

A Report on Delhi Net Metering Policy

(A Whitepaper Analyzing Scope, Impact and Benefits of Net Metering Policy)



**RECONNECT
ENERGY**

The Energy Solution Company

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Overview

Delhi Electricity Regulatory Commission (DERC) on 2nd September has announced its Net Metering Policy for the electricity consumers of Delhi. The policy allows various electricity consumers (buyers) to generate power by installing Solar Rooftop Systems. The policy is aimed to encourage the Renewable Energy Generation in the state and to create a sustainable environment by allowing consumer to take active participation in the distributed generation of Renewable Energy.

To participate in the scheme the consumer of the premises or the Renewable Energy Generator, should submit the application to the concerned distribution licensee to connect the renewable energy system to the distribution system of the distribution licensee.

Delhi is a state which is lacking in the renewable energy generation as the total installed renewable capacity on 31st March is only 5.15 MW. The policy targets to increase the Renewable Energy Generation in the state by allowing consumers to install solar rooftop systems.

The Scheme

Any consumer in the state can install a solar rooftop system which can be owned by the rooftop owner or it can be a third party owned system. The consumers who is installing the rooftop system can utilise the generated energy for their own use and may inject the surplus energy into the distribution system. The injected surplus energy into the grid can be carried forward as energy credits and which they can subsequently draw back within the financial year. Thus the consumers can reduce their electricity bill and can also generate revenue based on the energy accounting.

The distribution licensee will raise bill for a billing period, stating the actual energy injected, energy withdrawn and net energy billed or carried forward. The energy accounting & settlement will based on the conditions mentioned below:

1. For a billing period, if the energy injected is more than the energy withdrawn from the distribution system then such surplus energy will be carried forward to the next billing cycle as energy credit.
2. During a billing cycle the distribution licensee will raise invoice based on the net energy as per applicable tariff after adjusting all the energy credits of the previous month.
3. At the end of each financial year the distribution licensee will pay for any net energy credits to the consumer which remains unadjusted.

The consumer who is installing the rooftop system under this policy will also be eligible for subsidies and incentives as provided by the MNRE and the state Government. Presently subsidy of 30% of the capital cost is being provided by MNRE and there will be no power purchase adjustment charges (PPAC) applicable.



Apart from this a consumer can also claim Renewable Energy Certificates (REC's) under this scheme, the eligibility criteria will be as per terms and conditions of CERC REC Regulation 2010.

A consumer generating renewable energy under this scheme will qualify for claiming RPO, if he is an obligated entity. In case the consumer is not an obligated entity the surplus energy injected into the distribution system will be accounted towards the RPO of the distribution licensee.

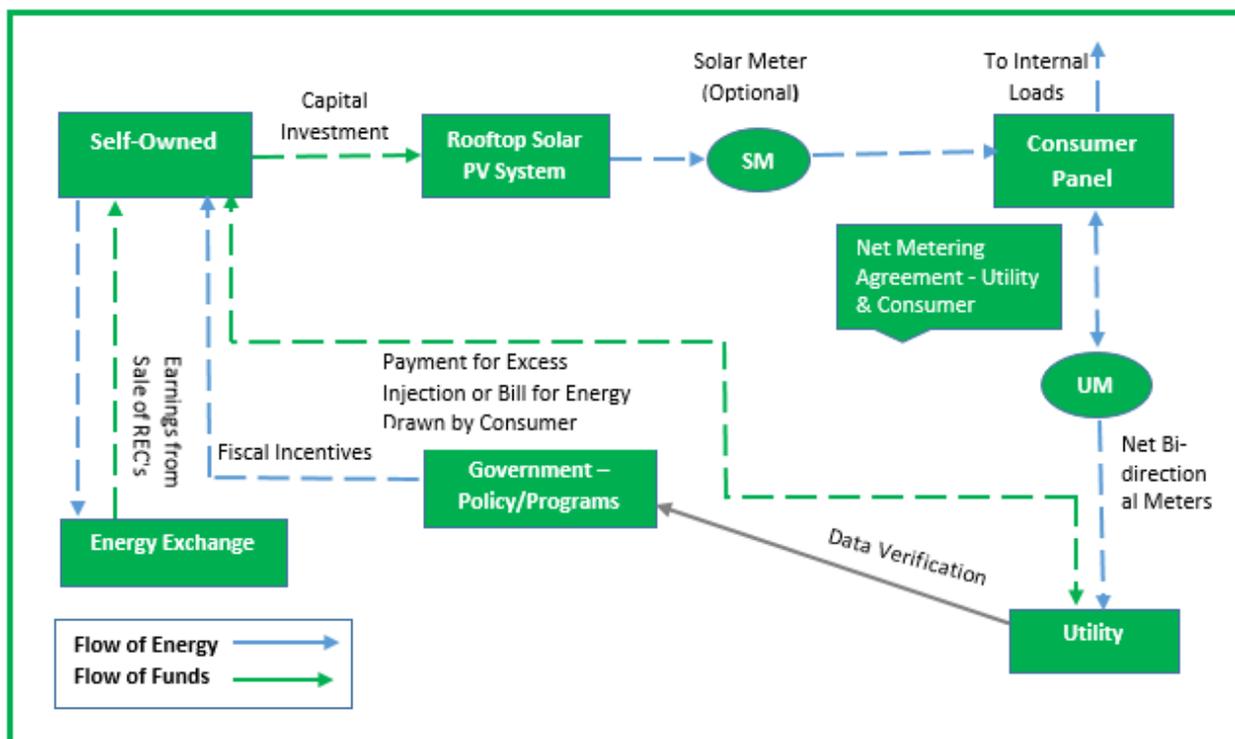
The Rooftop System Ownership Arrangements

The types of ownership structure for net metering based Rooftop Solar Systems becomes an important constraint. There are two ownership arrangements defined under the policy which are explained below:

Self-Owned Rooftop Solar Systems

If an electricity consumer of the distribution company, installs the rooftop system on his own rooftop either himself or with the help of a system installer then such systems will be called as the self-owned systems. The energy generated by such systems will be utilized first by the consumer for his own use and the remaining excess energy will be fed to the distribution system. The settlement of such systems will be made on the basis of the meter reading.

Figure 1: Model Self-owned Net Metering System

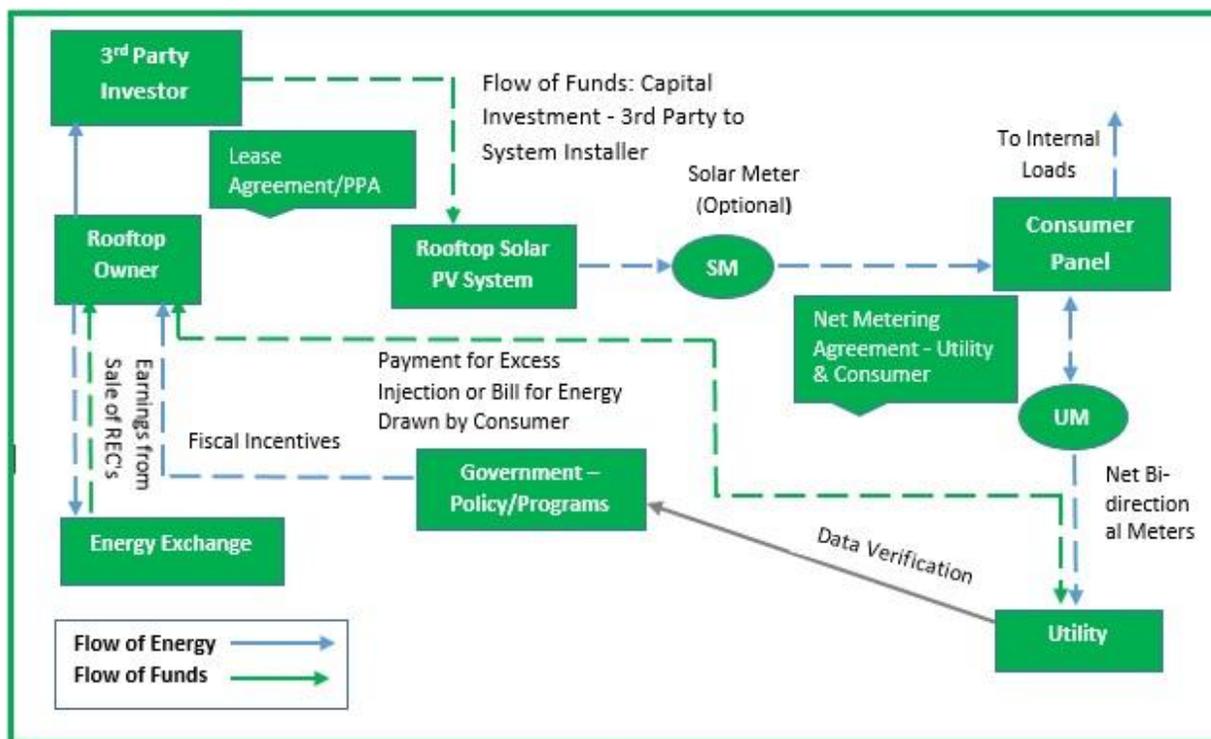


Third Party Owned Rooftop Solar Systems

In the third party owned rooftop system, a consumer of the distribution licensee leases out the rooftop system from a project developer and installs Solar Rooftops System on his own rooftop. Simply the installer provides the rooftop systems on lease to the individual households who in turn pay him the monthly rental for the rooftop systems, are called as the third party owned rooftop systems. The electricity generated from such system is used to meet the rooftop owner’s internal electricity needs, and the surplus energy is fed to the distribution system.

In this arrangement the rooftop owner has the benefit avoiding large investment on solar equipment’s. The rooftop owner is also having the benefit of saving on power bills (power consumed) from grid, and a part of the saving from power consumption is shared with the developer by the way of lease rental. While the developer being the owner of the equipment enjoy the benefits of revenue generated through lease rental from the rooftop owner. The developer is also eligible for claiming depreciation on the capital cost of the PV systems, with associated direct tax benefits.

Figure 1: Model Third Party Owned Net Metering System



Summary of the Policy

DERC has announced its Net Metering Regulation earlier this month, the main features of the policy are summarized in the table below:

Particulars	Details
Applicability	Applicable to all the consumers buying Electricity from Distribution Licensee.
Date of Operation	The Policy will come in force from the date of publication in the official Gazette.
Eligibility	The system to be installed should be of minimum 1KWp capacity.
Third Party Ownership	Allowed Under this scheme.
Excess Generation Limit	Allowed – no limit defined
Process for Applying	To avail the benefits, a person or organization should apply to the distribution licensee of the area for grid connection then the Distribution Licensee after analyzing the criteria as defined in the Net Metering regulation of DERC, will allow connection.
Metering Arrangements	The Distribution licensee shall install correct meters for the consumer, the cost for the Renewable Energy Meters will be borne by Distribution Licensee while the cost for Net Meters will be borne by consumer.
Energy Accounting	The Energy accounting will be done on the basis of Meter readings that is according to the energy injected and drawn from the distribution system.
Settlement Period	Financial year
Eligibility for REC	The eligibility for participating in REC scheme is as per CERC REC Regulation 2010, however the commission has not mentioned clear guidelines about eligibility of Net Metering Injection.
Renewable Purchase Obligation(RPO)	In case the generator is not an obligated entity then such quantum of electricity generated will qualify towards the RPO of distribution licensee.
Wheeling, Banking and other Charges	The RE Generation under this regulation is been exempted from deemed generation charges, wheeling, banking, cross subsidy and other charges for a period of 5 years
Incentives	<ol style="list-style-type: none"> 1. Subsidy @ 30% of the capital cost presently being provided by MNRE. 2. Generation Based Incentives as per MNRE scheme. 3. Not PPAC charge for the RE Generation under this scheme



Delhi Power system – Everything in Numbers

Solar Irradiation per year:
1825 – 1900 kW/m²

Ambient Temperature:
25.1°

Total Energy Deficit:
76 MU

Capacity Utilization factor:
18.40

Total Peak Power Deficit:
382 MW (6.3%)

Residential Tariff:
8.1 Rs. /kWh

Commercial Tariff:
8.4 Rs. /kWh

Industrial Tariff:
7.4 Rs. /kWh

Total Installed Capacity by
31-03-14: 5.1538 MW

Solar Potential in Delhi:
2000 MW

RPO Targets in Delhi for FY 14-15:
Solar: 0.25%
Non-Solar: 5.95%

Power required to meet RPO Targets for FY 14-15: 1562.38 MU

Total Cost Approved for meeting RPO Targets of FY 14-15:
Rs. 289.28 Crores



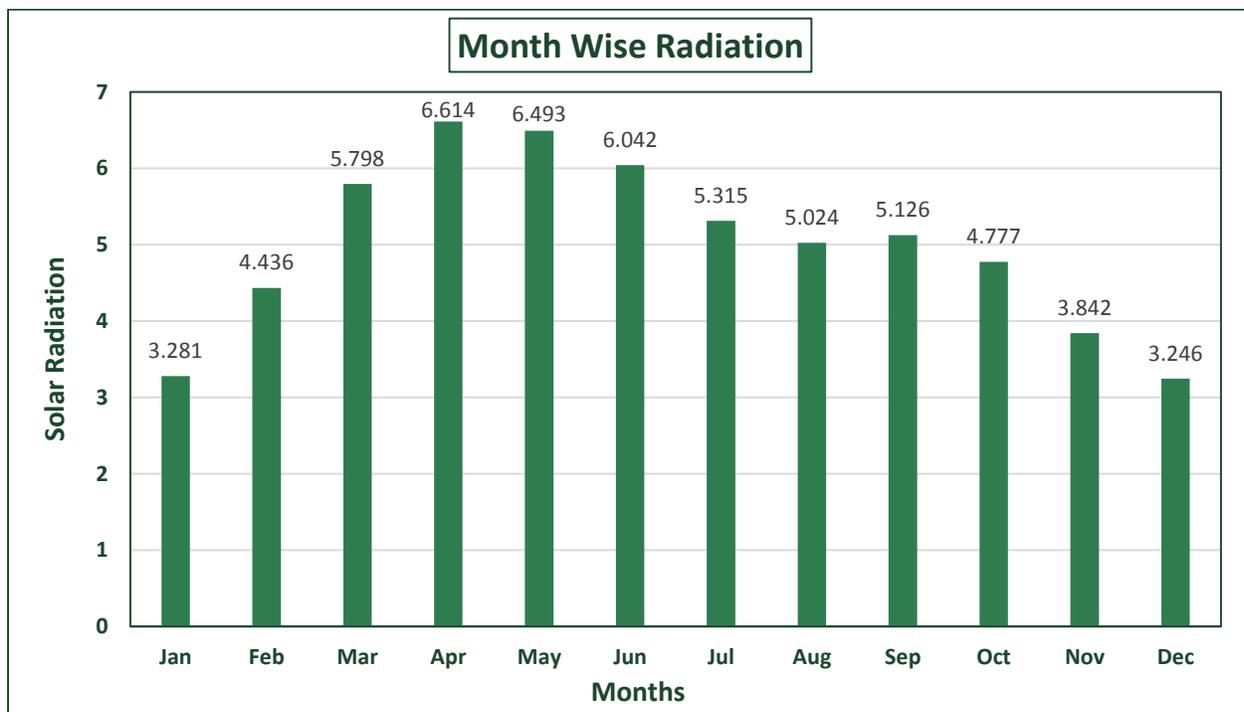
Scope for the Policy

The Net Metering Policy is having a good scope for an energy deficit state. The state is having a total energy deficit of 76000 MWh and a total peak power deficit of 382 MW. The policy will help in filling the gap of the energy deficit in the state.

Delhi is having a total solar potential of 2000 MW which is very high, which implies that there is need of harnessing solar energy in the state. The solar potential is not as high as states like Tamil Nadu, Gujarat or Rajasthan but still it is enough to bridge the gap between supply and demand in the state.

On an average Delhi receives solar irradiation of around 5.00-5.15 kWh/m² with an ambient temperature around 25.1°C. The highest Irradiation in the country is in Rajasthan, Tamil Nadu, Maharashtra and Gujarat which is typically in the range of 5.3 to 5.7 kWh/m². The solar irradiation of Delhi is good with on average 300 sunny days in a year. So it can inferred that the state is having good environment for solar generation, and in turn there is enough scope for the rooftop model and solar generation.

The Net Metering Policy in the state is having great potential, and can push the lacking renewable sector in the state. A graph on month-wise solar Irradiation in the state is shown below



Source: NREL



Impact Analysis

Delhi Net Metering Policy is going to have its influence on all the electricity utilities of Delhi, as this policy will attract industrial, commercial and residential electricity consumers of the state. As the tariff is not yet defined for the energy generated under this scheme, the policy is still unable to give a clear view to project developers and to decide about the feasibility of the project. A brief analysis of the policy on various factors is discussed here in the below mentioned points.

Consumers

The policy can be a good package for the electricity consumers of the state, where the tariff applicable for the industrial consumers is Rs. 7.40 per unit and the tariff for the commercial & residential consumers is Rs. 8.4 per unit and Rs. 8.1 per unit respectively.

Delhi has been facing frequent outage and load shedding problem for extended hours which can go up to length of 10 hours. So the consumers installing rooftop systems under net metering regulation will be free from unease of power cuts and shutdowns as the power source will be at their end and this adds huge advantage in the scheme.

The policy is having a good framework for the consumers as there are significant benefits of the policy for them. The financial benefits provided by the MNRE will be as per rules of JNNSM scheme. The policy offers extra benefits as there will no charges payable for wheeling banking, cross subsidy charges and other charges for next 5 years, and also the consumers will have the benefit of availing REC's under this scheme.

The policy can attract large electricity consumers like industrial and commercial consumers who are having large demands. The commercial consumers such as Hotels, Malls, and Hospitals etc. can install the rooftops system and can avail the benefits given by policy. As these entities completely depend upon the distribution companies, they would be having good opportunity of generating power for their own use.

RPO Compliance

This policy can be very helpful for the distribution companies of Delhi, which are continuously facing difficulties in complying with RPO. The main benefit will be towards RPO compliance, as the policy suggest that if a consumer is not an obligated entity and is generating renewable energy under net metering regulation then such quantum of energy of the consumer will be accounted towards RPO of the distribution licensee.

The distribution companies of Delhi are continuously unable to meet the RPO targets set under DERC RPO regulation 2012. The RPO Targets for Financial year 13-14 was total 4.80% of total consumption from renewable sources out of which 0.20% was Solar RPO and 4.60% was total non-solar RPO. While all the four distribution companies of the state has been unable to meet RPO targets for FY 12-13 and FY 13-14. The



distribution licensees has given reasons that as there was not sufficient renewable energy available in the state so the RPO targets cannot be met and requested for waiver.

The DERC has approved a total of Rs. 289.28 crores for purchase of 1562.38 MU from renewable energy in order to meet the RPO targets for distribution companies, which includes cost of renewable power purchase and the purchase of Solar and Non-Solar REC's. This has been approved in the ARR filed by the utilities for the tariff determination of FY 14-15.



Conclusion

The Policy announced by DERC is a good initiative by DERC in order to encourage the Renewable Energy Generation in the state. Which is only having a total of 5.15 MW of solar sower by 31st March 2014. The state is having enough potential for the solar generation but due the lack of initiatives by the state government, it's lagging behind in the Renewable Energy Generation.

The Gujarat rooftop model has got a very good start where the government has put up a very comprehensive policy and set a goal of achieving 5 MW of rooftop installation in first phase. The Gujarat government has announced a tariff of Rs. 15 per Unit to promote the policy & the scheme. So the DERC also should also set certain goals and should declare the tariff for the scheme as there is no tariff defined for the solar generation in the state. As the Delhi is having a problem of land for the installation of normal solar PV cells, this policy can be a successful start for the state.

The rooftop model is very successful in the countries like USA and Germany (California itself is having more than 1 GW of Solar Rooftop Installations). The Indian renewable sector is also looking proactive under Prime Minister Narendra Modi led government.

The Delhi Net Metering Policy gives upper hand to the consumers as it provides significant benefits of waiver in various charges for coming 5 years. And also has the benefits as it is going to help in the complying RPO, which is a getting hard for the distribution companies of the state.

The data regarding deficit in power, the potential of generation, subsidies provided by the Govt. in the policy and the climatic conditions of the Delhi concludes on a higher note to make the policy a positive step taken towards promotion and generation of Green Energy.



Annexure

REC	Renewable Energy Certificate
RPO	Renewable Power Obligation
CERC	Central Electricity Regulatory Commission
DERC	Delhi Electricity regulatory Commission
NREL	National Renewable Energy Laboratory
GBI	Generation based Incentive
CEA	Central Electrical Authority
CUF	Capacity Utilisation factor
PPAC	Power Purchase Adjustment Charges
MNRE	Ministry of New and Renewable Energy
JNNSM	Jawaharlal Nehru National Solar Mission

References

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DERC Net Metering Regulation in Brief	http://www.derc.gov.in/Public%20Notice/Brief%20on%20Net%20Metering.pdf
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Cover Page Image Source	http://www.marylandsolar.us/how-it-works/



About REConnect

REConnect Energy is India's leading Renewable Energy Trading Company. We provide end-to-end services for projects in the Renewable Energy Certificate mechanism – from contract structuring, advisory to monetization of REC's. We also work with power consumers to manage Renewable Purchase Obligation (RPO) liabilities, and develop and execute their energy sourcing strategy. We are a knowledge focused company that prides itself in providing premium services to our clients backed by in-depth research and analysis. Our other prime area of focus is, facilitating Private PPAs (OTC) by bringing RE Generators and HT Consumers onto a single platform called **Clickpower.in**, which we have developed specifically for this purpose. It is India's First Green Energy Marketplace.

REConnect is run by an experienced and professional team. The team consists of members with relevant experience of working at IEX, L&T, JP Morgan, Arthur Andersen and Gensol. Key members of the team are alumnus of IIT Bombay, Columbia University (an Ivy League university) and IIT Kharagpur.

For more details of services provided and profile of the management team, please visit our website.

Authors:

Dheeraj Babariya

Business Analyst

REConnect Energy Solutions Pvt. Ltd.

No:2, 2nd Floor, Kodihalli,

Old Airport Road, HAL 2nd Stage(PO),

Bangalore-560008

Ph.: 080-65473384/83

Nagendra Prasad H S

Business Analyst

REConnect Energy Solutions Pvt. Ltd.

No:2, 2nd Floor, Kodihalli,

Old Airport Road, HAL 2nd Stage(PO),

Bangalore-560008

Ph.: 080-65473384/83



Contact Details

Bangalore:

Vishal Pandya

Vishal.Pandya@reconnectenergy.com
No. 2, Victor Mansion , 2nd floor,
Kodihalli, Old Airport Road,
HAL 2nd Stage (PO),
Bangalore—560008
O : 080 - 6547 3383 / 84

Mumbai:

Ram Kumar (+919930359992)

Ramkumar@reconnectenergy.com
1013, 10th Floor, Micro (Haware) Infotech Park, Plot
no. 16, Sector-30A, Vashi,
Navi Mumbai- 400705,
Maharashtra, India.

Hyderabad:

Bhanu Tejja (+91 7799874036)

Bhanu.Tejja@reconnectenergy.com

Renewable Purchase Obligation (RPO):

Chetan Singh Adhikari (+91 9910772666)

Chetan.Adhikari@reconnectenergy.com

New Delhi:

Vibhav Nuwal

Vibhav.Nuwal@reconnectenergy.com
C- 503, 5th Floor, Nirvana court-yard, Nirvana
Country, Sector 50, Gurgaon 122018.
O : 0124 - 4103216
F : 080 – 30723571

Chennai:

Vishal Pandya

Vishal.Pandya@reconnectenergy.com
18/1 (88), 2nd Floor, Aarya Gowda Road, West
Mambalam,
Chennai - 600 033.

Solar Market:

Anurag Dhyani

(+91 7760300499)
Anurag.Dhyani@reconnectenergy.com

Renewable Regulatory Fund (RRF):

Vineet Shastry (+91 9972290511)

Vineet.Shastry@reconnectenergy.com

