

The Role of High-Impact Utility Green Tariffs

**EXPANDING CLEAN ENERGY
PROCUREMENT OPTIONS IN THE
ASIA-PACIFIC REGION**



November 2024

ABOUT THE

CLEAN ENERGY BUYERS ASSOCIATION

The Clean Energy Buyers Association (CEBA) is a business trade association that activates a community of energy customers and partners to deploy market and policy solutions for a carbon-free energy system and procure clean energy across the globe. CEBA's [more than 400 members](#) represent over \$20 trillion in market capitalization and include the world's largest clean energy buyers as well as energy providers, service providers, cities, universities, and nonprofit organizations.

CEBA is at the forefront of utility green tariff research and education in the United States and has developed detailed reports on U.S. utility green tariff programs since 2019. In partnership with energy customers, utilities, and regulators, CEBA has been involved in the development of numerous [utility green tariffs](#).

ABOUT THE

ASIA CLEAN ENERGY COALITION

Founded in 2022, the Asia Clean Energy Coalition (ACEC) is a pivotal initiative aimed at propelling the transition to clean energy across Asia. By uniting leading renewable energy buyers, sellers, and financiers, ACEC works to influence policy in key Asian markets, offering strategic advice and coordination to promote sustainable energy solutions. As a hub for expertise and strategic communication, ACEC plays a critical role in shaping energy policies that drive investment, ensure energy security, and foster sustainable economic growth across the region.



TABLE OF CONTENTS

- 4 Authors and Acknowledgments
- 5 Introduction
- 6 The Case for Utility Green Tariff Programs
- 7 How Utility Green Tariffs Work
- 10 Utility Green Tariffs Versus Green Premium Programs
- 11 Energy Customer Utility Green Tariff Design Principles
- 12 Risk Mitigation in Green Tariff Design
- 12 Utility Green Tariff Trends
- 13 Examples of Green Tariffs in the United States
- 16 Examples of Green Tariffs in the Asia-Pacific Region
- 18 Conclusion

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Introduction

Corporate clean energy demand in the Asia-Pacific (APAC) region is rapidly growing. The demand stems from increasing pressure to decarbonize from policies like the European Union's Carbon Border Adjustment Mechanism, growth in voluntary corporate commitments to decarbonize direct operations and value chains, and opportunities to manage volatility risk in electricity costs via stable clean energy pricing. APAC-headquartered companies now represent [45% of RE100 members](#); this reflects the economic importance of the APAC region, which accounts for [a third of global gross domestic product \(GDP\)](#) and [roughly 50%](#) of global manufacturing production and primary energy demand. Corporate clean energy procurement in the region has risen drastically, with cumulative corporate power purchase agreements (PPAs) reaching nearly 10 gigawatts (GW) in 2023, triple the [number in 2020](#).

Expanding clean energy procurement options provides both economic and climate benefits. Allowing energy customers to procure and power their activities with clean energy accelerates the energy transition as well as economic growth by attracting and retaining companies in a region, [spurring](#) new private investment in domestic clean energy industries and adding jobs and tax revenues. Clean energy added around [\\$320 billion](#) to the global economy in 2023, representing 10% of global GDP growth. The private sector plays an important part in this investment. Corporations represented [80% of green investment](#) in Southeast Asia in 2023, and the International Energy Agency forecasts that [13% of renewable energy growth](#) worldwide between 2023 and 2028 will come from the private sector.

Access to clean energy in the Asia-Pacific region is limited due to constrained procurement options. Ensuring that energy customers have access to a wide menu of procurement options is key to ensuring they can buy clean electricity and support decarbonization of the grids where they operate. In much of the world, corporate power purchase agreements offer a promising avenue to spur investment in clean energy. Through a PPA, a corporation purchases clean energy directly from the energy provider. This enables rapid and economic deployment of these resources. Globally, corporate PPAs have resulted in roughly [USD \\$9.2 billion](#) and [198 GW](#) of clean energy development from 2008 to 2023. Several APAC markets offer access to corporate PPAs, including Singapore, Japan, Taiwan, South Korea, Australia, Malaysia, and India. However, vertically integrated markets often do not allow customers to enter directly into PPAs with clean energy developers, although efforts are underway in [Thailand](#) and [Vietnam to allow direct purchases from developers](#).

In markets where PPAs are allowed, companies may still [face challenges](#) that limit their options. These hurdles include lack of [clear market rules](#), higher prices due to regulatory cost additions, financing constraints related to credit ratings, limited in-house capacity for the complexity of PPA negotiations, and long tenures for PPA contracts. Utility green tariffs can therefore be a powerful additional tool to enhance and expand clean energy procurement options and decarbonize the grid. A utility green tariff is a demonstrated procurement mechanism that provides utilities and corporate energy customers with a flexible and streamlined approach to help meet growing clean energy demand, in both vertically integrated and liberalized markets.

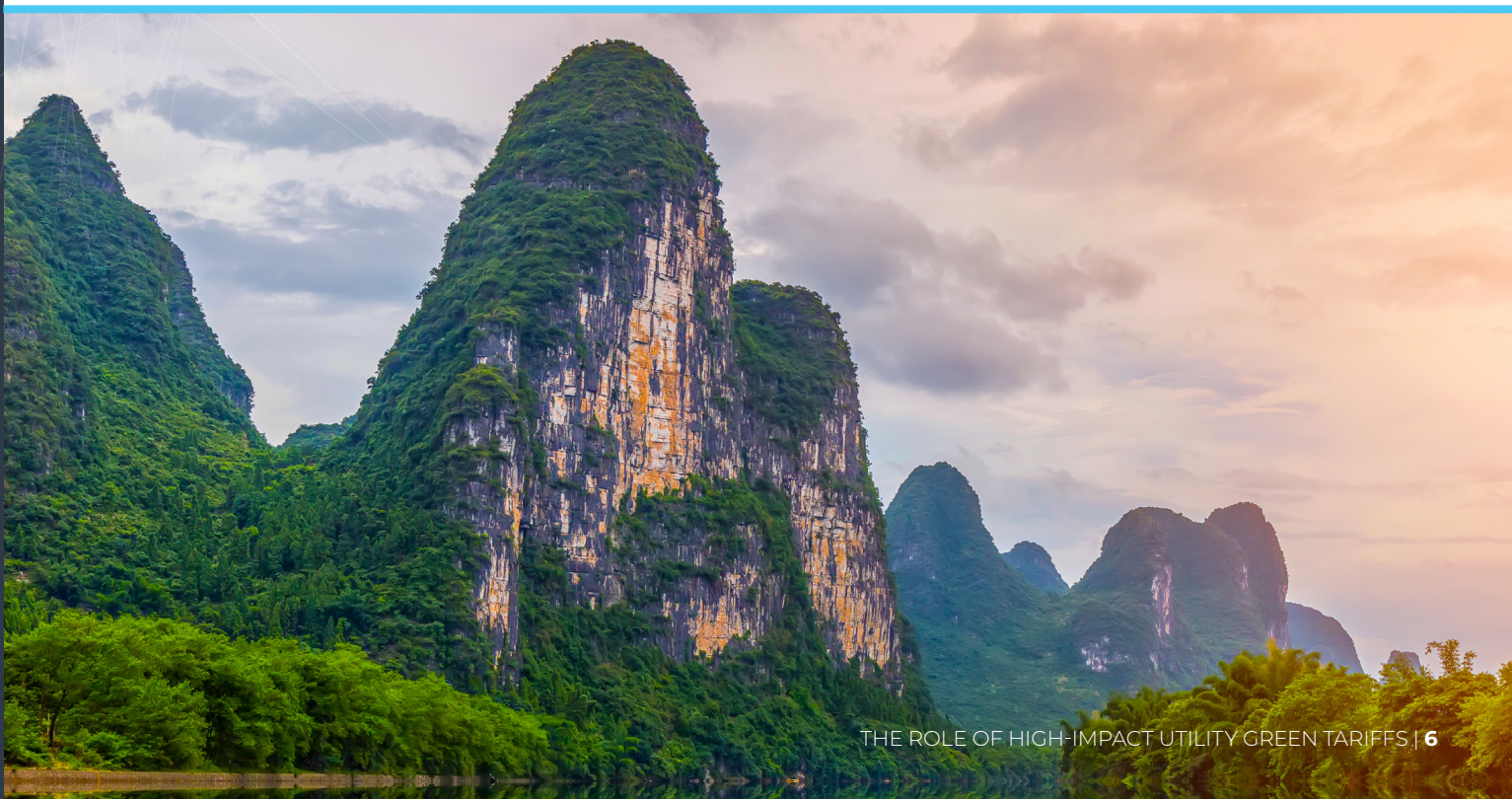
The Case for Utility Green Tariff Programs

A utility green tariff is a voluntary utility program that allows eligible customers to buy both the energy and associated energy attribute certificates (EACs) from clean energy projects through an independent tariff or as an adjustment on a customer's electricity bill.

While utility green tariffs are relatively nascent in the Asia-Pacific region, they can be adopted in vertically integrated as well as liberalized markets and designed to provide a simple yet effective procurement option to meet growing corporate clean energy demand. Experiences from other parts of the world offer useful insights for further developing these programs in the APAC region. In the United States, utilities began developing [green tariffs in 2013](#) to offer large corporate customers more options for buying renewable energy at fixed or predictable rates. By 2023, utility green tariffs had proliferated across 40 utilities in both vertically integrated and liberalized markets. The number of active utility green tariff programs in the United States is now [over 50](#). This growth reflects utilities and corporate energy customers seeking the mutually beneficial partnerships that utility green tariffs bring.

Utility green tariffs allow utilities and companies to partner to decarbonize local grids.

Utilities can use green tariffs to collaborate with customers on the [costs and risk](#) in deploying new clean energy projects, since companies can provide dependable demand and revenue streams. Utility green tariffs can also attract economic development from companies that factor access to renewable energy into their decisions about where to locate new facilities. In both vertically integrated and liberalized markets, utility green tariffs position utilities as a partner to companies seeking a simple and streamlined approach to corporate clean energy procurement. For customers who lack the expertise or ability to execute and manage clean energy PPAs, [partnering with their utility](#) may be easier than having to contract separately with third parties. Importantly, utility green tariffs can be designed to offer customers the [cost predictability](#) and economic benefits of underlying clean energy projects.





How Utility Green Tariffs Work

A utility green tariff is an electricity rate that utilities offer so eligible customers can access clean energy. While utility green tariffs can take many forms, they typically share three key features:



FORM

Utility green tariffs are voluntary, regulator-approved options that utilities offer to a subset of their customers.



RATIONALE

Customers receive pricing and emissions accounting benefits. Customers buy clean electricity and the associated EACs bundled together, often via specific rates. Pricing may transparently reflect the underlying economic benefits of clean energy generation.



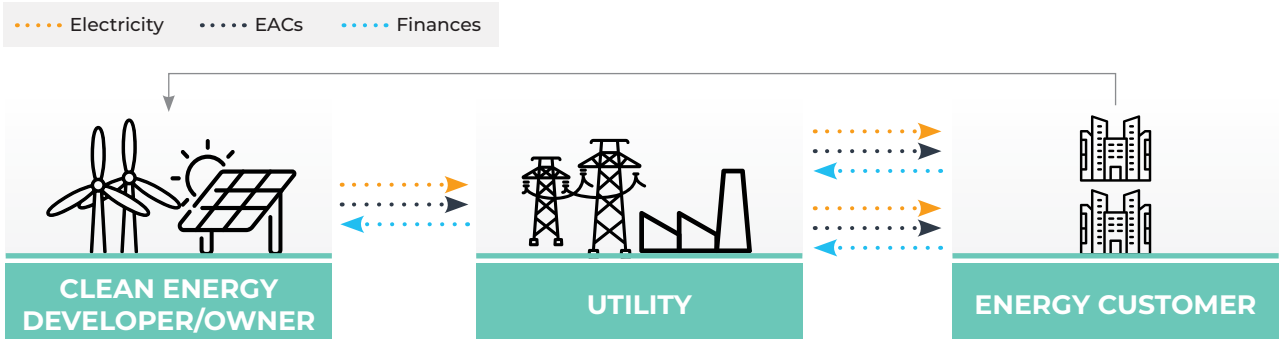
IMPACT

The tariffs enable the creation of new projects to generate the contracted clean energy. The projects are dedicated to the program and are located within the same grid area as the customers' load.

Most utility green tariffs developed to date in the United States have used one of two models: a sleeved PPA or a subscription program.

SLEEVED PPAs

A sleeved PPA green tariff is suitable for large or middle-sized energy customers and provides access to dedicated clean energy projects through a utility. Customers either work with the utility to identify a project fitting their needs or negotiate directly with a clean energy developer. The utility then signs a PPA contract with the clean energy developer and offers the energy customer a contract mirroring the PPA terms.



How it works:

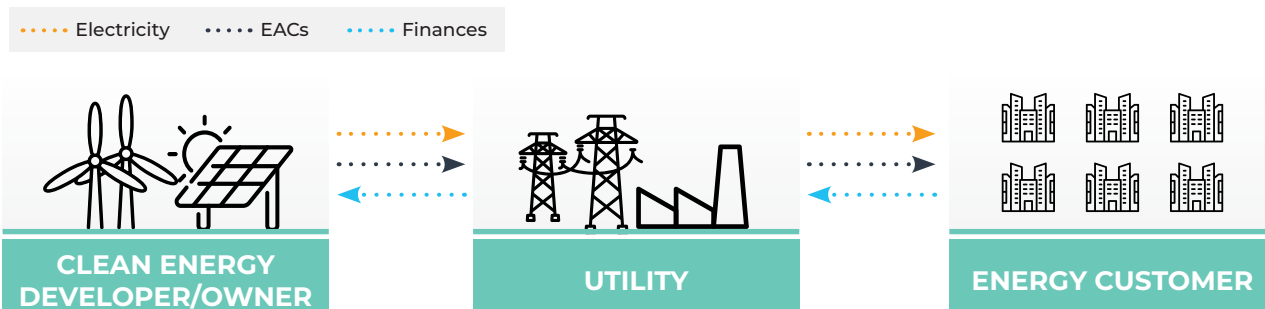
- 1 The utility and customer can either work together to identify a clean energy project that meets customer needs, or the energy customer can select a project and negotiate the price of bundled energy and EACs directly with a clean energy developer.
- 2 The utility either develops the project or enters into a PPA with a clean energy developer.
- 3 The energy customer signs a green tariff contract with the utility to buy clean energy and EACs.
- 4 The utility either retires EACs on behalf of the customer or transfers EACs directly to the customer.

KEY CONSIDERATIONS FOR WELL-DEVELOPED SLEEVED PPAs

Advantages that should be achieved	Aspects to consider
<p>Tailoring The sleeved PPA should allow larger energy customers to specify and propose projects fitting their clean energy requirements.</p> <p>Scale The PPA should enable customers to buy sizable amounts of clean energy.</p> <p>Ease The PPA should simplify procurement for customers through utility-bill processing.</p> <p>Pricing The PPA can be structured to offer transparency, price certainty, and reflect the full cost of the clean energy project as well as the value that it brings to the system.</p>	<p>Costs Typically, each contract needs to be approved by the utility’s regulator to ensure that one customer is not subsidizing the electricity costs of another.</p> <p>Duration Sleeved PPA contract tenures are often longer than other programs, due to the contract going through the utility.</p>

SUBSCRIPTION PROGRAM

A subscription green tariff program allows multiple customers to subscribe to a portion of a large clean energy project (or projects) while the utility holds the PPA or owns the project. Subscription programs are typically available to a broad range of customers, including small load customers. The utility aggregates the demand of multiple customers into a program, supplied by one or several new clean energy projects, and takes the lead in procuring the energy.



How it works:

- 1 The utility develops a project or selects a clean energy project from a developer and procures the energy and EACs.
- 2 The utility sells portions of the contracted energy and EACs to multiple customers through a subscription.
- 3 Energy customers contract with the utility to buy clean energy and EACs.

KEY CONSIDERATIONS FOR WELL-DEVELOPED SUBSCRIPTION PROGRAMS

Advantages that should be achieved	Aspects to consider
<p>Access The program should allow customers whose load is otherwise too small for PPAs to access clean energy.</p> <p>Scale The program should allow utilities to aggregate and meet demand from multiple customers through one program.</p> <p>Term Customers should have a choice of shorter subscription options, since exiting customers can be replaced with others.</p> <p>Ease The program should simplify procurement for customers through utility-bill processing.</p> <p>Pricing A program can be structured to offer transparency, price certainty, and reflect the full cost of the clean energy project as well as the value the project brings to the system.</p>	<p>Demand Matching customer demand with commensurate available capacity may be challenging for utilities, since well-designed tariffs can quickly become fully subscribed.</p> <p>Flexibility A subscription program does not cater to individual customer needs as much as the sleeved PPA model.</p>

Utility Green Tariffs Versus Green Premium Programs

Green premium programs, also known as green power or green pricing programs, allow customers to purchase unbundled EACs without a long-term commitment and at an additional cost to standard non-green utility electricity tariffs. The terms green tariff and green premium programs are sometimes referred to interchangeably; however, the two approaches vary:

Utility green tariffs	Green premium pricing
PRODUCT AND PRICING	
Bundles energy and associated EACs, often billed through an independent tariff	Offer unbundled EACs, paid via a charge added to the customer's existing bill
CUSTOMER CHOICE	
Allow for utility partnerships and can be tailored to specific customer classes and requirements	Provide one product through one program generally accessible to all customer classes
TRANSPARENCY/TRACEABILITY	
Enable EACs to be sold jointly with electricity from specified and new projects developed specifically because of and for the utility green tariff, on the utility's system	Allow unbundled EACs that are sold to be from existing and/or unspecified local projects and/or from outside the utility territory
CONTRACT DURATION	
Will vary by green tariff model and generally range from five to 20 years, although some subscription program contracts have one-year terms	Are typically short-term, on a monthly or annual basis, generally no longer than one year

Energy Customer Utility Green Tariff Design Principles

To meet growing corporate demand, encourage investment in clean energy, and reduce greenhouse gas emissions, utilities and governments in the Asia-Pacific region should consider utility green tariff options that meet these design principles:

- 1 Drive new clean energy projects:** Utilities should provide green tariff options that allow customers to purchase electricity from verified new clean energy projects that are built specifically because of and for the utility green tariff. Customers want to ensure that their actions are deploying clean energy on the grid above and beyond usual utility plans and can show meaningful joint efforts to further decarbonization.
- 2 Specified and traceable clean energy resources:** Many customers seek to buy clean energy from projects that allow them to specify their requirements and that provide transparency on [generation type and size](#) as well as commercial operation date, time, and location. Customers also want to ensure they can claim accompanying energy attributes toward their emissions goals without concerns about double counting.
- 3 Pricing that is transparent, stable, and cost competitive:** Customers should receive a clear and fair cost structure that is competitive with traditional non-green utility tariffs and reflects the comprehensive net costs and benefits of the clean energy project to the system. The cost structure should reflect any policy and regulatory support for traditional non-green power options and allow customers to retain the economic benefits of the project, including price predictability, particularly if the customer has paid the full cost of the resource. Transparency in pricing also is key for attracting customers; in the United States, transparency is frequently provided via publicly accessible [regulatory dockets](#) or on [utility websites](#).
- 4 Empower customers to choose high-impact features tailored for individual needs:** Utilities should consider offering advanced clean energy transition features such as mixed-technology options that include a full suite of firm and dispatchable clean energy options beyond solar and wind (including geothermal and storage) and should implement [granular hourly emissions tracking](#) and verification of clean energy contracted, to facilitate customers' hourly claims of clean energy consumption and encourage clean energy development in high-emission areas.
- 5 Meaningful utility-customer and regulator engagement:** Involving [a utility's senior leaders](#) and consulting customers throughout the development of green tariffs is critical to ensure both system and customer needs are met. Frequent dialogue with regulators is also often needed to integrate the project with ongoing utility planning; ensure true costs of service are reflected, including emission reduction benefits; and prevent cost-shifting to other customers as a result of the program. Engaging with local communities in the development of a project is also pivotal to ensure societal and environmental benefits are considered.

Risk Mitigation in Green Tariff Design

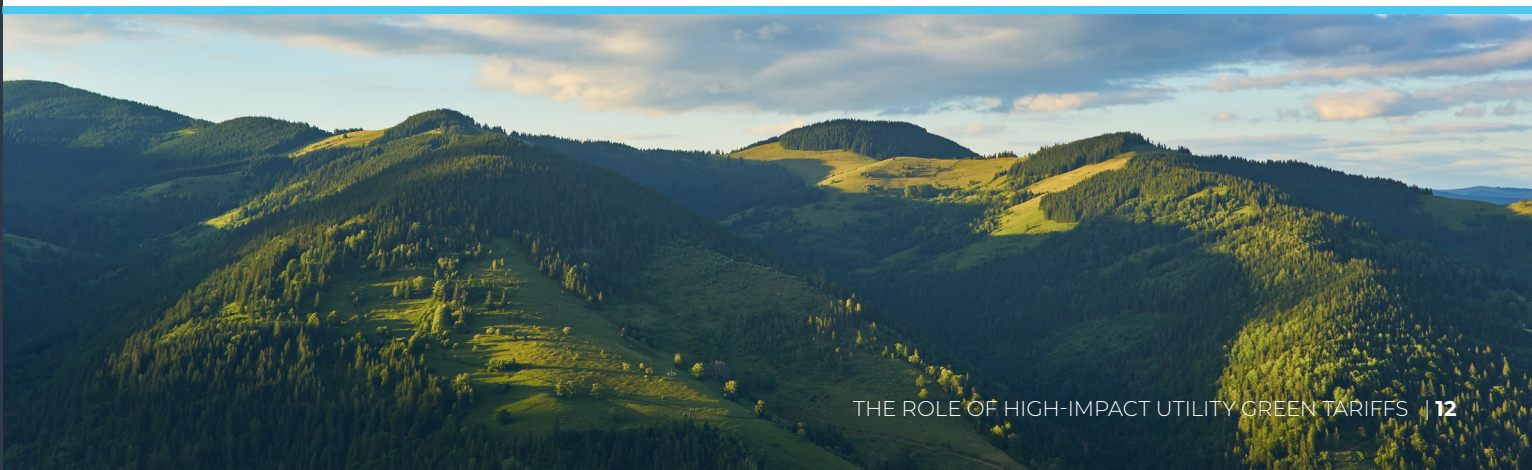
When developing green tariffs, [utilities should take steps to manage two key risks](#): If participating customers default, nonparticipating customers should be protected from any related costs, and if new resources are added, this could leave existing resources underutilized if demand is insufficient. Utilities have several risk mitigation tools that can be used:

- **Managing customer default risk:** Under sleeved PPA models, utilities can require simultaneous contracts between the utility and the energy developer or the utility and the customer, specifying a fee or other terms if a customer opts to exit the back-to-back contracts. Under subscription models, utilities can establish a process to collect interest once subscriptions reach 100%, with the contractual and procedural ability to quickly replace any customer defaults with reserve demand collected on an ongoing basis.
- **Managing stranded asset risk:** In markets with flat or low load growth, utilities should ensure that green tariff options and associated clean energy capacity are integrated into ongoing utility planning.

Utility Green Tariff Trends

Utilities have developed green tariffs in the United States to accommodate [corporate demand for clean energy](#). Historically, PPAs have been the dominant procurement method for large energy customers. About three-fourths of the off-site, utility-scale clean energy capacity corporate buyers announced between 2014 and 2024 came from either virtual or physical PPAs. Green tariffs amounted to about 13% of the announced clean capacity, or about 10 GW, over the same period. However, utility green tariffs have grown in importance since they were first created in 2013. By 2023, utility green tariffs and other utility-customer programs accounted for 27% of contracted corporate clean energy volume (megawatts) for the year.

The most popular utility green tariff approach in the United States is the subscription model, due to its adaptability to varying load requirements and contract lengths. Nearly as popular is the sleeved PPA model that allows customers to specify to a utility the projects from which they want to purchase energy. Green tariffs continue to evolve in response to customer interest. Most offerings to date have ranged from 50 MW to 400 MW, and new programs are increasingly offering more than 1,000 MW. [Green tariffs have become attractive](#) not just to large corporate energy customers but also to cities, municipalities, federal agencies, and small- and medium-sized commercial and industrial customers. More recently, [some U.S. utilities](#), including [Duke Energy](#), have started to include high-impact features, such as 24/7 options for customers looking to match their hourly energy usage with clean energy.



Examples of Green Tariffs in the United States

SLEEVED PPA MODEL: Duke Energy's [Green Source Advantage \(GSA\)](#)

Duke Energy's GSA tariff allows customers a choice of specific projects, either developed by the utility or by third-party developers.

Design Principle	Application
Driving new projects	Customers identify new, yet to be developed, renewable energy projects that will be added to the utility's system.
Specified and traceable resources	Customers select a specific project they want to procure through the utility. All generated EACs are transferred directly to the customer.
Transparent, stable, and cost-competitive pricing	Customers negotiate price terms directly with the developer, and the rates and charges for the full contract term are specified in the customer's contract with the utility. Customers can choose term lengths ranging from two to 20 years.
High-impact features	The updated version of the tariff "Green Source Advantage Choice" features an energy storage offering.

SUBSCRIPTION APPROACH: Florida Power & Light's [SolarTogether](#) program

This tariff was first approved in 2020, before becoming fully subscribed within 13 months and then extended in 2023. The tariff is noteworthy for its flexibility in contract length and its predictable pricing.

Design Principle	Application
Driving new projects	Florida Power & Light (FPL) constructs commercial-scale, photovoltaic, solar generating facilities specifically for this program.
Specified and traceable resources	The program has brought 44 new utility-scale solar projects into FPL's service territory, with a total capacity of 3,278 MW. FPL retires EACs on behalf of its customers.
Transparent, stable, and cost-competitive pricing	Customers joining the tariff see two separate line items added to their existing utility bill: a fixed monthly subscription charge and a monthly bill credit. The charge is \$6.76 per kW subscribed. The credit is based on the monthly actual electricity output of the projects, apportioned to the customer; it is multiplied with a credit rate that starts at 3.6 cents per kWh in the first year (since 2022) and increases by 1.5% annually. Over time, annual benefits are expected to outweigh costs and deliver savings.
High-impact features	This tariff is open to all the utility's customers, including standard and low-income residential customers, small and medium businesses, and commercial and industrial customers. Participation is also highly flexible. Customers can do month-to-month subscriptions in 1 kW increments up to 100% of their annual energy consumption, or at any time, they can reduce or fully terminate their subscription.

TARIFFS WITH 24/7 MATCHING AND CAPACITY CREDITS:

NV Energy's [Clean Transition Tariff \(CTT\)](#)

This tariff type is one of the most recent innovations in green tariff design. A variation of sleeved PPA structures, it offers solutions targeted at large energy buyers with a 10 MW minimum load requirement that are seeking around-the-clock clean energy options. The utility and large customers jointly plan, de-risk, and finance the investments in grid decarbonization.

Design Principle	Application
Driving new projects	The CTT explicitly aims to incentivize deployment of new clean energy projects that may not be viable without the corporate support provided through the tariff.
Specified and traceable resources	The tariff focuses on specific projects that will complement the existing grid.
Transparent, stable, and cost-competitive pricing	Pricing reflects the full cost of the clean energy resource as well as the value that it brings to the system. The structure incentivizes investment in technologies that complement the existing resources on the system.
High-impact features	The CTT is designed to have high impact through clean energy available around the clock. This includes incentives for clean energy as well as clean capacity, including geothermal or long-duration storage.



Examples of Green Tariffs in the Asia-Pacific Region

Most APAC utility-customer offerings are green premium programs for existing renewable energy resources, such as Korea Electric Power Corporation (KEPCO's) [Green Premium](#) in South Korea and [Malaysia's Green Electricity Tariff](#). However, utility green tariff programs have been approved in some APAC markets, including [Japan](#), and new programs such as [Thailand's Utility Green Tariff 2](#) are being designed to meet corporate demand.

SLEEVED PPA MODEL: Tokyo Electric Power Company's (TEPCO's) Sunlight Premium

In 2021, Japan's TEPCO introduced the [Sunlight Premium Tariff](#) to connect those customers with at least 1,000 kW of demand seeking to drive new clean energy projects online to [new small-scale solar photovoltaic projects](#). TEPCO signed [additional supply agreements with developers](#) in 2021 with a stated intention to bring the program up to 300,000 kW. Sunlight Premium demonstrates how utilities can work with developers to bring new clean energy online through green tariff programs in liberalized markets.

Design Principle	Application
Driving new projects	The program drives new non-Feed-in-Tariff (FIT) solar projects to the grid.
Specified and traceable resources	Customers receive renewable energy and its attributed environmental value. Specifics on how are not publicly available. In 2021, TEPCO announced a power agreement with Sun Village to supply the program with non-FIT projects.
Transparent, stable, and cost-competitive pricing	The pricing structure of the program is based on bilateral negotiations between TEPCO and customers and is not publicly available.
High-impact features	The program does not offer mixed technology options or granular emissions tracking.

SUBSCRIPTION MODEL: Thailand's Utility Green Tariff with Specific Sources (UGT2)

The Energy Regulatory Commission of Thailand recently proposed the [Utility Green Tariff 2 \(UGT2\)](#), with plans to [open subscription in early 2025](#) on a first-come, first-served basis, pending approval. The proposed tariff would be managed through the Electricity Generating Authority of Thailand, which would offer Large General Service (category 4) and Specific Business Service (category 5) customers access to 4.8 GW of clean energy at a 10-year minimum contract.

Design Principle	Application
Driving new projects	The program is based on already awarded FiT-auctioned projects, which somewhat weakens the program's impact in driving new clean energy beyond utility "business as usual" plans.
Specified and traceable resources	Customers can choose from two different portfolios, including a mix of wind, solar, and solar plus storage. The bundled EACs and energy would come in one bill, and utilities would redeem the EACs upon delivery, using the I-REC tracking standard.
Transparent, stable, and cost-competitive pricing	Customers would pay a specific tariff at a fixed price. Customers would benefit from the fixed price of clean energy generation, albeit at the regulated FiT rate rather than at a clean energy generation price determined through market dynamics.
High-impact features	The tariff would offer a mix of complementary and diverse technologies (wind, solar, and solar plus storage).

CONCLUSION

Corporate demand for clean energy is growing exponentially across the Asia-Pacific region as companies seek a diverse menu of procurement options and more ways to work with their utilities. At the same time, countries and utilities are aiming to decarbonize their grids and attract private investment. Utility green tariffs are an established tool that offer utilities and customers a partnership model to develop mutually beneficial clean energy options.

Utilities and regulators in the APAC region have an opportunity to adapt a proven model to their local needs for decarbonized economic growth. This is especially the case in vertically integrated markets, where PPAs may not be readily available, as well as in liberalized markets, where green tariffs can provide an additional option for customers not well suited for PPAs.

Utility green tariffs can be designed to meet the needs of a wide range of energy customers. These tariffs can exist alongside other procurement options such as PPAs and offer easier and more affordable clean energy options to small-and medium-sized businesses seeking practical, cost-effective means to decarbonize. In return, utilities can benefit from green tariffs as a tool to collaborate with corporate customers and de-risk and finance clean energy deployment, accelerating grid decarbonization and attracting new customers and economic development.

Successful designs for utility green tariffs share two traits: They involve stakeholders and consider key design principles. These principles include access to new clean energy projects that are specified and traceable, with pricing that is fair, stable, and cost-effective. The projects should also meet the needs of customers with ambitious targets and include high-impact features, such as mixed-technology options and 24/7 load matching. The principles and resources in this report are intended to be a discussion starter for utilities, regulators, customers, and other stakeholders across the APAC region. Public-private collaboration is integral to identifying the specific needs of corporate customers and designing programs that align the interests of utilities, regulators, and other ratepayers.

