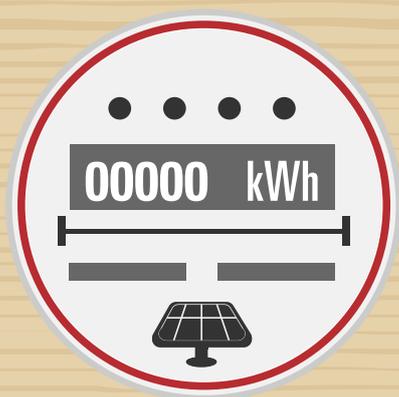


Egyptian Solar PV Feed-in-Tariff Procedures for Small Scale Projects

«A guideline for investors»



RCREEE

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



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E : info@giz.de
I : www.giz.de



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Steffen Erdle, Head of Project – E: steffen.erdle@giz.de

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Author:

Regional Center for Renewable Energy and Energy Efficiency
Hydro Power Building (7th Floor)
Block 11 – Piece 15, Melsa District
Ard El Golf, Nasr City, Cairo, Egypt

T: +202 2415 4755
F: +202 2415 4661
E: info@rcreee.org
I: www.rcreee.org



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



Egyptian Solar PV Feed-in-Tariff Procedures for Small Scale Projects

How to start your photovoltaic project in Egypt under the first and second rounds of Feed-in-Tariff scheme

A guideline for investors



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

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The Regional Center for Renewable Energy and Energy Efficiency (RCREEE) is an independent intergovernmental regional organization which mission is to facilitate, increase and mainstream the adoption of renewable energy and energy efficiency practices in the Arab region. RCREEE teams up 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.

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For further information or to provide feedback, please contact Inass Abou-Khodier (inass.aboukhodier@rcreee.org).

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Executive Summary

This guide is intended to provide the most up to date information for investors on the currently proposed solar PV feed-in tariff process for projects with capacity less than 500 kWp in nominal capacity.

Several RCREEE member countries such as Tunisia and Jordan have enacted policies and administrative procedures for private sector participation in the development and operation of utility scale and small scale solar PV projects.

While recognizing that national PV programs in RCREEE member states are in their early phases and due to the infancy of the process, several issues risk the creation of a reputation of long process times and an unpredictable implementation context for project developers. There is a need on both sides of the equation, authorities and developers, for a comprehensive overview of the required step across the project life cycle. Detailed visual mapping tools can facilitate access to this comprehensive overview and narrow the gap on the interpretation of requirements among various stakeholders engaged in the process.

As such, RCREEE in co-operation with the RE-Activate project (GIZ) have developed two elements:

1. A detailed rich info-graphic outlining the project process from qualification through to the end of small scale solar PV project’s life-time (less than 500 kWp)
2. A guidance document detailing the currently proposed process steps for prospective investors.

The Egyptian scheme directs that the Electricity Distribution Companies (EDCs) are required to accommodate all renewable energy supply and purchase all electricity that has been produced from renewable energy power plants at the price set by the Cabinet of Ministers¹.

The prices for the **first round** of feed-in tariff were valid for two years starting October 2014 and were set as follows²:

Residential	84.4 PT/kWh
Installed Capacity ≤ 200 kW	90.1 PT/kWh
200 kW ≤ Installed Capacity < 500 kW	97.3 PT/kWh

In September 2016, the MoERE announced the updated prices to be valid for the **second round** of feed-in tariff over the next 2 following years, starting officially in 28th October 2016. These updated prices are as follows³:

Residential	102.88 PT/kWh
Non-residential < 500 kW	108.58 PT/kWh

Under this scheme the cost of installing new renewable energy will be transferred to consumers and will not be subsidized by the Egyptian government. The scheme is aimed at supporting 300 MW of installed solar PV capacity less than 500 kWp as part of the targeted 4300 MW of installed renewable energy capacity by 2020. All renewable energy projects established under this scheme will qualify for priority dispatch and the concerned EDC will sign a 25 years take or pay Power Purchase Agreement (PPA) with the relevant solar PV producer (Ministry of Electricity and Renewable Energy, Egyptian Electricity Holding Company, & Egyptian Electricity Transmission Company, 2014).

With regards to the second round, only the pre-qualified developers from the first round will be considered eligible for participating in the second round. Only in case the targeted capacity of 300 MW for small scale solar PV projects are not met, new investors will be pre-qualified to participate in the FIT programme together with interested developers already qualified for the first round.

The process of developing a solar PV project in Egypt can be daunting for an investor, as information is spread throughout a number of different government agencies. RCREEE has been able to work closely with the three key agencies NREA, EDCs and Egypt ERA to attain the most reliable and up to date information for this guide.

¹(Ministry of Electricity and Renewable Energy, Egyptian Electricity Holding Company, & Egyptian Electricity Transmission Company, 2014; Presidential Decree, 2014)

²More details about Egypt ERA regulations and FIT scheme in Egypt are available through <http://www.egyptera.org> (short link for this document: <http://goo.gl/pMUib9>)

³Sharkawy and Sarhan Law Firm “Round Two of Egypt’s Feed-In Tariff...Resurgence?”



The following process steps have been identified in the Egyptian solar PV small scale projects supply chain:

1. Selection of the qualified company (installer)
2. Application to the off-taker (EDCs)
3. Technical proposal and study of grid connection
4. Installation of the solar PV project
5. Quality assurance by off-taker (EDCs)
6. Contract with the off-taker and feed-in to the grid
7. Operations and Maintenance throughout the project's life-time

This guide provides details on each of these steps with all relevant information including the following:

- Key stakeholders:
 - Off-taker (Electricity Distribution Company)
 - Investor (system owner and electricity producer)
 - Qualified solar PV company (Installer)
- A demarcation of responsibilities of and required actions from the key stakeholders within each step
- Some costs, such as fees for quality assurance onsite or electric power meter and measuring devices
- Any documents required in each step, the flow of these documents between stakeholders and related links to download it.
- Any specific laws and regulations governing each step, where available
- The websites of key organizations involved in the process

It must be clear that these steps are subject to change as the process is updated by the government authorities and new directives and laws are put into place.



Abbreviations

EDC	Electricity Distribution Company
EGP	Egyptian Pounds
Egypt ERA	Egyptian Electric Utility and Consumer Protection Regulatory Agency
FiT	Feed-in Tariff
kW	Kilo Watt
kWh	kilo Watt hour
kWp	Kilo Watt Peak
LCoE	Levelised Cost of Electricity
LV	Low Voltage
MoERE	Ministry of Electricity and Renewable Energy
NREA	New and Renewable Energy Authority
PPA	Power Purchase Agreement
PV	Photovoltaic
PT	Piaster



1 Introduction

Various stakeholders have communicated investors' confusion with the current process to establish a solar PV project under the new Egyptian Feed-in Tariff (FiT) scheme. This guide is intended to provide the most up to date information for investors on the currently proposed solar PV feed-in tariff process for projects less than 500 kWp in nominal capacity. Through continuous consultation with key government authorities, this guide is intended to detail the process steps from the selection of the qualified company through to feeding in to the grid and until the end of the project's life-time.

While these steps are up to date at time of writing, they are subject to change and this document is required to be updated on a regular basis as new information comes to hand.

1.1. Egypt and the Feed-in-Tariff Scheme

Egypt is characterized by relatively low electricity tariff levels, due to its high subsidies, low energy imports, significant natural gas reserves and its renewable energy strategy that has focused in the past period on large scale wind projects. The solar energy sector has however received remarkable attention recently. The ratification of the new Renewable Energy Law (203/2014) and the introduction of the FiT scheme for large scale and small scale solar PV projects have attracted both, the local and international investors' attention to the country.

Feed-in tariffs, or FITs, are a type of market-based instrument aimed to increase investment security for technologies that have not reached grid parity. Worldwide, FITs are commonly used and many studies argue that this policy option is the most effective to stimulate the deployment of grid-connected renewable energy technologies. (Michel et al., 2011; del Río, 2012).

FITs allow for the electricity producers (system owners) to sell their generated electricity to the utility under a Power Purchase Agreement (PPA). A regulatory body sets the price to which electricity can be sold and thereafter lets the market determine the level of deployment. The price paid per kWh is usually technology-specific and an appropriate price level should be determined as closely as possible to the specific generation cost (Levelised Cost of Electricity - LCOE) of a certain technology (Couture & Gagnon, 2010).

The prices for the **first round** of FiT was set as 84.4 PT/kWh for residential purpose, 90.1 PT/kWh for installed capacity less than 200 kW and 97.3 PT/kWh for installed capacity more than 200 kW and less than 500 kW. This tariff was valid for two years (Ministry of Electricity and Renewable Energy et al., 2014).

With regards to the second round, these prices have been set as 102.88 PT/kWh for residential purpose and 108.58 PT/kWh for installed capacity less than 500 kW (non-residential purposes). The updated tariff for the **second round** will be valid for the next two years, as applied in the case of the first round.

Under this scheme, the cost of installing new renewable energy will be transferred to consumers and will not be subsidized by the Egyptian government. However, high quality components as well as good design will assure no bad impact on the low or medium voltage grids. In a later step in the process, the concerned Electricity Distribution Company (EDC) will make a grid impact study at the proposed connection point for each planned project.



1.2. Electricity and Renewable Energy Sector of Egypt

The Electricity Distribution Companies (EDCs), together with the Electricity Generation Companies (EGCs) and Egyptian Electricity Transmission Company (EETC) are all affiliated to the Egyptian Electricity Holding Company (EEHC), which is operating under the umbrella of the Ministry of Electricity and Renewable Energy (MoERE).

The overall structure of the MoERE with all relevant authorities is highlighted in the Figure 1

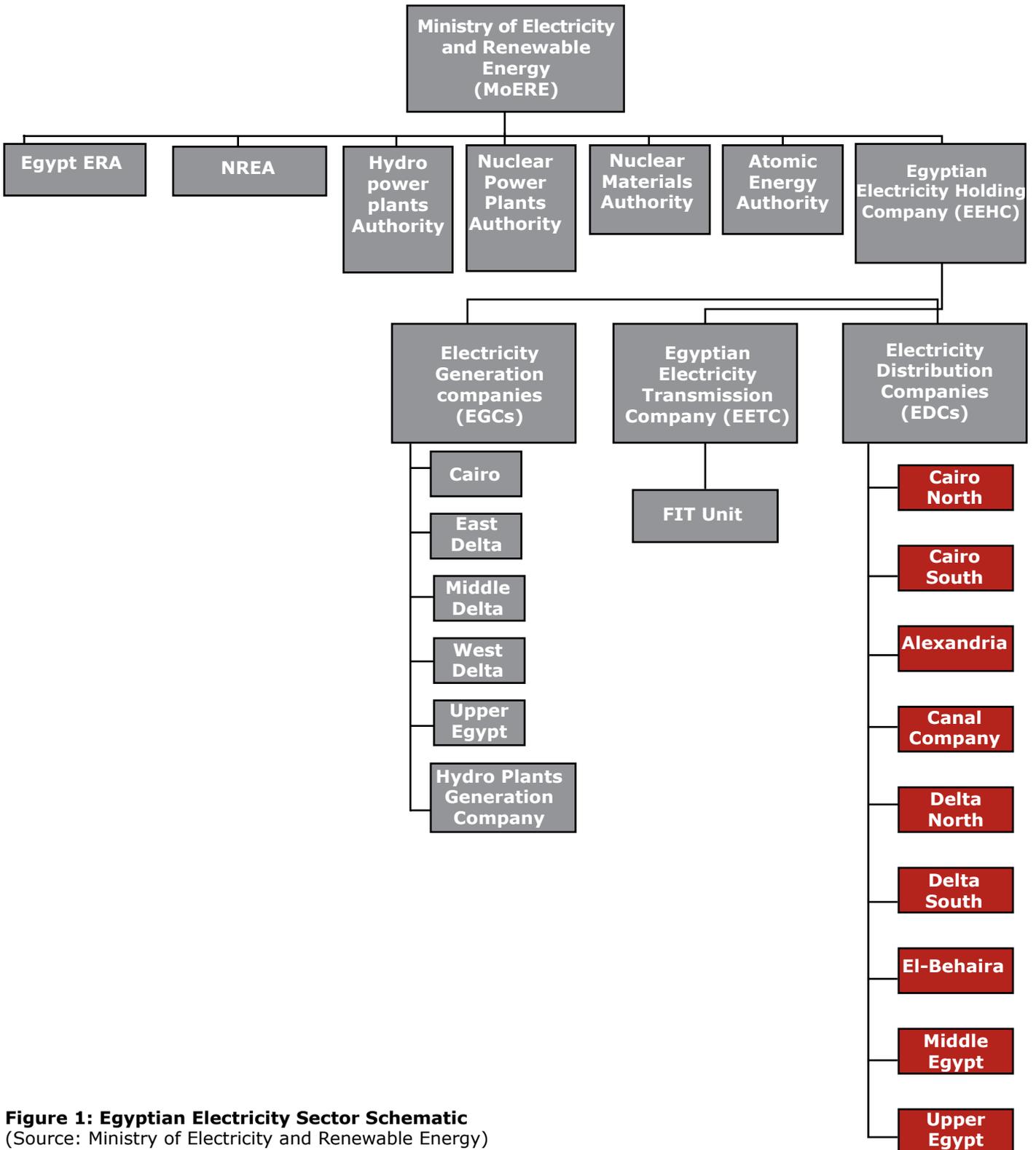


Figure 1: Egyptian Electricity Sector Schematic
(Source: Ministry of Electricity and Renewable Energy)

 The off-taker is one of these Electricity Distribution Companies (EDCs)



2 Solar PV Projects less than 500 kWp

The announced FiT scheme covers the solar PV projects with installed capacity less than 500 kWp. The process of establishing these projects starts with identifying the solar PV companies, which are qualified for supply, installation and maintenance.

The qualification process for solar PV companies is done by NREA through its pre-set regulations⁴, which aim to protect the solar PV market from low quality products and the utility from the negative impact on the low and medium voltage grids. The qualified companies receive "Qualifying Certificate" valid for 3 years and must submit a semi-annual report on their operations. NREA has the right to renew the qualifying certificate after approval of updated information for the respective company or to cancel this certificate in case of any violation.

A short-list of qualified companies⁵ working in the small scale solar PV field in Egypt is available on NREA's website and is continuously updated by NREA, in order to assess new companies and to eliminate violations from existing companies.

2.1. Selection of the Qualified Company

The electricity producer can find a short-list of qualified companies available on NREA's website and also at the Renewable Energy and Energy Efficiency Department in the respective Electricity Distribution Companies (EDC, the off-taker)⁶.

The selection of the qualified company (installer) depends on the negotiations about technical specifications for the proposed solar PV project as well as the cost. After accepting one of these qualified companies, the electricity producer should sign a contract package with the chosen qualified company (including supply, installation and maintenance).

2.2. Applying to the Off-Taker

The off-taker is the EDC that serves the geographical area where the solar PV project is located. In the head-quarter of the respective EDC, there is a department in charge of the Renewable Energy (RE) and Energy Efficiency (EE) that represents "**one-stop-shop**" for electricity producers.

However, the application process could be done only by the partner qualified company (installer).

The application form⁷ contains the following information:

1. Electricity producer's (investor's) data.
2. Project's technical data.
3. Qualified company's (installer's) data.

In addition, the following necessary documents must be attached:

1. A valid qualifying certificate of the installer (qualified company), issued by the New and Renewable Energy Authority (NREA)
2. A signed copy of the contracts concluded between the installer (qualified company) and the electricity producer (investor).
3. Copy of investor's national ID (for individuals) or commercial registration and tax card (for companies).
4. Copy of commercial registration and tax card of installer (qualified company).
5. Copy of an electricity bill issued under the name of the electricity producer (investor), proving the availability of distribution network at the proposed location of the solar PV project.

⁴Detailed regulations and qualification requirements for solar PV companies are available through <http://www.nrea.gov.eg/> (short link for this document: <http://goo.gl/9Jw1UH>)

⁵The updated list of "Qualified Companies" is available through this short link: <http://goo.gl/nnOMt5>

⁶A list of all "Renewable Energy and Energy Efficiency Department" in the Electricity Distribution Companies is available through (<http://egyptera.org/downloads/>) a short link of this link available here: <http://goo.gl/klfDCk>

⁷The "FiT Application Form for PV systems with installed capacities less than 500 kWp" is available through this short link: <http://goo.gl/yYDgcf>



6. The technical proposal, including:
 - a. Single line diagram of the project certified by a syndicate's registered engineer (including the ground connection lay-out)⁸.
 - b. Technical specification of the project and a copy of the manuals and component certificates⁹ (for inverter and other components).
 - c. Electrical diagram for the project and the proposed connection point (including the ground connection lay-out).
7. A declaration indicating that the electricity producer shall bear the civil liabilities due to any violation of the building law (law 119/ 2008) companies.

2.3. Technical Proposal and Study of Grid Connection

During two weeks from receiving the application, the concerned EDC should analyse the technical proposal and get answers for all inquiries necessary for decision making, before accepting the proposal.

After accepting the technical proposal, a technical team from the EDC should visit the project's site during two weeks to study the Low Voltage (LV) grid in the project's area and to check the proposed connection point to the grid. This study visit is free of charge.

Note that:

Small scale projects mean by default that it will be connected to the LV grid. All connections to the grid are according to the Grid Code issued by EgyptERA.

2.4. Installation of the Solar PV Project

After having the grid analysis done, the EDC will give the electricity producer an approval to start the installation. In all cases, the installation process should not exceed six months for completion.

The installer should have the design and connections approved from the EDC (off-taker) especially for the grounding connection¹⁰ of the project.

2.5. Quality Assurance by Off-taker

Upon completion of installation, the electricity producer must notify the respective EDC in order to make the second site visit to check and verify the matching of the installed project with the previously accepted technical specifications.

For the purpose of quality assurance, a technical team from the EDC will carry out the technical measurement and grid impact study for the project's output. The measurements' study visit will be held against a fee of EGP 750. The EDC's acceptance is documented in the form of "Minutes of Matching".

⁸The ground connection (through inserting a copper bar under the ground near the project) should also be approved by EDC (see number 2.4 below)

⁹These component certificates include: PV modules certificate according to IEC 61215 standard and IEC 61730 standard, in addition to PV inverters certificate according to IEC 61727 standard (as advised by NREA)

¹⁰The grounding connection is part of the single line diagram and the electrical diagram of the project, which are



2.6. Contract with the Off-taker and Feed-In the Grid

After having verified the quality of the project's output and its impact on the grid through the quality assurance check, the electricity producer is now in a position to sign the contract¹¹ with the respective EDC. This contract is valid for a maximum and non-renewable period of 25 years. The tariff segment is determined based upon the capacity of the project and the price will be valid throughout the term of contract duration.

Simultaneously, an electric energy meter and protection devices should be installed at the project's connection point. The expected fee for this process is EGP 1,000 – EGP 3,000, depending on the project's capacity, which will affect the voltage level for the connection with the grid. The EDC will calibrate and validate the meters on a yearly basis.

Upon installing the electricity meter, protection and measuring devices¹², the electricity generated from the solar PV project can be fed-in to the grid, after concluding a note proving electricity supply commencement between the EDC and electricity producer. The electricity producer may report the monthly readings and the EDC has also the right to validate these readings as well.

2.7. Operations and Maintenance throughout the Project's Life-time

Throughout the project's life-time, the electricity producer shall submit to the EDC a monthly payment request for the supplied electricity using a standard form, stating the amounts of the electricity produced in kWh and EGP within the first week of each month.

The respective EDC is committed to settle the claimed amounts with 20 days from receiving this payment request through direct cash deposit or transfer to the electricity producer's bank account, as agreed and stated in the contract. If the settlement process exceeded 40 days, extra charges will be due in favour of the electricity producer as per the contract terms.

2.8. Access to Digital Documents

An interactive version of this document and the related visualization tool are available online through this short link:

In addition, smart-phones can be used to scan this QR code to access these documents:

<http://GOO.GL/WXTEOZ>



¹¹A template contract is available through Egypt Era website, <http://www.egyptera.org>. A direct short link to the contract is available through: <http://goo.gl/pX1UvE>

¹²measuring times during which electricity injection into the grid is temporary on hold or reduced



3 Relevant Laws and Documents

	Document	Description	Location of document
Legal	Electricity Law (87/2015)	Regulating all activities and work-related to the electricity utility in Egypt	http://egyptera.org/Downloads/Laws/law2015.pdf
	Renewable Energy Law (Presidential Decree, Law 203/2015)	Stimulation of electricity production from renewable energy sources	http://egyptera.org/Downloads/Laws/law2014.pdf
	Contact List	List of Renewable Energy and Energy Efficiency Departments in each Electricity Distribution Company	http://egyptera.org/Downloads/taka%20gdida/Download%20the%20Contact%20List%20of%20Renewable%20Energy%20and%20Energy%20Efficiency%20Dept.%20in%20each%20Distribution%20Company.pdf
	Renewable Energy Feed-in Tariff Regulations	An outline of the regulations and processes of establishing a renewable energy project under the feed-in tariff scheme	http://egyptera.org/en/kwa3d%20tanzmia.aspx
	Distribution Code	Code that regulates the distribution and supply of electricity to consumers	http://egyptera.org/en/code%20w%20dalil.aspx
Licensing and qualifications	Qualification Requirements for PV Installers to be Registered by NREA	Details the processes and requirements that companies must provide to NREA in order to qualify for establishing small scale PV roof-top systems in Egypt	http://egyptera.org/Downloads/taka%20gdida/2%20الشركات%20تأهيل%20اشتراطات.pdf
Contract	Standard Contract Form	Sample of the contract to be concluded between electricity producer (investor) and the off-taker (EDC)	http://egyptera.org/Downloads/taka%20gdida/%20لتحميل%20نموذج%20عقد%20ربط%20محطة%20طاقة%20شمسية%20بشبكة%20توزيع%20كهرباء%20-20%20أقل%20من%20500%20ك.و.ع%20نظام%20تعريف%20التغذية



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مبنى المحطات المائية (الدور 7)
بلوك 11 - قطعة 15، عمارات ملسا
أرض الجولف، مدينة نصر، القاهرة، مصر
الهاتف: +٢٠ ٢ ٢٤١٥ ٤٧٥٥
الفاكس: +٢٠ ٢ ٢٤١٥ ٤٦٦١

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

www.rcreee.org