



CLEAN ENERGY
INVESTMENT
ACCELERATOR

Energy System Decarbonization Guide for Commercial and Industrial Companies in the Philippines





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CLEAN ENERGY INVESTMENT ACCELERATOR

Objectives of the Guide

The **Energy System Decarbonization Guide** will provide commercial and industrial (C&I) companies operating in the Philippines with information on how to reduce their greenhouse gas emissions and decarbonize their operations specifically through the procurement of renewable energy (RE) solutions. RE sources, such as solar and wind power, do not produce greenhouse gasses, and implementation of these low-carbon solutions can help companies reduce emissions, reduce their environmental impact, and help take climate action.

About the Clean Energy Investment Accelerator (CEIA)

The **CEIA** is a public-private partnership that addresses barriers to clean energy deployment in the commercial and industrial sectors in emerging markets, which include Vietnam, Indonesia, and the Philippines. The CEIA is jointly led by the [World Resources Institute \(WRI\)](#), [Allotrope Partners](#), and the [U.S. National Renewable Energy Laboratory \(NREL\)](#). Each member brings a unique set of technical expertise to ensure successful country-based efforts, led by local and regional staff, which is all supported by a wider global team.

CEIA partners with large energy purchasers to send a strong demand signal and deploy clean energy and collaborates with governments to strengthen policy frameworks, and to grow clean energy project pipelines.

CEIA acts as a bridge, translating international commitments into on-the-ground market transformation. As demonstrated here, high-level commitment platforms, target-setting protocols, reporting methodologies, and business coalitions can benefit from CEIA's local presence and expertise, as CEIA brings together in-country coalitions of private sector, public sector, and utility partners to overcome barriers to clean energy procurement and investment among C&I energy users.

This guide is intended to serve as a starting point, but the CEIA seeks to support C&I companies interested in decarbonizing their operations. To join our future public-private dialogues, request more information on the contents of this guide, or learn more about the CEIA, visit our website at www.cleanenergyinvest.org, or contact CEIA Philippines Country Lead, Marlon Apanada, at marlon.apanada@wri.org.

Overall Context

Corporations globally have been setting science-based targets to reduce greenhouse gas (GHG) emissions and demonstrate sustainability commitments to consumers and investors. 100% RE goals (such as through the [RE100 initiative](#)) and net zero emission reduction targets all relate to the overall concept of science-based targets aimed at encouraging C&I companies to set a clear path toward decarbonization. Because the energy sector is the main driver of climate change, the increased use of RE, alongside energy efficiency measures and clean heat solutions, are important facets of science-based targets.

Science-based targets are good for the planet and for business. They allow companies to strengthen their brand reputation, future-proof growth, save money, spur innovation, reduce regulatory risk exposure, and gain a competitive advantage. Increased participation in the science-based targets movement is demonstrated by growing memberships in platforms like the Science Based Targets initiative (SBTi), RE100, and the Clean Energy Buyers Alliance (CEBA).

The emissions associated with purchased electricity are categorized as Scope 2 emissions by the World Resources Institute's (WRI) and World Business Council for Sustainable Development's Greenhouse Gas Protocol Corporate Standard. Scope 2 emissions are a major source of indirect greenhouse gas emissions from the generation of purchased or acquired electricity, steam, heat, and cooling [2] and they are often overlooked. However, they can be a significant contributor to companies' overall emissions. By switching to RE, companies can reduce their Scope 2 emissions and help to mitigate climate change.

Companies have increasingly turned to purchasing RE in order to claim the use of low or zero-emissions electricity and thereby reduce their carbon footprint. Most RE sources, including wind, solar, geothermal, hydropower, ocean, and others, and their associated technologies do not directly emit GHGs to generate electricity. Among the RE100 members, 73 organizations have operations in the Philippines; collectively these companies represent a total demand of 748 gigawatt-hours (GWh), equivalent to over 500 megawatts (MW) of RE demand. The Clean Energy Investment Accelerator (CEIA), has prepared this Energy System Decarbonization Guide to support companies in the Philippines to overcome barriers to procure and invest in RE solutions.

Energy System Decarbonization Strategies for Companies in the Philippines

Corporate decarbonization pathways for Asia-based companies with Scope 2 emission targets involve a strategic and systematic approach to reduce GHG emissions associated with purchased electricity, heat, or steam consumed in their operations. This includes both direct emissions from on-site combustion of fossil fuels and indirect emissions from the consumption of purchased electricity, heat, or steam (scope 1 and scope 2 emissions, respectively). The three main categories to decarbonize energy-related emissions are through energy **efficiency improvements, industrial heat decarbonization, and transitioning to RE**, which are described in-depth below.

Energy Efficiency Improvements

Enhancing energy efficiency is a crucial first step in decarbonization. By implementing energy-saving measures and technologies, such as upgrading equipment, optimizing processes, improving insulation, and adopting efficient lighting and heating, ventilation, and air conditioning systems, companies can reduce their energy consumption and, consequently, their emissions.

Companies in the Philippines can reach out to Energy Service Companies (ESCOs) to learn more and jumpstart their energy efficiency projects. ESCOs are Philippines Department of Energy (DOE) certified organizations that offer multi-technology services and goods to support developing and designing energy efficiency projects that result in guaranteed energy savings and optimal performance. ESCOs offer energy supply and management, energy financing, technical engineering expertise and consultancy, equipment supply, installation, operation, maintenance, and upgrade, and monitoring and verification of performance and savings. A list of ESCOs collected by the DOE can be found [here](#).

Industrial Heat Decarbonization

Shifting away from direct fossil fuel combustion in industrial heating processes is an effective strategy to decrease energy-related emissions and promote decarbonization. By substituting conventional fossil fuel boilers with cleaner heat options like biomass boilers, solar thermal heaters, heat pumps, and waste heat recovery systems, companies can significantly reduce their reliance on fossil fuels and minimize direct emissions. Industrial heat generation typically involves burning fossil fuels such as coal, diesel, or liquefied petroleum gas (LPG). However, the adoption of clean heat alternatives and innovative technologies aims to decrease or eliminate the dependency on fossil fuels for industrial heating purposes. CEIA is currently developing a comprehensive guide on clean heat, designed to provide businesses with the essential knowledge and understanding needed to make well-informed choices when considering the implementation of clean heat solutions for their industrial and commercial heating needs.

Transition to Renewable Energy

Shifting to RE sources is a significant pathway to decarbonize energy-related emissions. This can be achieved by procuring RE from the grid, installing on-site RE generation systems like solar panels and wind turbines, or entering into power purchase agreements (PPAs) with RE developers. By relying on clean, renewable sources, companies can significantly reduce or eliminate emissions associated with their energy consumption.

Decarbonization is an ongoing journey that requires continuous improvement and innovation. Companies should stay informed about emerging technologies, market trends, and policy developments related to RE and carbon reduction. Adopting RE technologies can accelerate the transition and unlock new opportunities for further decarbonization.

By following this Energy System Decarbonization Guide, Philippines-based companies can make significant progress in reducing their Scope 2 emissions, contribute to the energy transition, and demonstrate leadership in sustainable business practices. This guide mainly focuses on how C&I companies can transition to RE and includes current available RE procurement options taking into consideration the evolving policies and regulations in the Philippines.

Cost of Renewable Energy in the Philippines

The Philippines' unsubsidized electricity rates are among the highest in Asia, driven by its overdependence on imported fossil fuels that are exposed to volatile fluctuations in the global market. Exacerbated by geopolitical conflicts and global inflation trends, the prices of fossil fuels combined with a weakened Philippine Peso have pushed electricity rates even higher, raising electricity prices by 33% from the same quarter last year.

Transitioning to RE will not only support decarbonization goals but will also provide operational savings. Since 2010, the cost of RE technologies such as solar and wind have been declining globally. In the Philippines, RE is already cost-competitive, if not more affordable, compared to fossil fuel-based energy. The low cost of RE is demonstrated by the price cap for the upcoming green energy auction prices as seen below.

Rooftop Solar P4.7156 per kilowatt-hour (kWh) (0.084 USD/kWh)

Ground-mounted solar P4.2395 per kWh (0.076 USD/kWh)

Wind P5.9823 per kWh (0.11 USD/kWh)

Biomass P5.1475 per kWh (0.092 USD/kWh)

In comparison, the current average annual rate of the country's largest distribution utility (DU), which sources at least [95% of its electricity](#) from fossil fuels, is P6.9989 per kWh (0.13 USD/kWh).

Renewable Energy Procurement in the Philippines

This section provides in-depth information about the RE procurement options available to C&I companies in the Philippines (see Table 1).

Table 1. Potential Procurement Pathways in the Philippines

Procurement Options	Applicability
On-site solar for self consumption	Relevant for all customers with sufficient open space and satisfactory roof infrastructure.
On-site solar with net-metering	Net metering can result in additional cost savings for customers interested in an on-site solar photovoltaic (PV) system smaller than 100 kW.
Distributed Energy Resource (DER) licensed on-site solar	DER rules allow on-site solar PV systems above 100 kW to export to the grid for potential additional cost savings.
Off-site power wheeling	The Green Energy Option Program (GEOP) is opening new opportunities for large customers with a peak demand over 100 kW to purchase RE from off-site sources through PPAs with Independent Power Producers (IPPs).

On-Site Solar

On-site solar systems generate electricity from solar PV installed on rooftops, parking lots, or other open spaces, which is used to power a home or business for self-consumption and can lower the customer's electricity bill. On-site solar will supply a portion of the customer's electricity load and works best for facilities with a load profile that aligns well with the resource availability of the sun in that particular geography.

On-site solar can also be exported to the grid by applying to the **net-metering program** or by registering as a **DER**. Exporting excess electricity to the grid may help offset the costs of the on-site solar installation.

A. On-Site Solar with Net-metering

Net metering is a consumer-focused RE incentive where excess electricity generated by an end-user from an on-site RE generating system may be exported to the grid and the consumer is given a peso credit based on its exported energy and the distribution utilities' monthly generation charge. Electricity sold back to the grid is "banked" as credits on a customer's bill and can be used to offset electricity purchases from the DU only for the following month. Therefore, net metering results in additional economic benefits for consumers with on-site solar PV systems who have less than seven days of full load. Net-metering is limited to on-site installations up to 100 kW in capacity.

B. Distributed Energy Resource (DER) licensed On-Site Solar

Following the release of DER rules in November 2022, DER now allows on-site installations over 100 kW to export 30% of its capacity to the grid. This provides the opportunity for increased return on investments for rooftop solar projects in facilities with drastic differences in energy consumption throughout the week or season, such as schools and office buildings. To be considered as a DER, facility owners have to secure a Certificate of Compliance for their on-site solar systems from the Energy Regulatory Commission. DER is limited to on-site installations up to 1 MW in capacity.

The DU covering the area where the on-site solar installation is located compensates the net-metering consumers or registered DER's exported energy based on the DU's monthly blended generation rate. This compensation will be used to account for the net amount payable by or creditable to the facility. The DU shall subtract the cost for the exported energy and any credited amount from the previous month from the cost of the imported energy. If the resulting amount is positive, the facility will pay this amount to the DU. If the resulting amount is negative, the DU will credit the amount to the facility's electric bill in the succeeding billing period.

Table 2. On-site solar export compensation

Capacity	Maximum export	Export energy compensations	Sample compensation (as of 2022)
Less than 100kW (net-metering)	100 kW	100% of blended generation rate	6.55 – 8.13 PHP/kWh
100 kW – 500 kW	30% of capacity	75% of blended generation rate	4.91 – 6.10 PHP/kWh
500 kW – 1,000 kW	30% of capacity	60% of blended generation rate	3.93 – 4.88 PHP/kWh

On-site Solar Procurement Options

There are two main financing options for customers to consider when procuring on-site RE systems: turnkey purchases and third-party financed structures. Each option has its own pros and cons depending on the customer's preferences and financial situation. Table 3 below compares the key characteristics of two available financing models.

A. Turnkey Purchase On-Site Solar

On-site RE systems can be procured directly through turnkey purchases where the customer buys the system outright and owns the assets. This is also known as a capital expenditure (CAPEX) model. Customers with existing lines of credit may also be eligible for a loan to purchase a RE system. When a customer opts for a turnkey purchase, they typically work with a provider or manufacturer who offers a complete package, including the design, installation, and commissioning of the RE system. The consumer pays a lump sum amount to the provider or manufacturer, who then takes care of all the necessary aspects to deliver a fully functional and operational system.

B. Third-Party Financed Structure

Customers that prefer not to self-finance under a turnkey model can work with RE developers to utilize third-party financing structures. These arrangements typically include either an explicit lease arrangement or a PPA. These arrangements are also known as operational expenditure (OPEX) contracts, "solar-as-a-service," or "Build-Own-Operate" systems. Under a third-party financed structure, a customer does not own the RE assets directly. Instead, a RE developer finances the system and owns and operates the assets for the lifetime of the contract. Leasing contracts with RE developers vary in length, but are typically 7 to 25 years. In some cases, a customer can have a "lease-to-own" option at the end of the contract, also known as a "Build-Own-Operate-Transfer" contract.

In a third-party financed arrangement, the customer could pay a predetermined amount (fixed) or an amount corresponding to the electricity production (variable) to the system owner. Under a PPA, the customer pays for the RE system's electricity output using a rate that is usually lower than the utility rate. PPAs often include an annual escalator that is a percent increase set to track with either expected increases in utility tariffs, inflation, or other indices.

Third-party financing options intend to reduce the operational costs from the customer's current energy needs and the customer's carbon footprint, while avoiding two main issues associated with turnkey purchases: the upfront investment needed and operating on-site RE assets on a company's balance sheet that are not related to their core business. In addition, the system performance risks are not borne by the customer. However, these arrangements also involve long-term contractual obligations, which both the third-party finance provider and the customer must agree on from the outset and comply with over the life of the contract.

Table 3. Key Characteristics of Turnkey and Third Party Financed Structures

Characteristics	Turnkey purchase	Third-party financed (lease or PPA)
Financing	On company's balance sheet (cash or corporate loan/line of credit)	Financing from solar company
Operations and maintenance (O&M)	Requires separate contract with solar company or third-party O&M provider	Cost included in lease
Equipment warranties	Yes, possible	Yes, possible
Performance guarantees	Yes, possible with additional cost	Cost included in lease
Insurance included	Yes, possible with additional cost	Yes
Lowest per kWh cost over solar system lifetime	Yes	No
Potential for Year 1 cash flow positive	No	Yes

Off-Site Power Procurement

Electricity customers in regulated environments (captive customers [CCs]) are often legally bound to purchase their electricity from a single DU, meaning that they are not able to choose which utility supplies their power. In these systems, utilities have a franchise granting them a franchise for a certain geographic area. The Philippines now has two policy provisions available for off-site power wheeling. The original program is the [Retail Competition and Open Access \(RCOA\)](#) that allows CCs with a monthly peak demand greater than 500 kw to directly transact with retail electricity suppliers (RES) to supply their electricity needs. This includes the option to purchase electricity from renewable sources. The second and newer power wheeling program is the [Green Energy Option Program \(GEOP\)](#), which allows qualified customers (end-users with a monthly peak demand greater than 100 kW) to transact with licensed RES to source 100% RE.

The main advantage of these two power wheeling options compared to purchasing electricity from the incumbent utility is the ability for customers to negotiate directly with the RES on the generation rate and other applicable charges, with the ultimate goal of securing more affordable electricity rates. Lower retail rates, in combination with the opportunity to contractually lock in fixed energy rates or fixed discounts such as what is available through the GEOP program, can allow customers to realize immediate cost savings by switching to RE.

Through CEIA's direct engagement with a number of the RES, they have confirmed that they are able to offer lower generation rates and fixed payment models compared to local DUs, which allows customers to realize cost savings from the moment they switch to RE under the GEOP. These models are described below:

1. **Fixed energy rate for the duration of the contract:** RE suppliers can offer a fixed rate for customers with 24/7 energy utilization that is steady, predictable, and cost-effective.
2. **Fixed discount from the rate of the DU:** RE suppliers can offer a rate with a fixed discount from the monthly rate of the DU. The discounted rates could potentially be 5 to 12% lower than the DU's generation rate.
3. **Market based pricing:** Customers can also explore pegging their rate to the price of generation in the spot market.

Customers switching to GEOP still have to pay transmission and distribution wheeling charges that act as a postage stamp on every kWh of electricity distributed through the utility's wires. Under GEOP, the utility also acts as the power supplier of 'last resort', meaning that if the RE secured through the PPA is unavailable, power can be provided by the utility for a fee.

Under the current version of the GEOP, the utility retains all Renewable Energy Certificates (RECs) generated by the independent power producer. RECs can be used by utilities to meet their RE mandates under the Philippines Renewable Portfolio Standard. However, some companies also value RECs for offsetting their emissions and progressing towards their own energy and sustainability targets. RECs contain the legal representation of all environmental attributes associated with RE.

Conclusions

While energy system decarbonization in the C&I sector is not necessarily a quick overnight change, it is by no means insurmountable. For companies just starting their decarbonization journeys, the first steps include optimizing energy efficiency and electrifying processes where there is a strong dependence on on-site fossil fuel combustion. For companies ready to procure RE to further reduce their remaining emissions, there are a number of RE procurement opportunities available in the Philippines that allow C&I companies to start sourcing RE and reap the benefits, whether its brand reputation, progress towards their decarbonization targets, operational cost savings, or simply to do their part to fight climate change. As you consider your own path forward, please consider the Assessing Energy System Decarbonization Pathways flow chart in Annex A to help determine which RE procurement options are best suited for your needs.

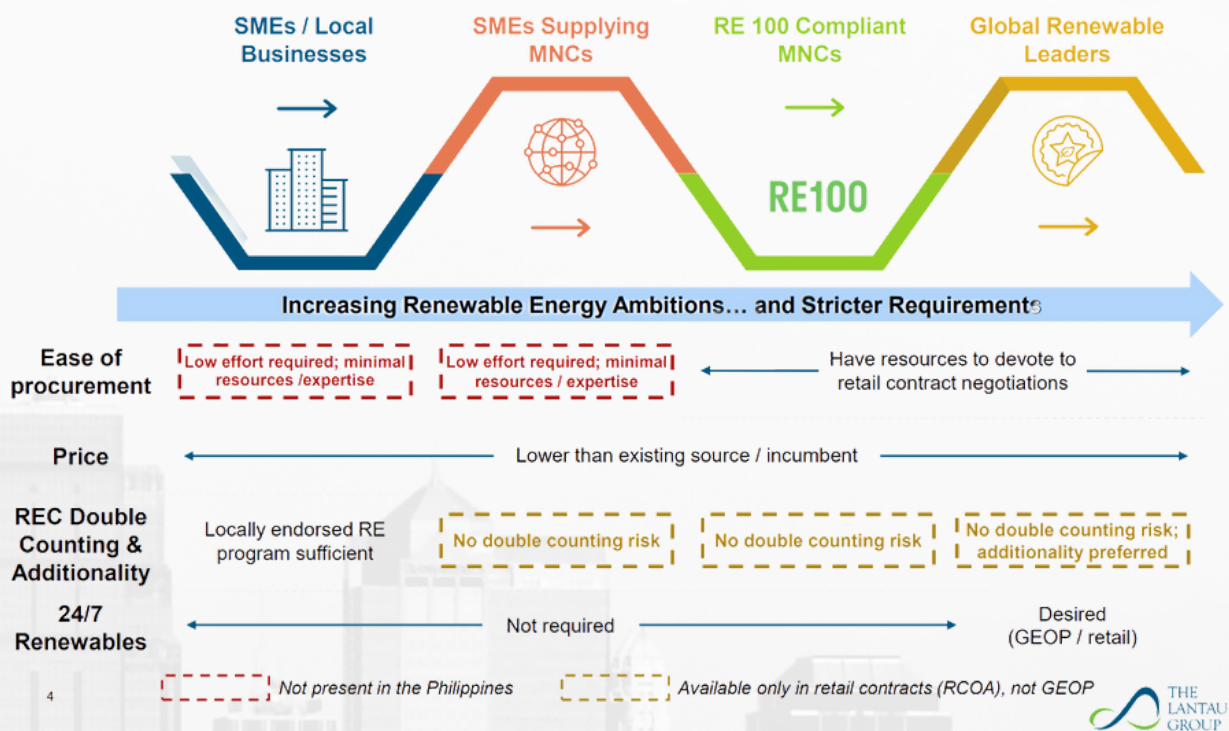
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Levels RE Procurement Ambition

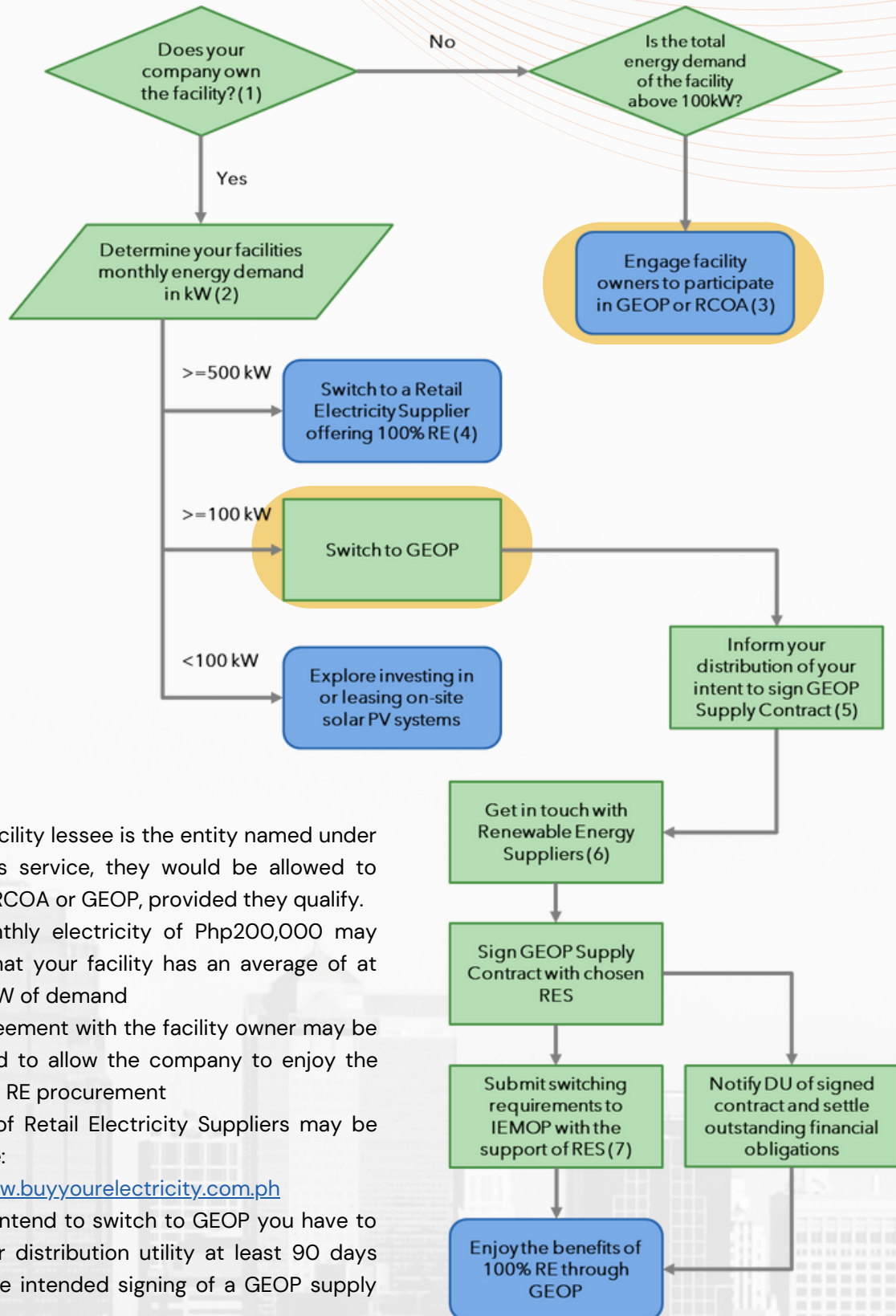
In a study conducted by the Lantau Group and the [Global Wind and Energy Council \(GWEC\)](#), companies have different needs and different goals in terms of ease of procurement, price, RECs, double counting and additionality, and RE availability, as shown in Figure 1. Across the different types of companies, including small-to-medium enterprises (SMEs) that are local businesses, SMEs that are multinational corporations (MNCs), RE100-compliant MNCs, and global leaders of RE procurement, all would benefit from procuring RE at rates lower than the incumbent utilities. In terms of ease of procurement, SMEs would prefer procurement options that require minimal expertise and out-of-pocket expenses, as they may not have the resources to devote to contracting with RES under the GEOP program or paying outright for on-site systems.

In fact, many companies starting their decarbonization efforts may not need to procure renewables 24/7 or completely shift 100% of electricity use to RE. For example, the GEOP requires companies to completely shift to 100% RE and this is one of the factors that is creating a barrier for RES to take on more customers. The DOE is working in the Philippines to resolve this and provide more flexibility in terms of procurement

Figure 1. Clean energy needs and priorities of SMEs and MNCs



Annex A. Flow Chart for Assessing Energy System Decarbonization Pathways



(1) If the facility lessee is the entity named under the utility's service, they would be allowed to switch to RCOA or GEOP, provided they qualify.

(2) A monthly electricity of Php200,000 may indicate that your facility has an average of at least 100kW of demand

(3) An agreement with the facility owner may be established to allow the company to enjoy the benefits of RE procurement

(4) A list of Retail Electricity Suppliers may be found here:

<https://www.buyyourelectricity.com.ph>

(5) If you intend to switch to GEOP you have to notify your distribution utility at least 90 days prior to the intended signing of a GEOP supply contract

(6) A list of Renewable Energy Suppliers may be found in Annex B.

Annex B. List of Renewable Energy Suppliers

	First Gen Energy Solutions, Inc.	Address: 6/F Rockwell Business Center Tower, 3 Ortigas Ave, Pasig, 1604 Phone: (02) 3449 6400
	Bacman Geothermal, Inc.	Address: One Corporate Centre Building Julia Vargas corner Meralco Avenue, Ortigas Center, Pasig City Phone: (+632) 7755-2332 / (+632) 8667- 7332 Email: sales@energy.com.ph
	AC Energy Philippines, Inc.	Address: 35F Ayala Triangle Gardens Tower 2, Paseo de Roxas cor. Makati Avenue, Makati City 1226 Tel. No.: (+632) 7730 6300 Email address: ela.mina@acenrenewables.com
	SN Aboitiz Power-Magat, Inc.	Address: 10F NAC Tower, 32nd Street, Bonifacio Global City 1634, Taguig City, Metro Manila Tel. No.: (+632) 8818-9101
	SN Aboitiz Power-RES, Inc.	Email: patricia.tirados@snabotiz.com Mobile: +639190653026
	Shell Energy Philippines, Inc.	Address: 41st Floor, The Finance Centre, 26th Street corner 9th Avenue, Bonifacio Global City, 1635 Taguig City, Philippines Contact Number: +63 (2) 7502 7994 Email address: ShellEnergyPhilippines@shell.com
	Solar Powered Agri-Rural Communities Corporation	Address: 3/F JTKC Centre, 2155 Don Chino Roces Ave., Makati City 1231 Phone: +63 2 813 8892 to 97 Email: contact@pureenergy.com.ph
	Adventenergy, Inc.	Email: catherine.del.villar@abotiz.com Tel. No.: (63-2) 886-2800 or 09173083371
	Aboitiz Energy Solutions, Inc.	Email: catherine.del.villar@abotiz.com Tel. No.: (63-2) 886-2800 or 09173083371
	Prism Energy, Inc.	Email: bong.saniel@abotiz.com Tel. No.: (6332) 411-1800
	AP Renewables, Inc.	Address: NAC Tower, 32nd Street, Bonifacio Global City, 1634 Taguig City, Metro Manila Tel. No.: (63-2) 8-886-2800
	Therma Luzon, Inc.	Address: 11th Floor, Rockwell Santolan Town Plaza, 276 Col. Bonny Serrano Ave, San Juan Tel. No.: (02) 8826 5698

 <p>Green Core Geothermal, Inc.</p>	<p>Green Core Geothermal, Inc.</p>	<p>Address: 6th Floor, Rockwell Business Center Tower 3, Ortigas Ave, Pasig City Phone: (+632) 8667.EDC (8667-7332) (+632) 7752.2332 Email: corpcomm@energy.com.ph</p>
 <p>DirectPower Services, Inc.</p>	<p>DirectPower Services, Inc.</p>	<p>Tel Nos: +632 7955-7065 (tel:+63279557065); +632 7500-6187 (tel +63275006187) Email: info.res@ayalaland.com.ph Address: 5th Floor, Ayala Malls Manila Bay, Macapagal Blvd. cor. Aseana Ave., Parañaque City</p>
 <p>Solar Philippines Retail Electricity, Inc.</p>	<p>Solar Philippines Retail Electricity, Inc.</p>	<p>Address: 20th Floor, Philamlife Tower, Paseo de Roxas, Makati, 1226 Metro Manila Tel. No.: (+632) 8817-2585</p>
 <p>EEI Energy Systems Corp.</p>	<p>EEI Energy Systems Corp.</p>	<p>Address: 12 Manggahan Street, Bagumbayan, Quezon City 1110 Metro Manila Phone: (+632) 334-2677 local 3131 Email Address: eeenergysolutions@eei.com.ph</p>
 <p>Mpower</p>	<p>Mpower</p>	<p>Tel: +63 2 8MPOWER / +63 2 867 6937* Address: 2/F Business Solutions Center, Meralco Compound, Ortigas Avenue, Pasig City, Philippines</p>
 <p>Kratos RES, Inc.</p>	<p>Kratos RES</p>	<p>Address: UGF Worldwide Corporate Center EDSA cor Shaw Blvd. Mandaluyong City, Philippines Tel. No.: (02) 5310-7284 Email address: kratosres@powergroup.com.ph</p>

Annex C. Rooftop Solar Procurement Guide

1. Assess energy needs and feasibility
 - a. Determine your facility's energy consumption and requirements.
 - b. Evaluate the feasibility of installing a rooftop solar system based on factors such as available roof space, orientation, shading, and structural considerations.
2. Research and shortlist installers
 - a. Conduct research to identify reputable rooftop solar installers.
 - b. Consider factors such as experience, certifications, customer reviews, and project portfolio.
3. Request information and quotes
 - a. Contact shortlisted installers to request information and quotes.
 - b. Provide details about your energy consumption, roof characteristics, and any specific requirements.
4. Site assessment and design
 - a. Schedule site visits with potential installers.
 - b. Installers assess your roof, analyze sun exposure, and gather necessary data for system design.
5. System design and proposal
 - a. Installers design a rooftop solar system based on your energy needs and site assessment.
 - b. Receive a proposal that includes system specifications, expected energy generation, cost estimate, and financial analysis (e.g., payback period, return on investment).
6. Evaluate proposals
 - a. Review and compare proposals from different installers.
 - b. Consider factors such as system design, equipment quality, warranties, installation timeline, and pricing.
7. Select rooftop solar installer
 - a. Choose the most suitable installer based on the evaluation.
 - b. Consider factors such as reputation, expertise, pricing, and customer support.
8. Contract negotiation and signing
 - a. Initiate contract negotiations with the chosen installer.
 - b. Address terms and conditions, project timeline, payment schedule, warranties, and any other specific requirements.
9. Permitting and approvals
 - a. Work with the installer to obtain necessary permits and approvals from relevant authorities.
 - b. Provide required documentation and ensure compliance with local regulations.

10. System installation
 - a. Coordinate installation logistics with the installer.
 - b. Installers procure equipment, schedule installation, and manage the entire installation process
11. System commissioning and testing
 - a. Installers complete the installation and perform necessary tests to ensure proper functioning and safety.
 - b. Conduct inspections, electrical connections, and system integration with the electrical grid.
12. System activation and monitoring
 - a. Collaborate with the installer to activate the rooftop solar system.
 - b. Set up monitoring systems to track energy generation and system performance.
13. Training and maintenance
 - a. Receive training on system operation and maintenance.
 - b. Understand routine maintenance requirements and contact information for technical support.
14. System performance and reporting
 - a. Monitor energy generation and system performance regularly.
 - b. Report on energy savings, carbon reductions, and other relevant metrics as required.