 것을 확인하며 이 계약의 증거로서 변경계약서를 작성하여 당사자가 기명날인한 후 각각 1통씩 보관한다.			
년 월 일			
매 수 자 (인)			
매 도 자 (인)			
* 첨부서류: 계약 일반조건 등 발주자의 규정에 의한 필요서류			

<Contract for Consent on Agreement Termination>
[별지 제20호서식]

계약 해지 합의서			
거래 당사자	매도자	상 호 명	발전소명
		주 소	
		사업자등록번호	대 표 자
거래 당사자	매수자	상 호 명	
		주 소	
		사업자등록번호	대 표 자
		전 화 번 호	
거래 정보	계 약 번 호		
	해 지 일 시		
	해 지 사 유		
공급인증서 매수자와 매도자는 「공급인증서 발급 및 거래시장 운영에 관한 규칙」에 의거하여, 거래당사자 쌍방의 합의에 따라 체결된 거래의 해지에 합의한다. 위 계약해지의 증거로서 변경계약서를 작성하여 당사자가 기명날인한 후 각각 1통씩 보관한다.			
년 월 일			
매 수 자 (인)			
매 도 자 (인)			

Practical Guideline for Each Procurement Type

REC Purchase

Procurement of renewable energy through purchasing RECs can be accredited as GHG emissions reduction for the relevant year by receiving the Confirmation of Renewable Energy Use for renewable electricity sourced from solar power, wind power, and hydropower for the year, in accordance with Article 18, Clause 6 of the *Guidance on the Report and Certification of Emissions under the Emission Trading Scheme*.

<Guidance on the Report and Certification of Emissions under the Emission Trading Scheme>

Article 18. Exclusion from Calculating Emissions

⑥ If the target company for assignment uses electricity generated from renewable energy sources such as solar power, wind power, and hydropower pursuant to Article 27 of the Act on the Promotion of the Development, Use, and Diffusion of New and Renewable Energy ("Act on Promotion") and Regulations on the Support, etc. of New and Renewable Energy Facilities ("Regulations") via methods enumerated below, and obtains a confirmation of renewable energy use to utilize it as GHG emission reduction records, indirect GHG emissions may be excluded from the renewable energy electricity consumption. However, this is applicable only for Renewable Energy Certificates (RECs) that are not used to implement the mandatory requirements under the Renewable Portfolio Standard (RPS).

1. Signing of power purchase agreement (PPA) via an electricity supplier
2. REC procurement pursuant to Article 12(7) of the Act on the Promotion of the Development, Use, and Diffusion of New and Renewable Energy
3. Signing of agreement on electricity and REC procurement through equity participation

5 Other Cautions

Any changes in the KEPCO customer number should be registered on the management system no later than one month from the date of the change.

Restrictions on participating in the transaction market are applied when:

- Failure to conclude a sales agreement after filling an order
- Noncompliance with the terms and conditions of the agreement
- Failure to register results of the transaction
- Duplicated transactions made in different transaction markets (RPS market of the Korea Power Exchange, REC transaction market of the New and Renewable Energy Center) due to causes solely attributable to the party to the transaction

Public Notice and Terms & Conditions of REC Transactions

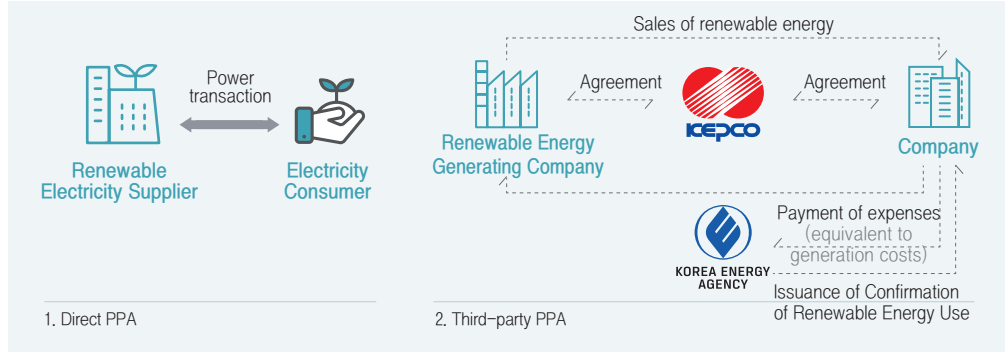
Classification	Description
New and Renewable Energy Center	Article 49 Provisions on the scope of participants in transaction markets
Rules on the Issuance of Renewable Energy Certificate (RECs) and the Operation of Transaction Markets	Articles 50 to 55 Provisions on the criteria for opening transaction markets and making transactions; Opening of over-the-counter transaction market and platform transaction market for REC transactions; RECs converted into electric power (MWh) price for transactions
	Articles 56 and 57 Provisions on the procedures for payment and REC ownership transfer
	Articles 58 to 61 Provisions on retiring RECs and restrictions on participation
Guidance on the Report and Certification of Emissions under the Emission Trading Scheme	Article 18 Clause 6 Utilized as records of GHG emissions reduction

Practical Guideline for Each Procurement Type

PPA

Configuration of Costs
Contractual unit price
Transmission and distribution cost (basic charge)
Transmission and distribution cost (electricity usage charge)
Amount reflected as electricity loss
Supplementary settlement fee
Transaction fee
Electrical Industry Foundation Fund

Procedures for PPA Procurement



1 Direct Power Purchase Agreement

Target company (Direct PPA)

1. Companies operating businesses pertaining to the Korean Standard Industrial Classification
 2. The scope of electricity consumers is limited to those who have installed power receiving equipment with the capacity exceeding 300 kVA at the place of electricity use, or electricity consumers for general or industrial use exceeding 300 kW of contractual capacity specified in KEPCO's Basic Terms and Conditions of Electricity Supply.
- * It is allowed for two or more electricity consumers to contract a direct PPA in the name of a joint party.

Terms and Conditions to be Included in Direct PPA

When concluding a direct PPA, the renewable energy supplier should report to the Minister of Trade, Industry, and Energy by using the Attachment 1 or 4 of the *Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers* via the KPX no later than two months from the planned date of initial electricity supply. The terms and conditions listed below should be included in the direct PPA concluded between the renewable energy supplier and the electricity consumer in accordance with Article 9 (Contents of Contract) of the *Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers* of the Ministry of Trade, Industry, and Energy:

1. Name, location, capacity, and energy sources of the renewable energy generation facility;
2. If a renewable energy generation facility of a different renewable energy supplier is used, information on the renewable energy supplier such as business name, representative and address;
3. Name (or business name), address, capacity of power receiving equipment of the electricity consumer or information on the contracted power;
4. Annual guaranteed supply volume;
5. Purchase ratio of the respective electricity consumers for the renewable energy supplied by the renewable energy supplier (only if multiple electricity consumers execute direct PPA);
6. Period of agreement;
7. Payment terms of electricity transaction price including unit price;
8. Information on the limitation and interruption of power supply;
9. Information on the termination of direct PPA; and
10. Information relevant to claim compensation.

8. Attachment 1 of the *Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers* of the Ministry of Trade, Industry, and Energy

<Electricity Supply Agreement⁸>

[별첨 제1호 식별]

전력공급계약서

계약 당사자 신뢰 당사자	상 호	사업자 유형	법인 <input type="checkbox"/> 개인 <input type="checkbox"/>
	대표자명	연 락 처 소	
	주 소	사업자등록번호	사업장 주소
	법인등록번호	통신통계번호	통신통계번호
계약 당사자 신뢰 당사자	상 호	전 화 번 호	
	주 소	사업자등록번호	사업장 주소
	법인등록번호	통신통계번호	통신통계번호
	발견계량점	발견계량점	발견계량점
발견계량점		계량점	계량점
계량점		계량점	계량점
계량점		계량점	계량점
계량점		계량점	계량점

1. 계약기간 : 년 월 일 부터 년 월 일 까지 (총 년)
2. 연간 보장공급량 : kWh
3. 공급단위 : kWh/1시간
4. 기타 세부 계약조건은 첨부 계약문서 참조
5. 계약문서에서 따로 정하지 않은 사항은 "태양에너지전력공급사업자의 직할전력거래 등에 관한 고시" 및 "전력사업규약"에 따라 함

위와 같이 전력공급계약 체결의견을 확인합니다.

태양에너지전력공급사업자 주소: 년 월 일
 대표자: (인)

발견사업자 주소: 년 월 일
 대표자: (인)

신원통신회사전무부장 권희

첨부: 사업자등록증 제 1호(사업), 계약문서(서면), 발전사업허가증(서면) 등

- 1 -

Practical Guideline for Each Procurement Type

PPA

Electricity Transaction Price

The electricity consumer pays the electricity transaction price incurred from direct PPA to the renewable energy supplier. The electricity transaction price includes electricity charges based on the contractual unit price, transmission and distribution cost, transaction fee, supplementary settlement fee, and electrical industry foundation fund.

Transaction for Electricity Shortages⁹

If renewable energy supplied from the renewable energy supplier is insufficient to meet the hourly electricity consumption of the electricity consumer and thus additional electricity is required*, the electricity consumer may:

- ① directly purchase electricity from the electricity market, or
- ② receive electricity from KEPCO to offset for deficiencies.

To purchase electricity directly from the electricity market, the annual guaranteed supply volume specified in the direct PPA should be 1/10 or more of the electricity consumer's total electricity consumption in the year immediately preceding the conclusion of the direct PPA. If the volume of renewable energy supplied pursuant to the direct PPA for one year after concluding the agreement is less than 1/10 of the electricity consumer's total electricity consumption in the same year, the electricity consumer is not allowed to directly purchase the deficient electricity volume from the electricity market when 30 days or more have passed since notification by KPX of the relevant information.**

* The calculation of deficient electricity volume is based on values notified by KPX.

** Transaction of deficient electricity volume is performed in accordance with *Rules for the Operation of the Electricity Market of KPX or Basic Terms and Conditions for Electricity Supply from KEPCO*.

Change and Termination of Agreement¹⁰

If any of the parties to the direct PPA changes or terminates the agreement, the party to the agreement should report to the Minister of Trade, Industry and Energy through KPX in the designated form of report, contract or notice stipulated in Article 10 ("Procedures of Agreement") Clause 2, or Article 12 ("Termination of Agreement") Clause 1 of the *Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers* of the Ministry of Trade, Industry, and Energy.

Conditions of Terminating Direct PPA by the Electricity Consumer

- The electricity is unfairly traded by modifying, altering, degrading, and/or manipulating the electricity facility;
- The electricity transaction is limited or interrupted for six months or longer due to force majeure causes such as natural disasters;
- The renewable electricity supplier fails to supply electricity to the electricity consumer for three consecutive months or longer, or supplies less than the half of the annual guaranteed supply volume for reasons solely attributable to the supplier;
- The electricity supply agreement required to implement the direct PPA is terminated;
- The agreement on the use of electricity facilities for transmission and distribution required to implement the direct PPA is terminated or canceled for reasons not attributable to the electricity consumer

Conditions of Terminating Direct PPA by the Renewable Energy Electricity Supplier

- The electricity consumer fails to pay electricity bills for three consecutive months or longer;
- Electricity transaction is limited or interrupted for six months or longer due to force majeure causes such as natural disasters;
- The agreement on the use of electricity facilities for transmission and distribution required to implement the direct PPA is terminated or canceled for reasons solely attributable to the electricity consumer

REC Issuance Not Allowed

RECs for renewable energy cannot be issued for the renewable energy supplied by the renewable electricity supplier to the electricity consumer through direct PPA, in accordance with Article 16(5) "Power Supply from the Renewable Energy Electricity Supplier" of the *Electric Utility Act*. However, RECs can be issued and traded in the market for the excess amount of power generated that exceeds the contracted electricity consumption.

9. Article 6 of the *Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers*

10. Articles 10 and 12 of the same public notice

Configuration of Costs

Contractual unit price
Transmission and distribution cost (basic charge)
Transmission and distribution cost (electricity usage charge)
Amount reflected as electricity loss
Supplementary settlement fee
Transaction fee
Welfare/Extraordinary discount
Electrical Industry Foundation Fund

<Renewable Energy Supply Agreement¹¹>

[별지 제2호 서식]

전력공급계약서

이와 당사자들은 다음과 같이 전력에너지의 전력공급계약을 체결하고 이 계약(신고서)을 체결하고, 각각 1부씩 보존합니다.

당 도	시/군/구	읍/면/동	계리번호
대 출 자 명	신입용전압용역의 사업장 주소지		
대 출 자 주소	신입용전압용역의 사업장 주소지		
계리	신입용전압용역의 사업장 주소지		

본 계약은 당사자간의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

신입용전압용역의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

신입용전압용역의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

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<Direct PPA of Renewable Energy¹²>

[별지 제3호 서식]

직접전력거래계약(신고서)

이와 당사자들은 다음과 같이 전력에너지의 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

당 도	시/군/구	읍/면/동	계리번호
대 출 자 명	신입용전압용역의 사업장 주소지		
대 출 자 주소	신입용전압용역의 사업장 주소지		
계리	신입용전압용역의 사업장 주소지		

본 계약은 당사자간의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

신입용전압용역의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

신입용전압용역의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

신입용전압용역의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

신입용전압용역의 계약조건과 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

<Direct PPA of Renewable Energy¹³>

[별지 제4호 서식]

직접전력거래계약(신고서)

이와 당사자들은 다음과 같이 전력에너지의 전력공급계약을 체결하고, 각각 1부씩 보존합니다.

당 도	시/군/구	읍/면/동	계리번호
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대 출 자 주소	신입용전압용역의 사업장 주소지		
계리	신입용전압용역의 사업장 주소지		

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② Third-party Power Purchase Agreement

Target company (Third-party PPA)

1. Electricity consumers of general (Category B) or industrial (Category B) use with contractual rate exceeding 1 MW

Third-party PPA in Korea is defined as a transaction wherein the company generating electricity concludes a direct PPA with KEPCO, and KEPCO in turn concludes a sales agreement with the electricity consumer. The legal basis of the third-party PPA is found in Article 31 of the *Electric Utility Act* and Article 19, Clause 1, Section 3 of its Enforcement Decree.

Target companies (electricity consumers) entitled to participate in third-party PPAs are consumers for general or industrial use whose contractual rate exceeds 1MW. Expenses to be paid by the electricity consumer under the third-party PPA system are shown below. "Simulation of third-party PPA rate calculation" is available at the website of KEPCO's Energy Marketplace (<https://en-ter.co.kr/main.do>).

Expense	Description
Contractual unit price	Contractual unit price agreed between the electricity generating business and the electricity consumer pursuant to Article 6 of the <i>Guidance on the Third-party PPA of Electricity Generated from New and Renewable Energy</i>
Transmission and distribution cost	Transmission and distribution cost stipulated in the agreement between the electricity generating business and electricity consumer
Amount reflected as electricity loss	Amount reflected as electricity loss determined in the statistical data by KEPCO
Supplementary settlement fee	Supplementary settlement fee calculated and submitted by KPX to the Minister of Trade, Industry, and Energy pursuant to the Rules for the Operation of the Electricity Market
Transaction fee	Fee calculated from the total expenses incurred from the establishment and operation of systems, metering, and billing for each agreement by KEPCO, and then billed equally to the electricity generating business and electricity consumer
Welfare/Extraordinary discount	Amount incurred to provide discounts to customers for the purpose of supporting specific industries and fields, such as electricity bills or exemptions in the title of energy welfare for the underprivileged based on social policy, pursuant to the terms and conditions of the electricity selling business
Electrical Industry Foundation Fund	Funds established for securing financial sources required for continuous progress and foundation-building of the electric power industry pursuant to Article 48 of the <i>Electric Utility Act</i>

11, 12, 13. Attachments 2, 3, and 4 of the *Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers* of the Ministry of Trade, Industry, and Energy (in order)

Practical Guideline for Each Procurement Type

PPA

Documents for application

- Agreement between the electricity consumer and the electricity generating company (agreement on concluding third-party PPA)
- Application for third-party PPA (for electricity consumer)
- Certificate of business registration

Documents for agreement conclusion

- Standard power transaction agreement
- Application (agreement) for electricity consumption
- Agreement on the use of electricity transmission & distribution facilities (for third-party PPA)

<Simulation of Third-party PPA Rate Calculation>

Agreement Between KEPCO and Electricity Consumer

To conclude a third-party PPA, the electricity consumer should submit a third-party PPA to KEPCO after settling the rates with the electricity generating company. Then, the electricity consumer concludes the third-party PPA with KEPCO. The electricity consumer should conclude a contract for electricity use pursuant to the terms and conditions of KEPCO prior to concluding a third-party PPA. This is because the electricity consumer concluding a third-party PPA is also a customer purchasing electricity from KEPCO.

Principle of Purchasing Total Power Generated

Purchase or sales of power in specific hours is not allowed under the third-party PPA pursuant to Article 3 of the *Guidance on the Third-party PPA of Electricity Generated from New and Renewable Energy*. Accordingly, the electricity consumer should indicate one of the two rate payment methods listed below when signing the “agreement on concluding third-party PPA” with KEPCO: ① An agreement on the actual hourly electricity generation; or ② an agreement on making equal deductions of annual electricity generation (choosing between predicted annual generation and actual monthly generation).

Resolution of Conflict Between the Electricity Supplier and Consumer

Any conflict from third-party PPA should be resolved by consent between the electricity supplier and the consumer. KEPCO recommends preparing a separate agreement for conflict resolution and contract termination between the electricity supplier and consumer after reviewing the *Guidance on the Third-party PPA of Electricity Generated from New and Renewable Energy*.

Practical Guideline for Each Procurement Type

Self-generation

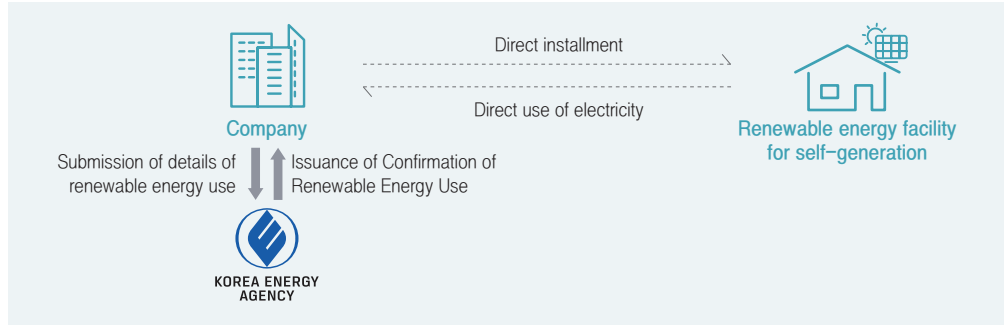
Documents for application

- Agreement between the electricity consumer and the electricity generating company (agreement on concluding third-party PPA)
- Application for third-party PPA (for electricity consumer)
- Certificate of business registration

Documents for agreement conclusion

- Standard power transaction agreement
- Application (agreement) for electricity consumption
- Agreement on the use of electricity transmission & distribution facilities (for third-party PPA)

Self-generation



1 Registering Power Generation Facility

A company operating an in-house facility for renewable energy generation is entitled to register it at the KEA's K-RE100 Management System to have its records acknowledged. Facilities can be registered by filling out the application form for facility registration in the K-RE100 Management System. Relevant documents are available at:

[K-RE100 Management System website](#) > Notice > “Guide to registration in the K-RE100 System (purchaser and self-generation facility registration)”

<Guidance on Registration of Renewable Energy Facility and Records for Self-generation>

자가소비용 재생에너지 설비 및 실적 등록 안내

1. 자가소비용 재생에너지 설비 등록

- 대상
 - ① K-RE100에 참여하는 전기소비자이며,
 - ② 소비자가 자가용 재생에너지 설비를 통해 생산 권리를 자체 소비하는 경우 설비 등록 가능
- * 사용기간 동안 설비를 임대하는 경우도 가능하나, 실제 사용 증명 필요
- 절차 : K-RE100 시스템 내에서 설비등록 신청서 작성
 - * K-RE100 관리 시스템 - 입찰관리 - 자가설비등록 - 설비등록 신청서 작성
- 필요정보
 - 자가설비 등록 신청서에 따른 열세정보
 - 설비인정정보
 - 첨부과일 (사용권 검사-점검 확인증, 설비사진, 설치확인서)
 - * 원장사진 2장, 설비사진 2장; 30일 이내 촬영 원칙
 - ** 선택사항이나, 제출 시 설비등록 절차가 보다 빠르게 진행될 수 있음

2. 자가소비용 재생에너지 설비 사용 실적 등록

- 대상 : K-RE100에 자가소비용 재생에너지 설비를 등록한 전기소비자
- 등록방법 : K-RE100 시스템 내에서 설비 실적 등록 신청서 작성
 - * K-RE100 관리 시스템 - 재생에너지 인정 신청등록 - 자가설비 실적 - 실적등록 신청서 작성
- 입회정보
 - 사용량(kWh)
 - 실적등록 시 자체적으로 사용량을 신청하여 [붙임1]과 함께 제출, 신청방식은 [붙임2] 참조
 - 사용기간
 - 첨부과일 (발진량 산정자료, 설비사진, (필요시)기타 증명서류)
 - * 원장사진 2장, 설비사진 2장; 30일 이내 촬영 원칙 [붙임3] 참조

<Registration of Renewable Energy Consumption from Self-generation Facility>

붙임1 자가소비용 재생에너지 설비 사용량 등록

자가소비용 재생에너지 설비 사용량 등록

○ 작성내용

발인등록번호 :	자립자등록번호 :
신청번호 :	
사용량 신청 내역 :	
- 발전량(재생에너지 생산량), 인정자료(기) 및 인정근거	
- 계약일(기)을 전액, 인정자료(기) 및 인정근거	
- 실제 사용량, 인정자료(기) 및 인정근거	

○ 당사는 제출한 서류 및 위 명시한 내용에 문제가 없음을 확인하여, K-RE100 관리시스템에 해당 자가소비용 재생에너지 설비 사용량 등록을 신청합니다.

상 호 :
 담 당 자 : (인)

한국에너지공단 귀하

2 Record Registration

Renewable energy consumed from self-generation is not recognized as a reduction of GHG emissions under the Korea Emission Trading Scheme^{K-ETS}. As for self-generation, the use of self-generated electricity leads to a reduced usage of electricity from external sources, which is considered as the total Scope 2 GHG emissions to be decreased.

A company may register its records by filling out the application form for facility record registration in the K-RE100 Management System with the following information:

- Consumption of self-generated power from renewable energy (kWh)¹⁶
- Consumption period
- Data for calculating electricity generation (a screenshot of the monitoring system to be taken, if possible)
- Facility photos

How to Calculate Renewable Energy Consumption

For companies to calculate the electricity produced from self-generation, the consumed renewable electricity sourced from the self-generation facility is calculated using the period of operation. If no legally mandated meter is installed, output from the inverter can be used as an alternative, based on the premise that it is the closest approximation of the actual consumption.

<How to Calculate the Amount of Self-generated Renewable Electricity>

- **When the consumption can be measured through a meter (watt-hour meter):** Actual measurement data from the meter (watt-hour meter) can be used.
- **When a monitoring equipment is installed (e.g., REMS), for instance by a facility participating in distribution projects of the KEA:** Measurement data from the inverter and the monitoring equipment can be used.

The volume of generated electricity is calculated with the method described above, and the volume of consumption reported should reflect actual consumption levels by excluding the amount of unused electricity. The final consumption of renewable energy (kWh) subsequent to subtracting the amount of electricity not consumed (e.g., PPA for self-generation) should be reported with evidentiary data (e.g., bill).

<An Example Photo of a Renewable Energy Facility required for the K-RE100 Management System>



Precautions when Submitting Panoramic Photos of Renewable Energy Facility

Panoramic photos of renewable energy facility should be taken together with devices showing the date and hour (e.g., mobile phone, watch, etc) to demonstrate that the photo was taken within 30 days since the end of the consumption period indicated in the application form. If the screenshot of the monitoring system cannot be submitted, the inverter screen photographed at the beginning and end of each month should be submitted (in order to compare generation levels between the beginning and end of each month). In such a case, the inverter screen should show the capacity (kW), daily generation (kWh), accumulated generation (kWh), and the date when the photo was taken.

16. Attachment 1 "Registration of Renewable Energy Consumption from Self-Generation Facility" of the Guidance on Registration of Renewable Energy Facility and Records for Self-generation from KEA's K-RE100 Management System should also be submitted.

Appendix #1

Legal Provisions for the Green Premium

<Highlights of the amended Regulations on the Support, etc. of New and Renewable Energy Facilities (Public Notice of the Ministry of Trade, Industry, and Energy)>

Item	Description
Green Premium system Exclusive institutions, etc. (Article 62)	<ol style="list-style-type: none"> ① Pursuant to Article 61, Clause 2, the exclusive institution should be the New and Renewable Energy Center. ② The exclusive institution should control and operate schemes relevant to consumption and confirmation of renewable energy by the electricity consumer, such as: operation of procedures and methods to implement Article 63, Clause 1, issuance of confirmation documents, operation of the management system and the management of statistics. ③ Notwithstanding Clause 2, executive agencies are designated as follows for the purpose of implementing individual sections of Article 63, Clause 1: <ol style="list-style-type: none"> 1. Operation of the Green Premium system: Korea Electric Power Corporation (KEPCO) 2. Operation of the PPA system with the electricity supplier: Korea Electric Power Corporation (KEPCO) 3. Operation of Renewable Energy Certificate (REC) purchases and the installation scheme of renewable energy facilities for self-generation: New and Renewable Energy Center
Payment of the Green Premium (Article 65)	<ol style="list-style-type: none"> ① The electricity consumer may purchase renewable energy electricity by paying the premium to the executive agency and concluding an agreement. ② The executive agency stipulates the conditions for billing the Green Premium in the terms and conditions of electricity supply pursuant to Article 16 of the Electric Utility Act, and the Renewable Energy Use Review Committee stipulates the major conditions for the operation of the system, such as setting the lowest bidding limit of the Green Premium and the upper limit of individual corporate purchases, pursuant to Article 72. ③ The specifics of purchase and payment procedures of the Green Premium other than those stipulated in Clause 2 are determined by the management criteria of the executive agency. ④ The executive agency may collect fees for the operation of premium payment and the issuance of certificates. ⑤ The annual volume of the Green Premium available for sales will be determined upon consultation between the exclusive institution and executive agency by taking into account the estimated renewable energy records of the mandatory Renewable Portfolio Standard (RPS) for the year pursuant to Article 12(5) of the Act, which should be reported to the Renewable Energy Use Review Committee of Article 72. ⑥ The executive agency should serve a public notice of major items for the implementation of Clause 1, such as the scope of electricity consumers, sales volume, and purchase methods and procedures, no later than Dec. 31 of each year and may serve an additional notice by considering the sales volume and remainder volume. ⑦ The executive agency should submit the specifics of the purchase agreement of the Green Premium concluded with the electricity consumer to the exclusive institution no later than 30 days after the date of agreement. ⑧ The executive agency should transfer the premium paid by the electricity consumer to the exclusive institution no later than 30 days after the date of payment.
Renewable Energy Use Review Committee (Article 72)	<ol style="list-style-type: none"> ① The exclusive institution should establish and operate a Renewable Energy Use Review Committee ("Committee") for the activation of renewable energy use and efficient operation of renewable energy investment projects. ② The Committee should comprise no more than ten members including one Chairman, selected among experts from the Ministry of Trade, Industry, and Energy, the executive agency, the exclusive institution, industry, academia, and research institutes. ③ The Chairman of the Committee should be elected from among the members, and the head of the relevant department in the exclusive institution should be elected as the executive secretary. ④ The Committee reviews and deliberates on issues enumerated below. <ol style="list-style-type: none"> 1. Adequacy of investment plans for renewable energy investment projects in Article 71 2. Activation of investment projects such as the utilization of output from renewable energy investment projects in Article 71 3. Major issues in the operation of the Green Premium system 4. Other issues recognized by the Minister as necessary for the activation of renewable energy use ⑤ The Committee members are elected for a period of two years. Other specific criteria required for the operation of the Committee should be determined pursuant to the internal guidelines of the exclusive institution.

<KEPCO's Basic Terms and Conditions of Electricity Supply> (September 1st, 2022)

Item	Description
Green Premium system Charging of expenses besides electricity costs (Article 82)	KEPCO may bill charges enumerated below together with electricity bills, and the management of the billing processes should be carried out in accordance with separate provisions. <ol style="list-style-type: none">1. Electrical industry foundation funds billed separately from electricity bills pursuant to Article 51 of the Electric Utility Act2. TV license fee pursuant to Article 64 of the Broadcast Act 3. Green Premium <ol style="list-style-type: none">4. Electricity bills incurred from third-party PPAs and billed to the electricity consumer pursuant to Article 19, Clause 3 of the Enforcement Decree of the Electric Utility Act

<Rules for the operation of KEPCO's Basic Terms and Conditions for Electricity Supply> (September 1st, 2022)

Item	Description
Green Premium system Application criteria for customers using renewable electricity (Article 83)	① Green Premium refers to the additional charges that customers voluntarily pay separately from electricity bills when wishing to purchase electricity generated from renewable energy. The specific conditions of the Green Premium are stipulated in the Regulations on the Support, etc. of New and Renewable Energy Facilities (Public Notice of the Ministry of Trade, Industry, and Energy).

Appendix #2

Legal Provisions for PPA

Item		Description
Direct PPA	Electric Utility Act	<p>Supply of Electricity by Entities Engaged in Renewable Energy Electricity Supply Business (Article 16-5)</p> <p>① An entity engaged in the renewable energy electricity supply business may supply electricity produced by using renewable energy to electricity consumers not via the electricity market.</p> <p>② Where an entity engaged in the renewable energy electricity supply business supplies electricity to electricity consumers pursuant to paragraph (1), it can enter into a contract after separately discussing each charge, other conditions of supply, etc.</p> <p>③ Electricity supplied pursuant to paragraph (1) shall not be subject to the issuance of new and renewable energy certificate under Article 12-7 (1) of the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy.</p> <p>④ Other matters necessary for supplying electricity under paragraph (1) shall be prescribed by Ordinance of the Ministry of Trade, Industry and Energy.</p>
	Enforcement Rule of the Electric Utility Act	<p>Supply of Electricity by Entities Engaged in Renewable Energy Electricity Supply Business (Article 17-4)</p> <p>① An entity engaged in renewable energy electricity supply business must confirm the amount of supplied electricity using a watt-hour meter capable of measuring hourly electric power transactions when supplying electricity generated from renewable energy, pursuant to Article 16-5 of the Act.</p> <p>② For a stable electricity supply from entities engaged in renewable energy electricity supply business, Korea Power Exchange and electric sales business entity must provide information of the following paragraphs to each entity.</p> <ol style="list-style-type: none"> 1. Amount of electricity generated hourly 2. Amount of electricity consumed hourly by the electricity consumer 3. Other information determined to be needed for a stable electricity supply from entities engaged in renewable energy electricity supply business by the Minister of Trade, Industry, and Energy <p>③ Other matters determined to be necessary pursuant to Article 16-5 of the Act, not stipulated by Paragraph 1 or 2, is to be determined and made as a public notice by the Minister of Trade, Industry, and Energy.</p>
	Public Notice on the Direct PPA, etc., of Renewable Energy Electricity Suppliers	<p>Definition of Direct Power Purchase Agreement (PPA) (Article 2)</p> <p>Electricity transaction in which the renewable electricity supplier directly supplies electricity to the electricity consumer, not through the electricity market, pursuant to Article 16(5) of the Act (Electricity Utility Act)</p>

Item	Description
Third-party Utility Act PPA	Electricity Trading (Article 31, Clause 1) An electricity generation business entity and an electric sales business entity shall engage in electricity trading in the electricity market, pursuant to the rules on operating the electricity market referred to in Article 43: Provided, That this shall not apply to cases prescribed by Presidential Decree, including islands.
Enforcement Decree Of the Electric Utility Act	Electricity Trading (Article 19, Clause 1, Section 3) ① "Cases prescribed by Presidential Decree, including islands" in the proviso of Article 31 (1) of the Act means the following: 3. Where an entity engaged in new and renewable power generation business which satisfies the requirements determined and publicly notified by the Minister of Trade, Industry and Energy (excluding any person who has established electric installations for private use) supplies to an electric sales business entity the electricity it produces with a electricity generating capacity of over 1,000 kilowatts (the sum of the electricity generating capacity, if at least two entities engaged in new and renewable power generation business jointly supply the same), and the electric sales business entity trades electricity by supplying it to electricity consumers who meet the requirements determined and publicly notified by the Minister of Trade, Industry and Energy
Guidance on the Third-party PPA of Electricity Generated from New and Renewable Energy	Third-party PPA (Article 2, Section 5) Transaction of electricity in which the renewable energy electricity generating business concludes an agreement to directly supply electricity to the electricity selling business, who in turn executes an electricity supply agreement with the electricity consumer
	Basic principles (Article 3) 1. No infringement of stability of electricity demand and supply 2. No excessive profits made to certain electricity consumers 3. No unfair burden on other electricity consumers, for instance by allowing sales and purchase of electricity generated in specified hours only
	Targets of application (Article 4) Energy sources: Solar power, wind power, hydro power, ocean energy, geothermal energy, bioenergy Electricity generation business: Power generation facility with capacity exceeding 1,000 kW Electricity consumer: Customers using high voltage of general electricity (Category B) or industrial electricity (Category B) exceeding 1,000 kW, as stipulated in the basic terms and conditions of electricity supply of the electricity selling business
	Objectives and unit price (Article 6) The electricity consumer should purchase the entire electric energy generated by the electricity generating business; the unit price should be determined upon consent between the electricity generating business and the electricity consumer.
	Period of agreement (Article 7) Period of agreement determined by consent between the electricity generating business and electricity consumer, but not less than one year
Renewal of agreement (Article 8) If any party to the agreement does not notify the intention of change or termination of the agreement between the period of six months to one month before expiry of the agreement, the agreement is automatically deemed as extended for another year under the same terms and conditions.	
Termination of agreement (Article 9) Both the electricity generating business and the electricity consumer are entitled to terminate a PPA upon consent; however, either party is entitled to request for termination of the agreement to the electricity selling business when there are reasonable causes attributable to the other party. In such a case, the electricity selling business is entitled to terminate the PPA, which also automatically terminates the agreement made between the electricity selling business and the other party.	



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