

**USER'S GUIDE**  
For  
**The Power Purchase Agreement (PPA) Model**  
For  
**Electricity Generated From Renewable Energy  
Facilities**



**Final Version**

**March 2012**



Regional Center for Renewable Energy and Energy Efficiency  
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

# USER'S GUIDE

## For The Power Purchase Agreement (PPA) Model For Electricity Generated From Renewable Energy Facilities

### About RCREEE

The Regional Center for Renewable Energy and Energy Efficiency (RCREEE) is an independent not-for-profit regional organization which aims to enable and increase the adoption of renewable energy and energy efficiency practices in the Arab region. RCREEE teams with regional governments and global organizations to initiate and lead clean energy policy dialogues, strategies, technologies and capacity development in order to increase Arab states' share of tomorrow's energy.

Through its solid alliance with the League of Arab States, RCREEE is committed to tackle each country's specific needs and objectives through collaborating with Arab policy makers, businesses, international organizations and academic communities in key work areas: capacity development and learning, policies and regulations, research and statistics, and technical assistance. The center is also involved in various local and regional projects and initiatives that are tailored to specific objectives.

### Author:

Adel Beshara  
Renewable Energy and Energy Efficiency Expert  
Cairo, Egypt

### Acknowledgments

RCREEE would like to acknowledge the support of Dr. Adel Beshara and his valuable contribution to this study.

March 2012

## Table of Contents

Preamble .....	1
<b>II. Staffing Considerations While Developing a REPA.....</b>	<b>4</b>
<b>III. Anatomy of a Renewable Energy Purchase Agreement (REPA) .....</b>	<b>5</b>
<b>IV. More Detailed Information on Specific Articles of the REPA Model.....</b>	<b>6</b>
<b>IV.1 ARTICLE 2: TERM .....</b>	<b>6</b>
<b>IV.2 ARTICLE 4: PRE-COMERCIAL OPERATION OBLIGATIONS.....</b>	<b>7</b>
<b>IV.3 ARTICLE 6: COMERCIAL OPERATION.....</b>	<b>8</b>
<b>IV.4 ARTICLE 7: SALE AND PURCHASE OF ENERGY OUTPUT.....</b>	<b>10</b>
<b>IV.5 ARTICLE 8: METERING .....</b>	<b>13</b>
<b>IV.6 ARTICLE 10: DEFAULTS AND TERMINATION.....</b>	<b>14</b>
<b>IV.7 ADDITIONAL NEW TOPICS TO BE CONSIDERED.....</b>	<b>15</b>
<b>V. Reference Used for the Model Agreement and the User's Guide .....</b>	<b>16</b>

## Preamble

This Power Purchase Agreement (PPA) for Electricity Generated from Renewable Energy Facilities has to be considered only as a generic model. Member states are urged to embed their particular considerations, their own legal context, local laws and tax obligations into the present model to ensure that their objectives will be achieved and their legal interests will be protected before entering into any binding PPA.

## I. Introduction, Context and Users Guide's Objectives

Given the existing diverse regulatory and legislative practices on renewable energy in the RCREEE region, the power purchase agreement (PPA) is a highly complex component of any renewable energy (RE) project. Thoughtful negotiations of long-term PPAs are essential as these PPAs represent the key initial step necessary to make these projects bankable and facilitate obtaining financing.

A PPA must take into consideration the current regulatory environment and contain anticipatory language to capture and accommodate future regulatory regimes. It must also include provisions to lock in price and quantity and meet renewable power standards if any.

Experienced counsels should support the parties concerned with developing PPAs. They must be fully aware of the critical terms, provisions and variations on the PPA geared to different RE sources. They must be also experienced in PPA negotiations discussing the key terms, adapting the PPA to the type of RE used, and cleverly handle helpful strategies for effectively negotiating the agreement in correlation with interconnection, wheeling and ancillary services agreements.

Signing a long-term PPA is an important step in the development of any RE project because it secures the long-term revenue stream through the sale of energy from the project and provides evidence that the energy is needed by the Purchaser. Power may be sold through a PPA to a local utility or electric cooperative, a more distant utility, or to a different wholesale or retail customer.

There are various forms of PPAs; these are differentiated by the source of RE harnessed (solar, wind, etc.). Financing for the project is delineated in the contract, which also specifies relevant dates of the project coming into effect, when the project will begin commercial operation, and a termination date for which the contract may be renewed or abandoned. All sales of electricity are metered to provide both Seller and Purchaser with the most accurate information about the amount of electricity generated, sold and bought. Rates for electricity are agreed upon in the agreement between both parties to provide an economic incentive to both parties of the PPA.

It should be also mentioned that, the PPA is the heart of any BOT, BOO or BOOT type power generation project that is to be undertaken by an Independent Power Producer (IPP) from either conventional or RE generating facilities. PPA developers should consider available models of multi-currency loans and equity financing packages for RE generation plants that are already built or to be built. These models are already available in many countries. Usually by using such financial models, financing institutions (lenders) evaluate any proposed PPA in order to identify the relative importance of each of the variables found in such an agreement. In general, variables become important if they represent major elements of costs or revenues or are significant sources of risk.

From another side, a PPA is a legal contract between an electricity generator (Seller) and a power Purchaser (Purchaser). Contractual terms may last anywhere between 15 and 30 years, and during this time the Purchaser buys energy, and sometimes also capacity

and/or ancillary services, from the Seller. Consequently, such agreements play a key role in the financing of independently owned (i.e. not owned by a utility) electricity generating assets.

It should be also noted that in many cases, the people who originally negotiate PPA will not be involved later in the operating period of the project, so it is important that any understanding between the parties be properly addressed and detailed clearly in the written agreements to prevent future misunderstandings. It is crucial to underline that, no matter what conversations the parties might have about provisions, terms and arrangements, the only thing that matters is what the document says. Therefore, if you don't like something about an agreement, negotiate a change before signing. Once signed, all parties involved have given written approval of the provisions of that agreement and are legally bound to fulfill their part.

Purchasers may be told that the agreements they are being asked to sign are standard contracts for RE projects and the terms of these contracts are typical and are the same everywhere for everyone. Even though this is partially true, until an agreement is signed, any and all of the agreement provisions are negotiable and should be clearly understood and agreed by both parties.

To wrap up this introduction and context, it would be useful to indicate the following issues as well:

- To the Seller, the PPA is a key ingredient in the project's cost structure, economic and financial success as well as profitability.
- To the Purchaser, the agreement impacts the cost of its electricity sales on the short, medium and long run.
- In the real practice, if RE projects development are to be realized through "Competitive Bedding" procedure, the Request for Proposals (RFPs) generally includes a PPA model mainly proposed from the Purchaser's prospective. However, in the other schemes when market forces and investment environment encourage RE developers to approach potential Purchasers, developers generally come with PPA models developed from developers' prospective.

Finally, this User's Guide provides information and guidance for the development of a Renewable Energy Purchase Agreement (REPA) or renewable Energy – Power Purchase Agreement (RE-PPA). We will use the abbreviation (REPA) instead of (PPA) in the following part of the User's Guide to cope with the developed model with which this guide will accompany. The provided REPA Model is a legal mechanism that enables states and local government entities to attract direct foreign investments (DFIs) to promote and acquire clean renewable energy. We will address and give more information on some of the REPA Model provisions concerning the financial, logistical, and legal aspects. This User's Guide ultimate objective is to offer alternatives formulas for some articles and also to provide support to the REPA developers whether they are technical or legal councils or decision making persons from the RCREEE member states who

might require further information while developing and before committing to a REPA for a particular project.

## **II. Staffing Considerations While Developing a REPA**

As the portfolio of power generation options expands from conventional to renewable sources such as wind, solar thermal or solar PV, a strong need for experienced individuals to analyze, implement, and execute the development of RE power generation facilities has appeared to be fundamental. Such individuals should possess experience on the evaluation and management of these new business opportunities by performing valuation analysis, financial modeling and pro-forma analysis, land rights permitting, performing financial and environmental due diligence, negotiating power purchase agreements, risk management, and managing a long term project budget and commitments through legal binding agreements.

As a result of the RCREEE member states' governments and public's concerns over the sustainability and even the scarcity of available sources of energy as well as the present nature of current consumption patterns, the energy industry is obliged to undergoing a major transformation in its human resources recruitment, training and leadership capabilities enforcement. The growing new market demands on renewable energy resources and applications has resulted in a need of professionals that can create solutions to meet the needs of policy making as well as concerned stakeholders including utility, private sector and end-users. Professionals in this job category are responsible for aligning the market direction with the internal company strategies by determining integration procedures, business models, and competitive analysis for specific products. As previously mentioned, these job functions should reside in both utility companies and private companies alike.

To make it easier for the non-specialists, energy trading is the buying, selling, and marketing of energy commodities such as electricity, natural gas, coal, crude oil or oil products. Energy Contracts and Trading involve the creation of physical delivery contracts, the creation of financial hedging instruments, and the use of current energy trading markets to sell physical delivery, options, and futures contracts. Contracts of this nature are often traded on open exchanges markets. Recent market transformations have created new (non-physical or virtual) trading value chain to include new products such as Renewable Energy Credits (REC) and Carbon Trading. These new emissions trading schemes and the complexity of climate change legislation require will trained specialists to analyze market and non-market forces and to create strategies to navigate the complexities of the REPAs.

It is important to mention that the staff developing the REPA has to discuss with the financial institutions that will lend money to the investor from the early beginning and before finalizing the REPA. Many REPAs have been renegotiated after signature as the financiers were objecting some provisions or have had any special prerequisites.

### III. Anatomy of a Renewable Energy Purchase Agreement (REPA)

As it has been clarified earlier, REPAs allow public agencies to implement on-site renewable energy projects with no upfront capital costs. A developer installs a renewable energy system on a public land or buildings. In exchange, the agency agrees to purchase the power generated by the system. These power purchase payments repay the developer over the contract term. The developer owns, operates, and maintains the system for the life of the contract.

Counsels to parties developing power purchase agreements must understand the critical terms and provisions and variations on the PPA geared to different renewable energy sources. The following paragraphs give a generic quick overview on the REPA's anatomy outline for the REPA's standard contents:

#### I. Key provisions of a REPA

- A. Term and extension articles
- B. Power production and pricing
- C. Facility ownership
- D. Compliance with renewable power standards (RPS)
- E. Access
- F. REPA legalities
- G. Green attributes
- H. Environmental Credits
- I. Tax duties responsibilities

#### II. Key terms

- A. For Purchaser
- B. For Seller

#### III. PPAs for different renewables

- A. Solar
- B. Wind
- C. Geothermal
- D. Bio-Mass
- E. Pricing models

#### IV. Other project contracts

- A. Land Use
- B. Interconnection
- C. Ancillary services
- D. Turbine supply
- E. Operations
- F. Permits

#### V. Strategies for negotiation

## **IV. More Detailed Information on Specific Articles of the REPA Model**

The REPA model includes necessary and fundamental provisions for a generic agreement to be used by public entities in order to tender RE power generating facilities. The stated provisions or articles have been developed based on international best practices that have been adjusted to suite the environment of the RCREEE Member States.

Each RCREEE Member State can tailor its own REPA based on its specific laws, regulations, rules of practice, tariff system, licensing requirements and electric codes.

Beside the selected “best” options that are included in the model agreement, other options are given for some of the governing articles in order to facilitate the task of adjusting and tailoring the model to reflect the local requirements and frameworks. The following articles are supplemented with additional explanations and/or alternative conditions as follows:

### **IV.1 ARTICLE 2: TERM**

The stated term of most REPAs is 20 years, although a term ranging anywhere from 15 to 25 years is not unusual. The REPA is usually legally binding once it has been executed by representatives of both the Seller and the Purchaser, subject to early termination rights. The end date of the REPA is usually measured in the number of years from the commercial operation date. The commercial operation date is the date the Seller has met all the conditions necessary to deliver power from RE to the Purchaser, such as getting all, or nearly all, of the installed RE facilities, running and able to deliver electric power.

The REPA may also provide the Purchaser an opportunity to extend the REPA to include a renewal term beyond the initial stated term of 15 to 25 years, such as an additional 5 years. This option may state that the price and terms included in the initial stated term will apply during the renewal term, or may provide for an indexed price.

REPAs will include several provisions that will allow one or both parties to terminate the REPA early if certain events occur. For example, the REPA may allow one or both parties to terminate REPA prior to the commercial operation date if: 1) the Seller’s or Purchaser’s internal approvals, or any required regulatory or third party approvals, are not received; 2) permits necessary for the construction and operation of the project are not obtained; 3) the Seller has not entered into an acceptable interconnection agreement; 4) in some cases, financing is not available; 5) transmission access has not been secured; or 6) site control is not secured. Typically, RE facilities or other supplier shortages, or actual costs being greater than anticipated, are not a condition allowing the Seller to terminate early.

The REPA early termination provisions will usually require the terminating party to give notice to the other party and often times will allow the parties enough time to address the underlying issue before the termination is effective.

in summary, lenders will want to see a REPA that has a term that exceeds the term of the loan provided. The Seller (developer) will want to see a REPA term that is consistent with the design life of RE facilities as it varies according to the RE technology used.

## IV.2 ARTICLE 4: PRE-COMERCIAL OPERATION OBLIGATIONS

### Construction Related Issues:

- From a Purchaser's perspective there are consequences to the late delivery/construction of a renewable energy facility because Purchaser wants the power and renewable energy credits/green credits associated with such power available on a timely basis.
- Commonly, a Purchaser will impose a liquidated damages regime (an obligation of Seller to pay Purchaser a fixed amount of money for each day of delay) to deal with the consequences of a renewable energy facility not being built in accordance with the project milestone timetable.
- The REPA itself could be at risk if an absolute deadline is missed.
- Force majeure provisions, which excuse a party's performance for reasons beyond its reasonable control, and will extend milestone deadlines, must be prepared with care to mitigate this risk.
- Ultimately, a sufficiently long lead time for construction must be factored into any milestones identified in the REPA to address permitting and regulatory delays and expected timing of procurement.
- In some REPAs, Sellers have been able to have permitting risk specifically included as force majeure in order to extend applicable milestones.
- Lenders will be very wary of a tight timetable where there is a risk of liquidated damages which is not adequately secured by construction budget contingency or equity sponsor support by way of cost overrun guaranty. Where the risk is loss of the REPA itself, the concern of lenders will be that much greater.
- Breach of internal milestones could have the effect of multiplying liquidated damages. Careful drafting should avoid this by crediting liquidated damages for earlier breaches against those accruing in respect of a subsequent breach.
- Extensions of milestones for force majeure delay should not necessarily be day for day as a force majeure delay of short duration could cause an extensive delay where, for example, a window of opportunity for construction is lost.
- Consider an allowance in the number of modular facilities that must be commissioned to declare commercial operation of the RE facility for the purpose of stopping the clock running on delay liquidated damages sooner. In other words, define commercial

operation by reference to less than 100% of the nameplate capacity being commissioned in order to address clearly the minimum number of troublesome modular facilities which could otherwise severely delay commercial operation of the entire RE facility.

- Ideally, the Seller should ensure that it has the right to pass on the cost of delay liquidated damages to the construction contractor where the construction contractor is the cause of delay.

## IV.3 ARTICLE 6: COMERCIAL OPERATION

We will discuss the three following topics:

### IV.3.1 Transmission Issues

Transmission issues are becoming an increasingly important part of REPAs. These provisions include allocating both responsibility for securing adequate transmission access and the costs for any required transmission upgrades, and other key transmission concerns. It is essential to consider the following matters:

- The Seller is often responsible for the costs of all transmission upgrades necessary to deliver the RE power output from the Re generation facility to the point of delivery, but sometimes Sellers negotiate for the right to pass some or all of these costs on to the Purchaser. The point of delivery is a specific point in the transmission system where the RE power output is deemed to be delivered to the Purchaser and the Purchaser assumes the risk of loss beyond that point. Costs for transmission upgrades that are necessary to reliably deliver the RE power from the point of delivery to the ultimate customer are not the responsibility of the Seller.
- At the time a REPA is negotiated and executed, it is common that the analysis and studies conducted by the transmission service provider are not complete. Thus, there is no final determination as to the allocation of costs for network upgrades. The Seller or the Purchaser may put any particular provision if the costs for needed transmission upgrades are unreasonable or exceed declared and agreed upon estimates.

### IV.3.2 Commissioning Process

There are a number of steps involved in the commissioning process of an RE project that must be completed before the facility can reach commercial operation. While some of these steps may be included in the milestone section of the REPA as per our Model agreement, other REPAs include them elsewhere as conditions to commercial operation. Each of these steps is aimed at ensuring that the facility will be able to reliably deliver power from RE to the Purchaser.

These conditions for commercial operation may require the Seller to demonstrate to the Purchaser that:

- the Seller has completed all testing required by the financing documents, government permits, interconnection agreement, Seller's operating agreement, Seller's engineering, procurement and construction agreement and any manufacturers' warranties;
- an officer of the Seller has certified that the equipment installed at the facility has a maximum designed output equal to the agreed megawatts (MW);
- the facility has achieved initial synchronization with the interconnection provider's system;
- the communications systems reliably communicates with the Purchaser's systems;
- an independent professional engineer has certified that the facility has been completed in all material respects in accordance with the REPA;
- the facility is performing under the interconnection agreement at a generation level acceptable to the interconnection provider without causing any abnormal or unsafe operating conditions on any interconnected system;
- a separate agreement is in effect to deliver energy to the facility to allow for RE facilities start-up and shut down and maintenance;
- security arrangements have been made;
- certificates of insurance have been obtained; and
- all permits, consents licenses, approvals and authorizations required by any government authority have been obtained.

REPAs also address when the Seller must have 100% of the project capacity up and running, or if less than 100% is acceptable and for how long.

### **IV.3.3 Curtailment**

The term curtailment that is stated for the first time in the REPA under item 6.3 (c) in the model agreement is being more elaborated as follows:

This topic is critical although confusing for many decision makers used to develop REPAs for IPPs building conventional power plants. The principal of calculating defined quantities of "virtual or deemed" electric energy that could have been generated during curtailment from a RE resource (which by itself, for many people, is indefinable or possible to estimate) is still hard to digest, accept and pay for. The following principal considerations are always included:

- Most REPAs require that the Seller deliver and sell to the Purchaser all the RE electricity generated by the facility. However, most REPAs recognize that there will be times when the Purchaser, transmission owner or Transmission System Operator (TSO) may mandatorily curtail the electricity production from the RE facilities because of constraints on the system, emergency or other reasons. Curtailment can also be for the convenience of the Purchaser for it to best manage its available energy supply sources.
- During negotiation of a REPA, the parties must decide who will bear the financial risk for losses that arise when the Purchaser, the transmission owner or the TSO exercises its curtailment right. Many REPAs are structured as "take-or-pay" agreements, which mean

- that the Purchaser will pay the Seller not only for RE electricity actually delivered to the point of delivery but also for “available capacity,” or power that would have been generated and delivered during the curtailment.
- As such vital provisions are quite new to most of the REPA developers from the side of the RCREEE member states, Curtailment provisions have to be clearly discussed and written because they can directly impact the required pricing, or profitability, of the project.
  - Various REPAs differ regarding the conditions under which the Purchaser must pay for available capacity or energy that was not actually delivered. For example, in some REPAs, the Purchaser pays regardless of the reason for the curtailment. In other REPAs, the Purchaser pays for available capacity or energy only if the Purchaser exercised its discretionary curtailment right, not if the RE output was curtailed because of an emergency, force majeure event or another event that would have damaged the transmission system.
  - The parties usually agree to calculate available capacity and/or electrical power output based on RE source data available during the curtailment period and the power curve data for the RE facilities. The Seller is often required to construct and maintain adequate meteorological station(s) capable of measuring and recording representative RE source data 24 hours a day, and this data can be used to calculate the payment owed by the Purchaser for the curtailed energy. This particular issue has got many enquiries, questions and comments during the consultative workshop and it was satisfactorily clarified and detailed.
  - A right to curtail "at will" is a matter that will concern lenders. If Purchaser is to have a right to curtail or de-rate power output of the Facility at will, appropriate compensation should be paid based on an agreed formula. If no compensation is provided, there should be, at the least, a cap on the amount of generation that can be curtailed.
  - In case of any additional State tax imposed by any country of the RCREEE member states, the amount the Purchaser must pay to the Seller because of curtailment should include both the agreed price for the MWs of available capacity or MWHs of electric energy output and an additional “grossed up” tax amount reflecting the loss of the Member State’s tax value.

## **IV.4 ARTICLE 7: SALE AND PURCHASE OF ENERGY OUTPUT**

It is important to indicate the following additional significant features on the obligations to sell and purchase as well as some additional information on pricing as follows:

### **IV.4.1 Elaboration on particular features on obligations to sell and purchase**

Minimum and Maximum Delivery Obligations:

Many REPAs have a minimum annual delivery obligation or output guarantee, as well as a maximum purchase obligation, effectively creating a "collar" for power delivered under the REPA.

Power output for each year of the life of the RE power generation facility should be projected to fall within the collar, that is, between the ceiling and the floor.

Ideally, the collar should be structured to accommodate expected volatility in annual production. The consequences of output falling below the floor or rising above the ceiling are as follows:

*Minimum Delivery Obligation:*

- If annual generation is below a stipulated annual minimum, Seller could be accountable to Purchaser for losses suffered in procuring alternative sources of supply.
- This is doubly painful to the Seller as it is not earning revenue and, at the same time, is responsible for make-up payments to Purchaser based on the cost of replacement power and renewable energy credits/green credits if any.
- In some REPAs, a continuing failure to achieve the minimum level of generation could result in early termination of the REPA by Purchaser.
- Lenders will wish to ensure that the predicted power output for RE facility falls comfortably above the floor. Any concern with the volatility of generation of the RE facility based on a probability analysis could result in lenders imposing a more stringent debt service coverage ratio as a condition to financing (i.e. reducing the leverage of the project) or imposing a greater debt service coverage reserve.
- Seller should ensure that it is credited with lost power arising from force majeure events, or curtailment of power generation by Purchaser, for purposes of meeting a minimum obligation.
- If Seller concludes that it has a systemic problem of under-generation, Seller should have an express right to add incremental generation.

- Given that teething problems arise early in the life of a project, Seller should also consider having an extra allowance for failing to meet the minimum delivery obligation in the first year of operation.

Maximum Delivery Obligation:

- If an annual maximum amount of generation is stipulated, Purchaser may be entitled to pay a lower per unit sale price for power generated in excess of the ceiling. A more extreme variation would have the REPA places no obligation on Purchaser to purchase any surplus power (and Seller would have to make alternative arrangements for the sale of such surplus, including sales in the market, assuming there is access to same). Ultimately, though, this problem is more of an equity issue than a lender issue as the risk essentially relates to generation in excess of that contemplated in the original cash flow model.
- In some REPAs a surplus in one year (ie. above the ceiling) can be carried forward, or backward, to redress a deficiency in production in another year (ie. below the floor).

#### IV.4.2 Additional information on energy pricing

- Price terms vary depending on the structure of the project financing, quality of the RE resource, available transmission resources, RE facilities performance characteristics and many other issues. Market prices for power from RE are affected by cost increase in RE facilities, equipment and labor land use rents. Prices are also affected by the geographic area where the project is built. Price terms are very important to project development, as the REPA allows investors to estimate the total revenue available over the life of the project. If the price is too low, the project may not have a positive cash flow or the investors may be unable to earn a reasonable rate of return. If so, it is unlikely the project will be financed. Conversely, Purchasers have a keen interest in keeping the price low to ensure the utility can deliver low-cost electricity to its customers.
- Prices terms may remain flat, or may escalate or deescalate, over the life of the project. For example, Minnesota state in the USA requires utilities to develop a tariff for electricity from RE with a higher rate during the first 10 years of the project and a lower rate in the later 10 years, recognizing that RE projects have high upfront capital costs.
- In addition, the REPA typically provides for a lower initial rate, or trial price, that is applied to energy delivered to the Purchaser before the date of commercial operation, or in some cases, excess energy after commercial operation if too much energy is delivered.

- REPAs usually address metering dealings, invoice and billing procedures. It is common for the Seller to provide a monthly invoice detailing RE power output delivered or available capacity. Timelines for payment, and billing dispute procedures, are often included as well.

## IV.5 ARTICLE 8: METERING

The model agreement included the following sub-titles:

- Ownership of Metering Devices
- Testing and Inspection of Metering Equipment
- Measurement of Net Energy Output

Beside these selected “best practice” options that are included in the model agreement, other explanations and options are given for this specific article as follows:

- A. All electric metering associated with the Project including the Project Meter, whether owned by Seller or a third party, shall be installed, operated, maintained, and tested by or on behalf of Seller in accordance with existing practices and standards as well as Good Utility Practices, and any applicable Purchaser technical requirements.
- B. The Seller shall install, maintain, operate, test and replace (as appropriate) the Project Meter, telemetry equipment, and other appropriate electric meters and back-up meters at its sole cost and expense to accurately determine Delivered Energy taken by Purchaser under this Agreement or otherwise delivered by the Project.
- C. If the physical location of the Project Meter is not at the Point of Receipt, then, in conformance with applicable rules and Good Utility Practice, revenue quality loss-compensation metering shall be used to account for any transmission or transformer losses between the Project Meter and the Point of Delivery.
- D. The electric meters shall be checked annually by Seller who shall provide Purchaser with not less than thirty (30) days prior written Notice of such tests. Purchaser shall have the right to have a representative(s) present during such tests. Seller shall be responsible for fully metering all Project Energy generation, including the obligation to accurately and completely send meter telemetry into the eMeter system if any. Seller shall exercise reasonable care in the maintenance and operation of such metering equipment so as to assure to the maximum extent practicable an accurate determination of such quantities of Energy and Products. The amount of Energy measured by the Project Meter as being delivered to the Delivery Point rounded downward to the nearest MWh shall be the basis for determining Delivered Energy and the amount of other Products delivered pursuant to this Agreement based on such Delivered Energy, subject to Purchaser’s testing and audit rights.
- E. Either Party may from time to time request a retest of the meters if it reasonably believes that the meters are not accurate within the established tolerance limits. The requesting Party shall pay for any such retest and shall provide the other Party with not less than fourteen (14) days prior written Notice of such retest. Such other Party will have the right

- to have a representative present during such retest. If any tested or retested meter is found to be not accurate within the tolerance limits, Seller shall promptly arrange for the correction or replacement of the meter, at its expense, and the Parties shall use the measurements from the back-up meters or submeters to determine the amount of the inaccuracy. If the back-up meters or submeters are found to be not accurate within the tolerance limits and the Parties cannot otherwise agree as to the amount of the inaccuracy, the inaccuracy will be deemed to have occurred during the period from the date of discovery of the inaccuracy to the earlier of (a) one-half of the period from such discovery to the date of the last testing or retesting of the meters or (b) one hundred eighty (180) days. Any amounts due by Purchaser or to be refunded by Seller as a result of any meter that is not accurate within the tolerance limits will be invoiced by such Party within fifteen (15) days of the discovery of such inaccuracy, with payment due within thirty (30) days after the date of the invoice for such amounts.
- F. To support invoice settlement purposes, Seller shall provide Purchaser with reasonable access to the Project Meter and all other real-time meters, billing meters and back-up meters (i.e., all metering) in accordance with the Interconnection Service Agreement. Seller shall authorize Purchaser to view the Project's on-line meter data.
- G. In case of telemetry, Seller shall send telemetry data via a means of transmission approved by the Operating Committee and consistent with Good Utility Practice. The specific telemetry data points required for the Project, as measured by the Project Meter, are: MW, MVAR, MWH, MVARH, isolation breaker open/closed status, interconnection bus voltage, and amp flow. A data line will be required to send this data to Purchaser. These telemetry data point requirements should be outlined in Purchaser's "Technical Considerations Covering Parallel Operations of Customer Owned Generation Interconnected with the Connective Power Delivery System." Seller shall establish, in consultation with Purchaser, a system allowing Purchaser and Seller to provide real-time dynamic signals sufficient to fulfill the scheduling parameters of this Agreement, including enabling Seller to provide real-time dynamic signals to Purchaser regarding the types and amounts of Products that are to be delivered pursuant to this Agreement and enabling Seller to provide Purchaser real-time dynamic signals specifying the amount of Delivered Energy that is being delivered to the Delivery Point at all times.

## IV.6 ARTICLE 10: DEFAULTS AND TERMINATION

This article is discussed from the point of view of defaults associated with milestones as follows:

- REPA's often address milestones to be met to reach commercial operation. Construction or development milestones are intended to allow the Purchaser and Seller to track the project's development progress. The REPA may identify a variety of milestones, including: acquisition of all permits needed for construction; execution of a construction contract; commencement of construction; evidence of the Seller's purchase of RE facilities; and, ultimately, commercial operation.

- If the REPA addresses milestones, typically the Seller must meet the dates established in the REPA for each of the milestones or risk paying delay damages. Usually delay damages are often calculated by multiplying a dollar amount by the number of MWs of contracted capacity or the contracted electric power output, for each day the Seller fails to meet a milestone. Failure to meet the construction milestone for commercial operations may also trigger penalties per day per MW or MWh of contracted energy output. The REPA may also include a provision that allows the Seller to recover any delay damages paid to the Purchaser for earlier missed milestones if the Seller is able to deliver the project by the milestone for commercial operation.
- REPAs include detailed sections related to events of default. Events of default are situations where the action or inaction of one of the party significantly jeopardizes the overall project.
- Many events of default are curable, which means there is an opportunity to resolve the issue. However, when one party is responsible for an event of default, the other party is typically entitled to damages if the default cannot be cured. Some events of default may be considered incurable and allow for immediate termination rights.
- When negotiating a REPA, the parties acknowledge that there may be circumstances beyond the parties' control that could prevent them from performing under the REPA, that is, for events of "force majeure." If a force majeure event occurs, the agreement will excuse both parties from responsibility and liability related to any delay or failure to perform. Most agreements will require that the party asserting force majeure to provide the other party with notice. Often, Sellers and Purchasers negotiate over how broadly or narrowly to define what constitutes force majeure.
- When an event of default occurs and remains uncured, the non-defaulting party may be entitled to actual damages and/or the right to terminate the REPA. If the Seller defaults, this will usually mean the Purchaser can recover costs for purchasing replacement energy in addition to any other costs incurred. Liability for damages due to a delay or event of default are often capped, and Sellers and Purchasers negotiate over that the appropriate caps should be in different situations. The liability cap for delay damages may be substantially less than the cap for overall damages following an event of default.

## IV.7 ADDITIONAL NEW TOPICS TO BE CONSIDERED

It might be important to add some topics that were not deeply included in the model agreement for the sake of simplicity such as:

### IV.7.1 Credit Issues and Performance Security:

- Credit concerns of one party regarding its counterparty apply to all project agreements, not just the REPA.
- Credit enhancement/performance security may be required if the credit strength of the counterparty is an issue. This could be provided by way of guarantees, letters of credit or cash collateral.

- These are frequently required by Purchasers from Sellers under a REPA. Even though one would assume that, as a payee, most of the credit exposure lies with Seller, not Purchaser, Purchaser is concerned that non-performance by Seller will leave it in the position of scrambling to find replacement power and renewable energy credits in the marketplace at a cost that will be at a premium to the REPA price and that Seller may be unable to pay the consequent damages owed under the REPA.
- A Seller (and its lenders) will be concerned with any contractual right of assignment of the REPA by Purchaser to a party that may not have the same "credit strength" as Purchaser. Making sure that such a right of assignment is conditional on demonstrated credit strength of the assignee commensurate to the original Purchaser is critical from a lender perspective. A properly drafted Seller (and lender) consent is essential to address this risk.

#### **IV.7.2 Ancillary Revenue:**

- Ownership of ancillary products and revenues related to the generation of RE power, such as green credits, renewable energy credits, capacity payments and direct support payments, can often be allocated in the REPA between the parties. It does not automatically follow that these belong to Seller, particularly where Purchaser is a utility that requires, for example, renewable energy credits to comply with a renewable portfolio standard. Such allocation will be reflected in the cash flow projections for the project and will not concern lenders if the requisite debt coverage ratios are otherwise provided for.
- Where Seller is obligated under the REPA to procure such ancillary revenues for the benefit of Purchaser, Seller should seek to have the costs it incurs (at least direct costs) reimbursed by Purchaser.

#### **IV.7.3 Lender Consent Rights:**

- Project lenders are potential owners of the Facility, contingent on an uncured default by Seller under its loan agreement with them. The REPA is, as has already been pointed out, a key component of the project. Lenders will be concerned to ensure that their step-in rights to take over the project assets, including REPA, are explicitly recognized by Purchaser via an agreement between lenders and Purchaser (often referred to as a "lender consent agreement").
- While a REPA will often have text addressing this issue in some respect, such text is usually inadequate from a lender perspective and will not, in any event, provide the direct contractual connection with Purchaser ("privity of contract") required by lenders.

## **V. Reference Used for the Model Agreement and the User's Guide**

- 1- New Jersey Department of Community Affairs: Contracting for Renewable Energy Services: Update on Power Purchase Agreements, LFN 2009-10, June 2009, <http://www.nj.gov/dca/lgs/lfns/09lfns/2009-11.doc>
- 2- Power Purchase Agreements Presentation, 2009 Federal Environmental Symposium – West, 2-4 June 2009, by Chandra Shah, NREL [chandra\\_shah@nrel.gov](mailto:chandra_shah@nrel.gov) and Amy Solana, PNNL [amy.solana@pnl.gov](mailto:amy.solana@pnl.gov)
- 3- Wind Power Purchase Agreements: Five Key Issues, Simon C. Root, <http://www.fredlaw.com/events/archive/Morning-Simon.pdf>
- 4- Power Purchase Agreement between DELMARVA POWER & LIGHT Company and BLUEWATER WIND DELAWARE LLC, <http://www.ceoe.udel.edu/windpower/DE-Qs/Delmarva-Bluewater-PPA-10-December-07.pdf>
- 5- Exhibit C: Example of a Power Purchase Agreement for wind energy projects Executed by the USA DOE, [http://www.bpa.gov/power/pgc/wind/EX\\_C\\_PPA\\_2.pdf](http://www.bpa.gov/power/pgc/wind/EX_C_PPA_2.pdf)
- 6- Renewable Standard Offer Contract: Power Purchase Agreement General Terms and Conditions, <http://www.tva.com/renewablestandardoffer/contract.pdf>
- 7- A Webinar on “Solar Projects and the Role of the Power Purchase Agreement”, Thursday, May 27, 2009, [http://www.dlapiper.com/files/upload/Negotiating\\_Solar\\_Power\\_Purchase\\_Agreements.pdf](http://www.dlapiper.com/files/upload/Negotiating_Solar_Power_Purchase_Agreements.pdf)
- 8- Analysis of Risks to a Project Developer in a Term Sheet Or a Power Purchase Agreement (PPA) By John Whonderr-Arthur, Article Source: <http://EzineArticles.com/2489901>
- 9- Renewable standard offer contract (Power Purchase Agreement) <http://www.tva.com/renewablestandardoffer/contract.pdf>
- 10- Renewable energy provisions in power purchase agreements: A Primer, [http://www.spiegelmcld.com/files/20081107\\_Renewable\\_2011\\_11\\_07\\_09\\_23\\_19.pdf](http://www.spiegelmcld.com/files/20081107_Renewable_2011_11_07_09_23_19.pdf)
- 11- Encouraging investment in infrastructure services: political and regulatory risks" by S.K Sarkar & Vivek Sharma, online Article source: [http://EzineArticles.com/?expert=John\\_Whonderr-Arthur,\\_Ph.D.\\_Esq](http://EzineArticles.com/?expert=John_Whonderr-Arthur,_Ph.D._Esq)
- 12- Appendix A: Basics of a Power Purchase Agreement-Windustry October 2007, Authors: Daniel A. Yarano & Christy Brusven Fredrikson & Byron, P.A. <http://www.swifoundation.org/documents/SamplePowerPurchaseAgreement.pdf>

مبنى المحطات المائية (الدور ٧)  
بلك ١١ - قطعة ١٥، عمارات ملسا  
أرض الجولف، مدينة نصر، القاهرة، مصر  
الهاتف: +٢٠ ٢ ٢٤١٥ ٤٧٥٥  
الفاكس: +٢٠ ٢ ٢٤١٥ ٤٦٦١

Hydro Power Building (7<sup>th</sup> Floor)  
Block 11 - Piece 15, Melsa District  
Ard El Golf, Nasr City, Cairo, Egypt  
Telephone: +20 2 2415 4755  
Fax: +20 2 2415 4661