

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

ENERGY, INFRASTRUCTURE & INVESTMENT DEPARTMENT - Development of Solar Power in Andhra Pradesh - Andhra Pradesh Solar Power Policy-2018 - Orders - Issued.

ENERGY, INFRASTRUCTURE & INVESTMENT (PR.II) DEPARTMENT

G.O.MS.No. 1

Dated: 03-01-2019

Read the following:

1. G.O.Ms.No.39, Energy (Res) Deptt., dated 26.09.2012.
2. G.O.Ms.No.44, Energy (Res) Deptt., dated 16.11.2012.
3. G.O.Ms.No.8, Energy,I&I(Pr.II) Deptt., dated.12.02.2015.
4. The VC&MD, NREDCAP, File No.NREDAP-14023/1/2018.
5. The GA(Cabinet) Dept., U.O.Note.No.538/2018, dated:27.12.2018.

ORDER:

The Government of Andhra Pradesh had earlier issued the “Andhra Pradesh Solar Power Policy, 2015” vide G.O.Ms.No.8 dated 12.02.2015 to promote solar power generation in the State. Considering the good Solar Power potential existing in the State, the capacity addition achieved so far, the falling in solar tariffs in the recent times, etc., there is need to bring out New Solar Power Policy duly taking into consideration the recent developments in the Solar power sector.

2. Government, after detailed discussions on the proposal received in the reference 4th read above, with various stake holders viz., APTRANSCO, APDISCOMS, NREDCAP, Solar Power Developers and Solar Manufacturers Associations, hereby issue the Andhra Pradesh Solar Power Policy-2018 superseding the earlier Policy issued in G.O 3rd read above, as mentioned below:

ANDHRA PRADESH SOLAR POWER POLICY - 2018

PREAMBLE

India is blessed with abundant sunshine and solar power is expected to play a critical role in meeting the energy needs of the country in the long run. Solar power projects can be setup in a much shorter timeframe when compared to conventional power projects and the cost of solar power has become more economical today. Solar power can also help meet energy requirements for both grid connected as well as off-grid applications such as solar powered agricultural pumpsets.

Andhra Pradesh is poised for rapid industrial growth driven by infrastructure investments and has also been selected by Ministry of Power as one of the pilot states for implementation of the 24X7 - Power for All (PFA) scheme. Solar energy can become an important source in meeting the growing power requirements of the State.

AP has large agriculture consumption constituting around 24% of the total energy consumption of the State. Solar power can also help shift the agriculture load and meet the power demand during the day time.

The State government is keen to tap the immense solar potential and promote this clean source of energy to meet the rising energy requirements of the State. The following factors make Andhra Pradesh an ideal location for setting up Solar Power Projects:

- Availability of about 300 sunny days in a year with solar insolation of more than 5 kWh/m²/day.
- Amongst the best performing power distributing companies in India (APEPDCL and APSPDCL).
- An efficient and strong evacuation infrastructure that can facilitate distributed generation.

(P.T.O.)

The Government of Andhra Pradesh had earlier issued the “Andhra Pradesh Solar Power Policy – 2012” vide G.O.Ms.No.39 dated 26.09.2012 and G.O.Ms No.44 dated 16.11.2012 and again issued “Andhra Pradesh Solar Power Policy, 2015” vide G.O.Ms.No.8 dated 12.02.2015 to promote solar power generation in the State. The Andhra Pradesh Solar Power Policy, 2015 which provided many fiscal incentives for large scale promotion of projects helped in aggressive capacity additions and thereby driving the cumulative installed capacity of solar power in the state to 2515.78 MW. This policy was particularly supported with fiscal incentives because the cost of power from solar was way higher than the average power purchase cost of the state during 2014-15. But seeing the current trend of falling solar prices which is way less than Rs.3 per unit at present, it is felt necessary to revisit the clauses and come out with a new comprehensive policy for the promotion of solar power to meet the demand for power in an environmentally sustainable manner.

To meet the twin objectives of energy security and clean energy considerations, this policy aims to promote widespread usage of solar power and to meet the following objectives.

OBJECTIVES:

1. To target a minimum total solar power capacity addition of 5,000 MW in the next five years in the State with a view to meet the growing demand for power in an environmentally sustainable manner.
- 2 To develop solar park(s) with the necessary utility infrastructure facilities to encourage developers to set up solar power projects in the State.
- 3 To promote distributed generation that can help in avoiding upstream network cost and contribute towards loss reduction.
- 4 To deploy solar powered agricultural pumpsets and meet power requirements of farmers during day time.
- 5 To promote local manufacturing facilities which will generate employment in the State.

1. Operative Period

This policy shall come into operation with effect from the date of issuance and shall remain applicable for a period of five (5) years and/ or shall remain in force till such time a new policy is issued.

Solar Power Projects (SPP) that are commissioned during the operative period shall be eligible for the incentives declared under this policy, for a period of ten (10) years from the date of commissioning - unless otherwise the period is specifically mentioned for any incentive.

2. Eligible Developers

All registered companies, Government entities, partnership companies/firms, individuals and all consumers of APDISCOM(s) will be eligible for setting up of Solar Power Projects within the State for sale of electricity/captive use, in accordance with the Electricity Act – 2003, as amended from time to time. The entity desiring to set up Solar Power Project shall intimate the Nodal Agency as per the para (5) of this policy and also submit the DPR of the project with the details of technical and financial capabilities of the developer, based on which the Nodal Agency will allocate the capacity for development.

Before allocating the capacity for development, the Nodal agency shall apprise whether the proposal is technically, financially and commercially feasible. Nodal agency shall also apprise whether proposer has the required technical, commercial, managerial and financial capability to execute the project. Nodal agency shall apprise the existing installed capacity, existing generating capacity, required installed capacity and generating capacity.

3. Solar Power Projects

A. Sale of power to AP Discom(s)

The Government will promote setting up of Solar Power Projects for sale of power to APDiscoms. It is envisaged that the Discoms would procure around 2,000 MW of solar power capacity in a phased manner within the next five (5) years depending on the requirement in the State. The Discoms would enter into long term PPA of 25 years with developers who are selected based on a competitive procurement process as per the tariff based competitive bidding guidelines notified by the Ministry of Power. As per the communication vide DO Lr No. 8/7/2017-EFM, dt 12.01.2018, the MNRE has informed that the competitive bidding guidelines for solar power does not cover projects below 5 MW capacity for intra-state and accordingly the procurement of power from solar power projects having capacity less than 5 MW shall be at Feed in Tariff (FiT) determined by AP Electricity Regulatory Commission to the extent power required within the State.

B. Third party sale / Captive use

The government will encourage solar power producers to set up Solar Power Projects for captive use within the State or third party sale within and outside the State of Andhra Pradesh. These projects will also qualify for Renewable Energy Certificates (RECs) subject to applicable regulations/ guidelines issued by the appropriate commission.

C. Solar Parks

The Government of A.P will develop initially 4000 MW capacity Solar Parks. The State Government, under this policy, will help facilitate in building up the necessary infrastructure like power evacuation, water requirements and internal roads.

Solar Park shall consist of various zones viz. Solar Power Projects, Manufacturing Zones, R & D and Training Centres. The State will extend all facilities and fiscal incentives provided by Central Government/ National Solar Mission to the manufacturers in Solar Parks.

Special Purpose Vehicle(s) (SPV's) will be established for development of infrastructure and management of Solar Park. The SPV will formulate Policy and Rules in respect of land allotment, sharing of development cost by the solar power producers and manufacturers. The SPV will develop the initial infrastructure from the funds allocated by GoI and GoAP, which will be subsequently recovered from the solar power producers whose projects are located in Solar Parks by levying development charges.

D. Solar Rooftop Projects - Gross/Net Metering

The Government will promote solar rooftop systems on public buildings, domestic, commercial and industrial establishments on gross and or net meter basis. The consumer(s) are free to choose either net or gross meter option for sale of power to Discom under this policy. The applicable tariff for either of the cases shall be equal to the average pooled power purchase cost which will be determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of CoD will be paid for 25 years, in case of projects executed under both net metering and gross metering basis.

The above tariffs shall be applicable for a period of 25 years for Eligible Developers who set up solar rooftop projects within the Operating Period of this policy.

The Obligated Entities as per the RPPO Regulations of APERC, are eligible for adjusting the power generated from rooftop projects towards their obligation to meet RPPO provided necessary metering is arranged for measuring the solar power as per the regulations of APERC.

The metering facility will be extended for all Eligible Developers who intend to setup solar photovoltaic plants at their premises. Eligible Developers who wish to avail the metering facility will have to apply through online mode to the Discoms - either on their websites and/or through designated mee seva / customer service centres. All approvals/clearances shall be disposed by the respective Discom within 14 days from the date of application. The projects of capacity upto 1000 KWp at a single location will be permitted.

(P.T.O.)

The projects set up on the roofs of the buildings and also in the open areas within the premises of the consumer are categorized as solar rooftop projects, as per the guidelines of MNRE. In case of different rooftops belong to single owner in a city or town, the combined solar power generation will be adjusted against the combined consumption recorded in various energy meters.

Permission will be given to the group of persons/societies to set up Solar Power Projects and will be treated as collective generation for supply of power to the households of each society /group member. The DISCOMs will deduct the above energy from the consumed energy of individual service connections and balances (either excess or lower) can be billed on net metering basis. No Distribution losses and charges will be collected from the Group/Society/ individuals by the DISCOMs.

Eligible Developers are allowed to avail the relevant subsidies and incentives from MNRE under JNNSM scheme. The eligible subsidy for net metering systems may be processed through NREDCAP (Nodal agency) or Channel Partners of MNRE, GOI. The sanction and release of the subsidy will be as per the guidelines issued by MNRE from time to time.

The modalities for implementing the rooftop policy including metering, billing, settlement, payment(s) and technical aspects etc. shall be issued by APEPDCL within 30 days from the date of issue of this policy, which would be followed by all DISCOMS in the State.

E. Solar pumpsets

The State government in collaboration with the Central Govt/MNRE /MOP/Multilateral agencies will undertake measures to enable gradual replacement of conventional pumpsets to solar powered pumpsets through subsidy support. Nodal agency will facilitate with government agencies for availing subsidies, grants and/ or incentives on behalf of APDiscoms.

It is envisaged that 50,000 solar powered pumpsets will be operational in the State in the next five years without any additional financial burden on the farmers. The modalities of the scheme will be developed in consultation with all the stakeholders within 30 days from the date of issue of this policy.

The Government will encourage Grid Connected Solar Pump sets to benefit the farmer community by way of sale of surplus energy to the DISCOMs.

4. Incentives from the State Government

To enable solar power capacity addition in the State, following incentives shall be provided for Eligible Developers for those projects setting-up during the operative period mentioned in the para one (1).

a) Transmission and Distribution charges for wheeling of power

Transmission and Distribution charges shall be exempted only for connectivity to the nearest Central Transmission Utility (CTU) via State Transmission Utility (STU) network for inter- state wheeling of power subject to the consent of APERC.

b) Energy Banking

Banking of 100% of energy shall be permitted during all 12 months of the year, based on the feasibility and prior approval of APTRANSCO/APDISCOMs. Banking charges shall be adjusted in kind @ 5% of the energy delivered at the point of drawal. The banking year shall be from April to March.

Drawals from banked energy shall not be permitted during five (5) month period from 1st April to 30th June and 1st February to 31st March of each financial year. In addition, drawls of banked energy during the Time of the Day (ToD) applicable during the peak hours, as specified in the respective Retail Supply Tariff Order, shall also not be permitted throughout the year. However, the provisions on banking pertaining to drawal restrictions shall be reviewed based on the power supply position in the State.

Energy injected into the grid from date of synchronization to Commercial Operation Date (COD) will be considered as deemed energy banking. The unutilized banked energy shall be considered as deemed purchase by Discoms at 50% of the Average Pooled Power Purchase Cost as determined by the APERC for the applicable year. Energy settlement shall be done on monthly basis.

The payment for the deemed purchase of un-utilized banked energy shall be capped to 10% of the total banked energy during the applicable year.

c) Open Access

Intra-state Open Access clearance for the whole tenure of the project or 25 years whichever is earlier will be granted as per the APERC Regulations amended from time to time. In absence of any response or intimation from the Nodal Agency to the generator within 21 days, then such application shall be considered to be deemed open access.

d) Renewable Energy Certificate (REC)

All projects developed with the above incentives will be eligible for REC benefits subject to applicable regulations/orders of the appropriate commission. Deemed injection into the grid for in-house/co-located solar generation will also be eligible for REC benefits subject to applicable guidelines.

e) Grid Connectivity and Evacuation facility

The power generated from a Solar Power Project shall be injected at an appropriate voltage at the sub-station and/or interconnection point of the APTransco / Discom(s). The Eligible Developer shall bear the entire cost of construction of power evacuation facilities from the project upto the interconnection point and/or upto APTransco / Discom(s) substation.

The Eligible Developer shall abide by the orders, rules, regulations and terms and conditions as approved by the Commission from time to time for operation of Solar Power Projects, power evacuation, transmission and wheeling of energy. Solar Power Projects will be exempted from paying the Supervision charges to APTransco/Discom(s) only in case of transmission of power from State Transmission Utility (STU) to Central transmission utility (CTU).

APTransco /Discom(s) will dispose the proposals for the technical feasibility for evacuation within 14 days from the date of receipt of application. Any upstream system strengthening requirement shall be borne by APTransco/Discom(s) on a priority basis.

f) Deemed Industry Status

Generation of electricity from Solar Power Projects shall be treated as eligible industry under the schemes administered by the Industries Department and incentives available to industrial units under such schemes shall be available to the solar power producers. The services of single desk portal can be made available for obtaining time bound statutory clearances.

g) Deemed Public Private Partnership (PPP) Status

Deemed PPP status shall be provided for projects coming up under category (A) as per para (3) of this policy.

h) Non Agriculture Status

Deemed Non-Agricultural (NA) status for the land where Solar Power Projects will be accorded, on payment of applicable statutory fees.

i) Must run status

Injection from Solar Power Projects shall be considered to be deemed scheduled.

j) Land

It is the responsibility of the project developer to acquire the land required for the project. However, in case of land owned by Revenue Department, the land allotment shall be done as per the prevailing government policy.

To facilitate faster execution of projects, the District Collector shall hand over advance possession of land including path ways to NREDCAP and the land shall be allotted on alienation basis to NREDCAP by fixing reasonable market value. After getting advance possession of the land, NREDCAP will allow the developer to start the construction duly taking necessary undertakings. NREDCAP shall enter into lease agreement with the developer once the project is commissioned.

NREDCAP will pay the land cost as decided to the revenue authorities @ 10% of the market value for a period of 10 years.

NREDCAP will collect the lease rentals for 25 years period @10% of the value of land with 10% increase in every 5 years block period, from the project developer from the date of commissioning of project and shall utilize for the payment to the Revenue authorities towards land cost and promotion of renewable energy and other new green and clean technologies in AP State.

k) Pollution Clearance

Solar PV power projects will be exempted from obtaining any NOC/Consent for establishment under pollution control laws from AP Pollution Control Board.

5. Nodal Agency

New and Renewable Energy Development Corporation of A.P. Ltd (NREDCAP) shall act as a Nodal Agency under this policy and as decided by the government from time to time.

The Nodal Agency and/or designated offices by the Nodal Agency shall be responsible for the following activities:

- a) Facilitate in obtaining revenue land – wherever is required.
- b) Facilitate in getting power evacuation and/ or Open Access as per the regulation issued by APERC and amended from time to time.
- c) Facilitate water allocation from concerned departments.
- d) Facilitate and process of proposals for availing subsidy for solar rooftop systems as per MNRE guidelines.
- e) Co-ordinate with MNRE/SECI/ APTransco/Discom(s) and any other Central/State agencies in obtaining necessary clearances, approvals, grants and subsidies.

6. Administrative approval

The applications received from the Eligible Developers as per the provisions of this policy should be in the prescribed format along with a registration fee of Rs.1000 for capacities upto 5 KWp; Rs. 5,000 for capacities above 5 KWp to 100 KWp; Rs,10,000 for capacities above 100 KWp to 1000KWp and Rs.25,000 per MW for capacities more than 1000 KWp. In addition, a facilitation fees of Rs 25 per kW shall be applicable for the Eligible Developer who seeks assistance from the Nodal Agency for obtaining single window clearance support as per the above para.

The projects set up under solar parks developed by the Government are exempted from registration of the projects with the State Nodal Agency.

7. Project Monitoring Committee

A “High Level Committee” constituted with the following members will monitor the progress of implementation of the Solar Power Projects cleared under the policy:

1. Principal Secretary, Energy Department
2. Chairman and Managing Director, APTransco
3. CMD of APDiscom(s)
4. VC & MD, NREDCAP(Member-Convener)
5. Representative of FAPCCI/CII
6. Representatives (2) of solar power developers

If any difficulty arises in giving effect to this policy, the High Level Committee is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented.

8. Solar Manufacturing

The Government intends to promote solar manufacturing facility that can help develop the solar eco-system and support job creation potential in the State. The following incentives shall be applicable for new manufacturing facilities and equipment's, ancillaries related to Solar Power Projects only.

- Priority allotment of Government land in solar parks on long term lease basis
- Exemption from electricity duty for a period of ten (10) years
- Incentives as applicable as per the prevailing industrial promotion policies of the GoAP, subject to provision of the separate budget by the Energy Department for the same. The services of single desk portal can be made available for obtaining time bound statutory clearances.
- Preference for Off take of power, PE connectivity and to extend energy banking facility for the projects developed by the manufacturers.

9. Mid-Term Review

State Government may undertake a mid-term review of this policy after a period of two years or as and when need arises in view of any technological breakthrough or to remove any inconsistency with Electricity Act 2003, rules and regulations made there under or any Govt. of India policy.

10. Power to remove difficulties

If any difficulty arises in giving effect to this policy, energy department is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented for change in any provision.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

AJAY JAIN
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Vice Chairman & Managing Director, NREDCAP, Tadepalli, Guntur.

The Chairman, APPCC, Vijayawada.

The Chairman & Managing Director, APTRANSCO, Vijayawada.

The Managing Director, APGENCO, Vijayawada.

The Secretary, APERC, Hyderabad

The CMDs, of APSPDCL, Tirupathi / APEPDCL, Visakhapatnam.

All Collectors & District Magistrates in the state.

The Principal Secretary to Government, Revenue Department.

The Principal Secretary to Government, Industries Department

The Principal Secretary to Government, EFS&T Department.

(P.T.O.)

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Copy to :-

The Prl., Secretary to Hon'ble C.M.

The Principal Secretary to Govt., Finance (FMU-Energy,I&I) Department.

The Secretary, LAW Dept.,

The OSD to C.S.

The OSD to Minister (Energy)

The P.S. to Prl., Secretary, Energy, I&I Department.

The Adviser for Power Sector.

The GA(Cabinet) Dept.,

Sf/Sc (C.No.2584/Power.II(2)/2014- Computer No.212428)

// FORWARDED : : BY ORDER //

SECTION OFFICER

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

ENERGY, INFRASTRUCTURE & INVESTMENT DEPARTMENT-Development of Wind Power
in Andhra Pradesh-Andhra Pradesh Wind Power Policy-2018 - Orders - Issued.

ENERGY, INFRASTRUCTURE & INVESTMENT (PR.II) DEPARTMENT

G.O.MS.No. 2

Dated: 03-01-2019.
Read the following:

1. G.O.Ms.No.48, Energy (Res) Deptt., dated 11.04.2008.
2. G.O.Ms.No.99, Energy (Res) Deptt., dated 09.08.2008.
3. G.O.Ms.No.9, Energy,I&I(Pr.II) Deptt., dated.13.02.2015.
4. The VC&MD, NREDCAP, File No. NREDAP-14023/1/2018.
5. The GA(Cabinet) Dept., U.O.Note.No.538/2018, dated:27.12.2018.

ORDER :

In order to promote Wind power projects, the Government of Andhra Pradesh had issued "Andhra Pradesh Wind Power Policy-2015" in G.O.Ms.No.9 dated 13.02.2015 to promote wind power projects. Considering the good wind power potential existing in the State, the capacity addition achieved so far, falling in Wind Power tariffs in recent times, etc., there is need to bring out New Wind Power Policy duly taking into consideration the recent developments in the wind power sector.

2. Government, after detailed discussions on the proposal received in reference 4th read above, with various stakeholders viz., APTRANSCO., APDISCOMs, NREDCAP Wind Power Developers and Associations, hereby issue the Wind Power Policy-2018 superseding the earlier Policy issued in G.O., 3rd read above, as mentioned below:

ANDHRA PRADESH WIND POWER POLICY - 2018

PREAMBLE

India is amongst the largest wind power markets in the world. Wind power is already economical in comparison to conventional power sources and Andhra Pradesh has a huge wind power potential that is yet to be harnessed. The wind power potential in the combined state of Andhra Pradesh as estimated by the National Institute of Wind Energy (NIWE) formerly known as Centre for Wind Energy Technology (C-WET) is 44,229 MW at 100 meter level with maximum potential existing in the districts of Ananthapuramu, Kadapa, Kurnool, Chittoor and Nellore Districts.

The Government of Andhra Pradesh has earlier issued "Wind Power Policy", vide G.O.Ms.No.48 dated 11.04.2008 and G.O.Ms.No.99 dated 09.09.2008 and again issued "Andhra Pradesh Wind Power Policy - 2015" in G.O.Ms No.9 dated.13.02.2015 to promote wind power projects.. The Andhra Pradesh Wind Power Policy, 2015 which provided many fiscal incentives for large scale promotion of projects helped in aggressive capacity additions and thereby driving the cumulative installed capacity of wind power in the state to 3994.67 MW of wind power. This policy was particularly supported with fiscal incentives because the cost of power from wind was way higher than the average power purchase cost of the state during 2014-15. But seeing the current trend of falling wind power tariffs which is above Rs.3 per unit at present, it is felt necessary to revisit the clauses and come out with a new comprehensive policy for the promotion of wind power to meet the demand for power in an environmentally sustainable manner.

To meet the twin objectives of energy security and clean energy considerations, this policy aims to promote widespread usage of wind power and to meet the following objectives.

(P.T.O.)

OBJECTIVES:

1. To encourage, develop and promote wind power generation in the State with a view to meet the growing demand for power in an environmentally and economically sustainable manner.
2. To attract private investment to the State for the establishment of large wind power projects.
3. To promote investments for setting up manufacturing facilities in the State, which can generate gainful local employment.

1. Operative Period

The policy shall come into operation with effect from the date of issuance and shall remain applicable for a period of five (5) years and/ or shall remain in force till such time a new policy is issued.

Wind power projects that are commissioned during the operative period shall be eligible for the incentives declared under this policy, for a period of ten (10) years from the date of commissioning – unless the period is specifically mentioned for any incentive.

2. Eligible Developers

All registered companies, Joint Venture Companies, Central and State power generation/ distribution companies and public/private sector wind power developers will be eligible for setting up of wind power projects, either for the purpose of captive/group captive use and/or for selling of electricity to the utilities or third parties, in accordance with the Electricity Act-2003, as amended from time to time.

The entity desiring to set up wind power project(s), either for sale of power and/or for captive use/group captive use of power within or outside the State, shall inform the Nodal Agency as per the para (9) of this policy and also submit the DPR of the project with the details of technical and financial capabilities of the developer, based on which the Nodal agency will allocate the capacity for development.

Before allocating the capacity for development, the Nodal agency shall apprise whether the proposal is technically, financially and commercially feasible. Nodal agency shall also apprise whether proposer has the required technical, commercial, managerial and financial capability to execute the project. Nodal agency shall apprise the existing installed capacity, existing generating capacity, required installed capacity and generating capacity.

3. Category of Wind Power Projects

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|--------------|--|
| Category I | Projects set up in government/revenue lands or forest areas or I assigned lands and also in private lands selling power within the State or outside the State. |
| Category II | Projects set up for captive use or group captive use/3 rd party sale within or outside the state. |
| Category III | Sale of power at average power purchase cost and availing Renewable Energy Certificate (REC) |

Category I: Projects set up in government / revenue lands or forest areas or assigned lands and also in private lands selling power within the State or outside the State.

Power generated from the wind power projects installed entirely or partly on government/ revenue land or forest areas shall be for sale within the State only to the extent power required within the State, the rest may be sold in the open market by the producer.

The Ministry of Power, GoI have notified guidelines for tariff based competitive bidding process for procurement of power from wind power projects. The extent of wind power required within the State shall be procured based on these guidelines. As per the communication vide D.O. Lr. No.8/7/2017-EFM, dt.12.01.2018, the MNRE has informed that the competitive bidding guidelines for wind power does not cover projects below 25 MW capacity for intra-state and accordingly the procurement of power from wind power projects having capacity less than 25 MW shall be at Feed in Tariff (FiT) determined by AP Electricity Regulatory Commission to the extent power required within the State.

The Government of A.P. may consider proposals for allotment of revenue land if available - at the wind power potential areas on first come first serve basis- based on recommendation of NREDCAP, as per the provisions of New Land Allotment Policy announced by the Government vide G.O. Ms. No: 571, Dt: 14-09-2012 of Revenue (Assignment-I) Dept.

To facilitate faster execution of projects, the District Collector shall hand over advance possession of land including path ways to NREDCAP and the land shall be allotted on alienation basis to NREDCAP by fixing reasonable market value. After getting advance possession of the land, NREDCAP will allow the developer to start the construction duly taking necessary undertakings. NREDCAP shall enter into lease agreement with the developer once the project is commissioned.

NREDCAP will pay the land cost as decided to the revenue authorities @ 10% of the market value for a period of 10 years.

NREDCAP will collect the lease rentals for 25 years period @ 10% on the market value of the land with 10% increase in every 5 years block period, from the project developer from the date of commissioning of project and shall utilize for the payment to the Revenue authorities towards land cost and promotion of renewable energy and other new green and clean technologies in AP State.

In case of forest areas, the developers shall submit the application through the Nodal Agency to the forest department, to consider for allotment as per the guidelines/regulations laid down by the forest department from time to time.

If the wind farm is set up in private land then the Eligible Developer shall procure the land from the landholder on their own.

Category II: Captive use or group captive use /direct sale to 3rd party sale within the State/States other than A.P. State

The State will promote wind power producers to set up wind power projects with no cap on capacity for captive use/group captive or sale of power to 3rd party within the State/States other than Andhra Pradesh. These projects will also qualify for Renewable Energy Certificates (RECs) subject to applicable regulations/guidelines issued by the appropriate commission.

Category III: Projects under Renewable Energy Certificate Mechanism

The State will promote wind power producers to set up wind power projects with no cap on capacity for sale through Renewable Energy Certificate(REC) mechanism. The wind power producers will be required to apply for accreditation to the State Accreditation Agency and thereafter to Central Agency for registration and issuance of RE certificate under REC mechanism as per order/regulations of the appropriate commission. The power generated from these power projects shall be purchased by AP Discoms at pooled cost of power purchase as determined by APERC from time to time as required within the State and rest will be sold in open market by the producer.

4 Capacity Allotment

The wind power projects shall be allowed in the areas notified by MNRE or in the areas where wind monitoring studies have been undertaken by MNRE/NIWE/NREDCAP/ GoAP. In case wind resource assessment studies are proposed to be undertaken by the private developers, the capacity allotment will be considered only on submission of the wind data validation report of NIWE. The area applied for development of wind farm shall be clearly marked on a top sheet and Google Map with the proposed capacity to be developed in that area. NREDCAP shall be responsible for capacity allotment for upto 40 MW and to recommend capacity allotment beyond 40 MW to Government of AP.

The Project Proponent shall have net worth of Rs. 2.00 crores for each MW capacity applied. In case of OEMs/ Project Developers who set up manufacturing units in AP State, the eligibility condition shall be having experience of 1 MW capacity project execution for each MW capacity applied. The application for wind power project capacity allotment shall be submitted to Nodal Agency along with non-refundable processing fee of Rs. 25,000/- per MW.

The proposal shall include Detailed Project Report(DPR) duly indicating the wind data of the sites where wind monitoring studies of minimum one year period is taken up by NIWE/NREDCAP or NIWE validation report in respect of other sites.

On allotment of the project, the project developer shall enter into an agreement with NREDCAP for timely completion of the project i.e. within 24 months from the date of signing of agreement. Non-refundable allotment fee of Rs.1.50 lakhs per MW shall be paid along with applicable taxes before signing of agreement.

For transfer of capacities from manufacturers / developers, the transfer of capacity will be made only after WTGs are erected and grid feasibility is received before commissioning of the machines by collecting a fee of Rs. 50,000/- per MW. However, the transfer fee is not applicable for transfer of capacity from parent company to its subsidiary/SPV provided 51% equity share holding is held by the applicant.

In case of transfer of capacities from one location to other location, a fee of Rs.50,000/- per MW shall be paid. In case of change of name of the company, a fee of Rs. 25,000/- for capacities upto 40 MW and Rs.1,00,000/- for capacities more than 40MW on lumpsum basis shall be levied.

Preference will be given to the companies which have set up manufacturing facilities in the AP State for WEG components in capacity allotment, Power Evacuation connectivity signing of PPA as per the regulations of the APERC and for wheeling of power and banking as per the prevailing policies of the APERC.

5 Wind Resource Assessment studies in Private Sector

The WRA Studies shall be carried out as per the guidelines communicated by the MNRE vide Circular No. 51/9/2007-WE dated 20.06.2008 and OM No.336/19,2017-Wind dated 8.05.2018. There will not be any exclusivity for the area where wind monitoring studies are carried out. However, the developer shall register the wind mast location duly indicating the geographical coordinates duly paying Rs. 2.00 lakh with applicable taxes for each wind mast. The developer shall have net worth of Rs.20 Crores for each mast applied.

As per the guidelines of the MNRE, the development of on-shore wind power projects issued vide F No. 66/183/ 2016-WE dt 22.10.2016, the Project Developer is required to ensure the availability of wind resource at the site based on the various parameters measured for the purpose. The project developer is also required to ensure the quality of the data captured at a particular site for the correct assessment of the wind resource potential, project viability and sustainability of the project over the designed life time of the project.

For allotment of wind power projects, the developer shall submit the wind data duly validated or published by the National Institute of Wind Energy (NIWE).

6 Solar and Wind Hybrid Power Projects

To enable better utilization of common infrastructure and related facilities, solar and wind hybrid power projects shall be encourage in the State. A separate Policy shall be announced for promotion of Wind-Solar Hybrid Power Projects.

7 Repowering

The wind power developers will be encouraged to install higher capacity and improved technology Wind Electric Generators (WEGs) by undertaking appropriate micro-siting studies in order to optimally utilize the available wind resource potential at the project sites.

In respect of projects where lower capacity and lower hub height WEGs were installed and which have completed more than 15 years of life, proposals will be considered for replacing older turbines with higher capacity WEGs. In such cases, approval will be granted - subject to amendment of Power Purchase Agreement (PPA) with extension of time period for another 25 years.

The tariff for additional capacity arrived due to repowering of such projects shall be decided based on competitive bidding (or) shall be the lowest tariff discovered of the most recent competitive bidding process (or) sale to the distribution company (ies) at APPC under REC mechanism and avail RECs and shall be approved by the APERC.

8 GoAP Incentives

To enable wind power capacity addition in the State, following incentives shall be provided for Eligible Developers for those projects awarded during the operative period mentioned in the para one (1).

a) Power Evacuation

- i. The Eligible Developer shall bear the entire cost of power evacuation facilities for interconnecting the wind farm with the grid.
- ii. The Eligible Developer shall abide by the orders, rules, regulations and terms and conditions as approved by APERC from time to time for operation of wind farms, power evacuation, transmission and wheeling of energy.
- iii. All electrical installations within wind farm site and upto pooling sub-station shall be as per the statutory requirements and shall be certified by the Chief Electrical Inspector General (CEIG) or any other statutory authority.
- iv. AP Transco/Discom will dispose the proposals for the technical feasibility for evacuation within 14 days from the date of receipt of application. Any upstream system strengthening requirement shall be borne by APTransco/Discom on a priority basis.

b) Transmission and Distribution charges for wheeling of power

There will be no Transmission and Distribution charges only for wheeling of power generated from wind power projects to the nearest Central Transmission Utility(CTU) via State Transmission Utility (STU) network for inter- state wheeling of power subject to the consent of APERC.

c) Energy Banking

Banking of 100% of energy shall be permitted during all 12 months of the year, based on the feasibility and prior approval of APTRANSCO/APDISCOMs. Banking charges shall be adjusted in kind @ 5% of the energy delivered at the point of drawal. The banking year shall be from April to March. Priority will be accorded for Wind-Solar Hybrid projects for Banking and drawal facility.

Drawals from banked energy shall not be permitted during five (5) month period from 1st April to 30th June and 1st February to 31st March of each financial year. In addition, drawls of banked energy during the Time of the Day(ToD) applicable during the peak hours, as specified in the respective Retail Supply Tariff Order, shall also not be permitted throughout the year. However, the provisions on banking pertaining to drawal restrictions shall be reviewed based on the power supply position in the State.

Energy injected into the grid from date of synchronization to Commercial Operation Date(COD) will be considered as deemed energy banking. The unutilized banked energy shall be considered as deemed purchase by Discoms at 50% of the Average Pooled Power Purchase Cost as determined by the APERC for the applicable year. Energy settlement shall be done on monthly basis.

The payment for the deemed purchase of un-utilized banked energy shall be capped to 10% of the total banked energy during the applicable year.

d) Open Access

Intra-state Open Access clearance for the whole tenure of the project or 25 years whichever is earlier will be granted as per the APERC Regulations amended from time to time. In absence of any response or intimation from the Nodal Agency to the generator within 21 days, then such application shall be considered to be deemed open access.

e) Reactive Power charges

25 paise per kVARh will be levied on wind energy generators, who draw reactive power up to 10% of the net active energy generated. Anyone drawing in excess of 10% of the net active energy generated will be liable to pay 50 paise per kVARh.

f) Deemed Public Private Partnership (PPP) Status

Deemed PPP status shall be provided for projects coming up under Category I and have entered into a PPA with APDiscom for sale of power.

g) Non Agriculture Status

Deemed Non-Agricultural (NA) status for the land where wind power projects will be accorded, on payment of applicable statutory fees.

h) Deemed Industry Status

Generation of electricity from wind power projects shall be treated as eligible industry under the schemes administered by the Industries Department and incentives available to industrial units under such schemes shall be available to the wind power producers, The services of single desk portal can be made available for obtaining time bound statutory clearances.

i) Must run status

Injection from wind power projects shall be considered to be deemed scheduled subject to prevailing regulations/grid code of appropriate commission.

j) Pollution Clearance

Wind power projects will be exempted from obtaining any NOC/Consent for establishment under pollution control laws from AP Pollution Control Board.

9 Nodal Agency

New and Renewable Energy Development Corporation of A.P. Ltd (NREDCAP) shall act as a Nodal Agency under this policy and as decided by the government from time to time.

The Nodal Agency and/or designated offices by the Nodal Agency shall be responsible for facilitating single window clearance of the projects for the following activities:

- a) Registration of projects
- b) Allotment of capacity of projects
- c) Processing of proposals for allotment of revenue land or Forest land.
- d) Arranging approval for power evacuation plan and open access.
- e) Arranging other statutory clearances/approvals if any.
- f) Co-ordination with MNRE/SECI/APTransco/APDiscoms and other central and state agencies.

10 Time Lines for Project Completion

The Eligible Developers should enter into a project agreement along with the applicable fees and bank guarantees with the Nodal Agency within two (2) months from the date of sanction of the capacity allotment.

It is the sole responsibility of the project proponent to obtain the necessary permissions, land, grid connectivity etc., for timely completion of the project.

The developer shall also submit bank guarantee equivalent to Rs.2.00 lakhs per MW at the time of agreement. If the project is not implemented within 24 months, the project allotment stands cancelled.

After commissioning of the project, the project company shall maintain minimum 26% equity share- holding of the total equity, until completion of one year from the date of commissioning of the project. However, this will not applicable in case of Manufacturer developed projects.

In case of signing of PPAs based on competitive bidding, the terms and conditions of the bid document will be adhered to in respect of project completion, furnishing of PBG, penalties for delay in execution of the project etc.

11 Manufacturing

The Government intends to promote wind turbine manufacturing facilities that can contribute towards wind sector development in the State and create employment. The following incentives shall be applicable for new manufacturing facilities and equipment's, ancillaries related to wind power projects set up in the state after bifurcation with the approval of the investments by the Government of A.P.

- Priority allotment of Government land on long term lease basis
- Exemption from electricity duty for a period of ten(10) years for consumption of electricity from the first year of operation.
- Incentives as applicable as per the prevailing industrial promotion policies of the GoAP subject to provision of the separate budget by Energy Department for the same. The services of Single Desk Portal can be made available for time bound statutory clearances.
- Preference in wind power capacity allotment, Off take of power,
- Power Evacuation Connectivity and extending of banking facility for the wind power projects being developed by the manufacturers.

12 Applicability of this Policy for wind power projects approved under earlier Policy

This policy is applicable in respect of all wind power projects which are commissioned during the operative period of this policy in the State of Andhra Pradesh.

The projects which have completed more than 60 months period from the date of signing of agreement and also wind power capacities allotted and not entered into agreements within 60 months from the date of allotment will stand automatically cancelled as per the guidelines of MNRE vide Circular No. 51/9/2007-WE dated 20.06.2008 and the performance bank guarantees provided if any shall be invoked This will applicable of all projects except in respect of projects covered under various Project Implementation Agreements signed with Government of Andhra Pradesh/NREDCAP.

13 Project Monitoring

A "High Level Committee" constituted with the following members will monitor the progress of implementation of the Wind Power Policy:

1. Principal Secretary, Energy Department
2. Chairman and Managing Director, APTRANSCO
3. CMD of APDISCOMs
4. V.C.& Managing Director, NREDCAP(Member-Convener)
5. Representative of Indian Wind Turbine Manufacturers Association(IWTMA)
6. Representative of Indian Wind Power Association (IWPA)

If any difficulty arises in giving effect to this policy, the High Level Committee is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented.

14 Mid-term Review

State Government may undertake a Mid-term Review of this policy after a period of two years or as and when need arises in view of any technological breakthrough or to remove any inconsistency with Electricity Act 2003, rules and regulations made there under or any Government of India policy.

15 Power to remove difficulties

If any difficulty arises in giving effect to this policy, Energy Department is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented for change in any provision.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

AJAY JAIN
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Vice Chairman & Managing Director, NREDCAP, Tadepalli, Guntur.

The Chairman, APPCC, Vijayawada.

The Chairman & Managing Director, APTRANSCO, Vijayawada.

The Managing Director, APGENCO, Vijayawada.

The Secretary, APERC, Hyderabad.

The CMDs, of APSPDCL, Tirupathi / APEPDCL, Visakhapatnam.

All Collectors & District Magistrates in the state.

The Principal Secretary to Government, Revenue Department.

The Principal Secretary to Government, Industries Department.

The Principal Secretary to Government, EFS&T Department.

Copy to:

The Prl., Secretary to Hon'ble C.M.

The Principal Secretary to Govt., Finance (FMU-Energy,I&I) Department.

The Secretary, LAW Dept.

The OSD to C.S.

The OSD to Minister (Energy).

The P.S. to Prl., Secretary, Energy, I&I Department.

The Adviser for Power Sector.

The GA(Cabinet) Dept.

Sf/Sc(C.No.2584/ Power.II(2)/2014- Computer No.212428)

// FORWARDED :: BY ORDER //

SECTION OFFICER

GOVERNMENT OF ANDHRA PRADESH
ABSTRACT

ENERGY, INFRASTRUCTURE & INVESTMENT DEPARTMENT - Introducing Andhra Pradesh Wind-Solar Hybrid Power Policy-2018 to encourage Hybrid Renewable Energy Power - Orders - Issued.

ENERGY, INFRASTRUCTURE & INVESTMENT (PR.II) DEPARTMENT

G.O.MS.No. 3

Dated: 03-01-2019
Read the following:

1. National Wind-Solar Hybrid Policy notified by the MNRE, GoI, New Delhi vide letter No.238/78/2017-Wind dated 14.05.2018.
2. The VC&MD, NREDCAP, File No. NREDAP-14023/1/2018.
3. The GA(Cabinet) Dept., U.O.Note.No.537/2018, dated:27.12.2018.

ORDER :

Government of Andhra Pradesh is keen to harness the huge solar and wind potential of the State to meet its growing energy demands in an environmentally sustainable manner. Several initiatives such as investor friendly solar and wind power policies, large scale solar park(s) development, green corridor investment for power evacuation and power procurement through PPA's with APDISCOMs have been undertaken to promote RE capacity addition. The Government of Andhra Pradesh has set a target to achieve 18,000 MW of renewable energy capacity by the year 2021-22, which is 10 % of the national target.

2. GoAP is keen to encourage wind solar hybrid projects in order to harness the combined potential of these clean energy sources in an optimal manner and to help contribute towards grid stability . It is proposed to promote Wind- Solar Power projects, inline with National Wind Solar Hybrid Power Policy notified by the MNRE, GoI, New Delhi, to enable better utilization of common infrastructure and related facilities.

3. Government, after detailed discussions on the proposal received in reference 2nd read above, with various stakeholders viz., APTRANSCO., APDISCOMs, NREDCAP, Solar and Wind Power Developers and Associations , hereby issue the Andhra Pradesh Wind-Solar Hybrid Power Policy-2018 as mentioned below:

ANDHRA PRADESH WIND-SOLAR HYBRID POWER POLICY - 2018

Introduction

1.1 Government of Andhra Pradesh is keen to harness the huge solar and wind potential of the State to meet its growing energy demands in an environmentally sustainable manner. Several initiatives such as investor friendly solar and wind power policies, large scale solar park(s) development, green corridor investment for power evacuation and power procurement through PPA's with APDISCOMs have been undertaken to promote RE capacity addition. The Government of Andhra Pradesh has set a target to achieve 18,000 MW of renewable energy capacity by the year 2021-22, which is 10 % of the national target.

1.2 Solar and wind power potential in AP is concentrated in the Rayalaseema belt and studies reveal that their generation profile is complementary to each other. A hybrid wind solar project can help in optimal utilization of transmission infrastructure. Further, under the AP Wind Power Policy-2015, it is proposed to promote Solar and Wind Hybrid Power projects to enable better utilization of common infrastructure and related facilities. The existing wind farms may have scope of adding solar PV capacity and similarly there may be wind potential in the vicinity of existing solar PV plant. GoAP is keen to encourage wind solar hybrid projects in order to harness the combined potential of these clean energy sources in an optimal manner and to help contribute towards grid stability.

1.3 Suitable policy interventions are therefore, required not only for new Wind-Solar Hybrid Plants but also for encouraging hybridization of existing wind and solar plants.

(P.T.O.)

1.4 Ministry of New and Renewable Energy (MNRE), Government of India has notified National Wind – Solar Hybrid Policy vide letter No.238/78/2017-Wind dated 14.05.2018 with the main objective to provide a frame work for promotion of large grid connected wind-solar PV hybrid system for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power.

1.5 Taking into consideration the National Wind Solar Hybrid Policy, it is felt necessary to announce AP Wind Solar Hybrid Power Policy to encourage hybrid renewable energy power projects for optimal utilization of transmission infrastructure and also reduce variability in renewable power generation and achieving better grid stability.

2. Objectives and Goals

- i. The main objective of the Policy is to provide a framework for promotion of large grid connected wind-solar PV systems for optimal and efficient utilization of transmission infrastructure and land, reducing the variability in renewable power generation and thus achieving better grid stability.
- ii. Optimal utilization of transmission infrastructure being built by State Utility to evacuate renewable power.
- iii. Policy aims to encourage new technologies, methods and way-outs involving combined operation of wind and solar PV plants, and other emerging technologies like energy storage systems.
- iv. Target to procure the Contracted capacity of 5,000 MW at desired CUF under this policy in next 5 years or till such time a new policy is issued, as per power and energy requirements including time/season of procurement of distribution companies.

3. Period of Enforcement

This policy shall remain applicable for a period of five (5) years from the date of issuance and/ or shall remain in force till such time a new policy is issued or this policy is withdrawn, modified or superseded by the Government.

The Wind Solar Hybrid Projects that are commissioned during the operative period shall be eligible for the incentives declared under this policy, for a period of 10 years from the date of commissioning.

4. Wind-Solar Hybrid System

- a. Under the category of wind-solar hybrid power plants, Wind turbine generators and Solar PV systems will be configured to operate at the same point of grid connection. There can be different approaches towards integrating wind and solar depending upon the size of each of the source integrated and the technology type.
- b. In case of fixed speed wind turbines connected to grid using an induction generator, the integration can be on the HT side at the AC output bus. However, in case of variable speed wind turbines deploying inverters for connecting the generator to the grid, the wind and solar PV system can be connected to the intermediate DC bus of the AC-DC-AC converter.
- c. The second important aspect would be related to the sizing – which would depend on the resource characteristics. In order to achieve the benefits of hybrid plant in terms of optimal and efficient utilization of transmission infrastructure and better grid stability by reducing the variability in renewable power generation, in the locations where the wind power density is quite good, the size of the solar PVs capacity to be added as the solar-hybrid component could be relatively smaller. On the other hand, in case of the sites where the wind power density is relatively lower or moderate, the component of the solar PV capacity could be relatively on a higher side.
- d. In Case of Wind –Solar Hybrid Project(s), both Wind and Solar project(s) should connect to grid in the same region at 132 KV and above either through individual or common pooling station. Such project(s) must give the common scheduling and forecasting for the Wind and Solar Project(s) and further at any point of time should not exceed the PE capacity allocated jointly between Wind and Solar Project(s).

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However, a wind-solar plant will be recognized as Hybrid Plant if the rated power capacity of one resource is at least 25% of the rated power capacity of other resource. Further, each 1 (one) MW of **contracted** Wind Solar Hybrid Project shall achieve a minimum CUF of 40%. In case of projects which achieve higher CUF shall be given preference.

5. Implementation Strategy

5.1 The implementation of wind solar hybrid system will depend on different configurations and use of technology as detailed below:

a) Wind-Solar Hybrid- AC integration

In this configuration, the AC output of both the wind and solar system is integrated either at LT side or at HT side. In the later case, both systems use separate step-up transformer and HT output of both the systems is connected to common AC Bus-bar or at interconnection point. Suitable control equipment is deployed for controlling the power output of hybrid system.

b) Wind-Solar Hybrid- DC integration

DC integration is possible in case of variable speed drive wind turbines using converter-invertor. In this configuration the DC output of the both the wind and solar PV plant is connected to a common DC bus and a common invertors suitable for combined output AC capacity is used to convert this DC power in to AC power.

5.2 New wind-solar hybrid plants

New wind-solar hybrid projects shall be encouraged with following provisions:-

- i. The hybrid power generated from the wind-solar hybrid project may be used for (a) captive purpose; (b) sale to third party through open access; (c) sale to the distribution company (ies) either at project specific tariff determined by the APERC or at tariff discovered through transparent bidding process; or (d) sale to the distribution company (ies) at APPC under REC mechanism and avail RECs.
- ii. The power procured from the hybrid project may be used for fulfilment of solar RPO and non-solar RPO in the proportion of rated capacity of solar and wind power in the hybrid plant respectively.
- iii. For procurement of hybrid power through transparent bidding process different parameters may be used. Parameters that may be considered for bidding could be capacity delivered at grid interface point, effective CUF and unit price of electricity.
- iv. Government entities may invite bids for new hybrid plants keeping qualifying criteria such as those discussed in iii above, the tariff being the main criteria for selection.

5.3 Hybridization of existing Wind/Solar PV plants.

Existing wind or solar power projects, willing to install solar PV plant or WTGs respectively to avail benefit of hybrid project, may be allowed to do so with following Conditions:

- i. No additional connectivity/transmission capacity charges shall be levied by the respective transmission entity for hybridisation at existing wind/solar PV plants if already granted transmission connectivity/ access is being used. Transmission charges may be applicable for the additional transmission capacity/ access granted as per prevailing regulation.
- ii. In case capacity margins are available at the receiving transmission sub-station of respective transmission entity, at which the existing wind/solar projects is connected, additional transmission capacity/access may be allowed subject to its technical feasibility. In such a case, any transmission augmentation required up to the receiving transmission substation will be the responsibility of project developer.

- iii. In case of AC integration assessment of solar and wind power injected from the hybrid project in to the grid will be worked out by apportioning the reading of main meter installed at the receiving station on the basis of readings of ABT meters installed on LT or HT side of the wind and solar PV plant as the case may be.
- iv. In case of DC integration assessment of solar and wind power injected from the hybrid project in to the grid will be worked out by apportioning the reading of main meter installed at the receiving station on the basis of readings of DC meters installed at the DC output of the wind and solar PV plant. Till such time the methodology for DC metering of hybrid systems and standards and regulations are framed for DC meters, only AC integration will be permitted.
- v. The additional solar/wind power generated from the hybrid project may be used for
 - (a) captive purpose; (b) sale to third party through open access; (c) sale to the distribution company (ies) either at project specific tariff determined by the APERC or at tariff discovered through transparent bidding process; and (d) sale to the distribution company (ies) at APPC under REC mechanism and avail RECs. For bidding purpose, State or Central entities may bid for hybridization of existing projects connected to InSTS or ISTS as the case may be.
- vi. Government entities may also invite bids for hybridisation of existing wind and solar plants with tariff being the main criteria for selection.
- vii. The additional solar/wind power procured from hybrid project shall be used for fulfilment of solar/non-solar RPO as the case may be.

5.4 Energy Banking and Drawal

Banking of 100% of energy shall be permitted during all 12 months of the year, based on the feasibility and prior approval of APTRANSCO/APDISCOMs. Banking charges shall be adjusted in kind @ 5% of the energy delivered at the point of drawal. The banking year shall be from April to March.

Energy injected into the grid from date of synchronization to Commercial Operation Date (COD) will be considered as deemed energy banking. Energy settlement shall be done on monthly basis. The unutilized banked energy shall be considered as deemed purchase by Discoms at 75% of the Average Pooled Power Purchase Cost as determined by the APERC for the applicable year. The payment for the deemed purchase of un-utilized banked energy shall be capped to 10% of the total banked energy during the applicable year.

5.5 Energy Storage

Any Energy storage technologies like Mechanical, Chemical, Compressed Air, Hydrogen, Pumped Storage, etc may be added to the hybrid project (i) to reduce the variability of output power from wind solar hybrid plant; (ii) providing higher energy output for a given capacity (bid/ sanctioned capacity) at delivery point, by installing additional capacity of wind and solar power in a wind solar hybrid plant; and (iii) ensuring availability of firm power for a particular period.

Bidding factors for wind solar hybrid plants with storage may include minimum firm power output throughout the day or for defined hours during the day, extent of variability allowed in output power, unit price of electricity, etc.

6. Round The Clock Power

The projects for delivery of power Round The Clock (RTC) by adopting Wind-Solar Hybrid Projects with (a) Energy Storage Systems (b) Bundling with Clean Resources like Gas, (c) Flexibility by balancing with power generated by APGENCO or Independent Power Producers (IPPs), will be given priority for off taking of power by APDISCOMs or APGENCO, PE connectivity by APTRANSCO and issuing various clearances and facilities including "MUST RUN STATUS" (d) For Round The Clock (RTC) power by Wind-Solar Hybrid projects, at least 51% of the energy requirement should be from the Renewable Energy projects (Solar/Wind).

7. Regulatory requirements

The APERC, Central Electricity Authority and CERC shall formulate necessary standards and regulations including metering methodology and standards, forecasting and scheduling regulations, REC mechanism, grant of connectivity and sharing of transmission lines, etc. for wind-solar hybrid systems.

8. Standard and quality

For wind turbines, solar modules and balance of systems, the technical guidelines issued by the Ministry of New and Renewable Energy (MNRE), from time to time for grid connected systems will be followed.

9. Incentives

The Government will encourage development wind-solar hybrid systems through different schemes and programmes. All fiscal and financial incentives available to new wind and new solar power projects will also be made available to new hybrid projects in addition to the fiscal and financial incentives announced in this policy .

After bi-furcation of the state, there is necessity to attract investments in manufacturing sector for overall development of State and to create the employment. The Government intends to promote wind turbine and solar manufacturing facilities that can contribute towards wind and solar sector development in the State and create employment opportunities In addition to the incentives applicable for promoting manufacturing as per the existing industrial, solar and wind power policies, it is proposed to provide preference in allotment of the wind solar hybrid capacity for projects that come up based on manufacturing facilities located within the State after bifurcation and which are set up as per the investments approved by the Government. Further, the projects which are developed by the manufacturers are given preference for sale of power to distribution company (ies) either at project specific tariff determined by the APERC **(OR)** a tariff discovered through transparent bidding process **(OR)** at APPC under REC mechanism and avail RECs. In case of utilization of power for captive use or third party sale, preference will be given for extending energy banking facility based on feasibility and prior approval of APTRANSCO/APDISCOMs.

Further, in respect of Wind Solar Hybrid Power Projects, the following additional incentives shall be provided,

- a. Transmission and Distribution charges shall be exempted upto 50% of the applicable charges for wheeling of power generated from new Wind - Solar Hybrid Power Projects within the State. There will be no transmission charges for connectivity to the nearest Central Transmission Utility (CTU) via State Transmission Utility (STU) network for inter-state wheeling of power subject to the consent of APERC.
- b. In respect of new wind or solar projects in the existing solar or wind project sites respectively (which will make it hybrid) the plant will continue to enjoy all the incentives they were getting from the previous policies ("Andhra Pradesh Solar Policy 2015" and "Andhra Pradesh Wind Policy 2015") only till the balance operative period as per the previous policies.
- c. Energy injected into the grid from date of synchronization to Commercial Operation Date (COD) will be considered as deemed energy banking. The unutilized banked energy shall be considered as deemed purchase by Discoms at 75% of the Average Pooled Power Purchase Cost as determined by the APERC for the applicable year. Energy settlement shall be done on monthly basis. The payment for the deemed purchase of un-utilized banked energy shall be capped to 10% of the total banked energy during the applicable year.
- d. 50% of applicable Electricity duty shall be exempted for captive consumption, sale to DISCOMs and third party sale provided the source of power is from wind - solar hybrid power projects set up within the State.
- e. 50% of the Cross subsidy surcharge shall be paid for third party sale provided the source of power is from Wind- Solar Hybrid Power Projects setup within the State.

f) Supervision charges

Wind-solar hybrid power projects will be exempted from paying the Supervision charges to APTransco/Discom(s) only in case of transmission of power from State Transmission Utility (STU) to Central transmission utility (CTU)

g) Deemed Industry Status

Generation of electricity from wind-solar hybrid power projects shall be treated as eligible industry under the schemes administered by the Industries Department and incentives available to industrial units under such schemes shall be available to the Wind solar power producers subject to the payments from the Energy Department. In addition, the services of the single desk portal can also be extended for obtaining necessary clearances, if any.

h) Deemed Public Private Partnership (PPP) Status

Deemed PPP status shall be provided for projects coming up as wind-solar hybrid power projects as per this policy.

i) Non Agriculture Status

Deemed Non-Agricultural (NA) status for the land where wind-solar hybrid power projects will be accorded, on payment of applicable statutory fees.

j) Pollution Clearance

Wind-solar hybrid power projects will be exempted from obtaining any NOC/Consent for establishment under pollution control laws from AP Pollution Control Board.

k) Must run status

All Wind- Solar hybrid power projects shall be treated as "MUST RUN" power plants and shall not be subjected to 'Merit Order Despatch (MOD) principles'

10. Nodal Agency

- i. NREDCAP shall act as a Nodal Agency under this policy and as decided by the government from time to time.
- ii. Nodal Agency and/or designated offices by the Nodal Agency shall be responsible for facilitating single window clearance of projects for the following activities:
 - a. Registration of projects
 - b. Allotment of capacity of projects
 - c. Processing of proposals for allotment of revenue land or Forest land, as per the provisions of AP Wind Power Policy and AP Solar Power Policy.
 - d. Arranging approval for power evacuation plan and open access.
 - e. Arranging other statutory clearances/approvals if any.
 - f. Co-ordination with MNRE/SECI/APTRANSCO/ APDISCOMs and other central and state agencies.

11. Administrative approval

- a. The proposals received from eligible developers as per the provisions of this policy along with non-refundable processing fee of Rs. 25,000/- per MW will be processed by NREDCAP duly taking into consideration of the policies of Government of India, Government of AP, provision of signing of PPAs, prevailing RPPO against requirement as per the regulations and availability of grid feasibility for evacuation of power from the hybrid power plants. NREDCAP will apprise whether the proposal is technically, financially and commercially feasible. NREDCAP will also apprise whether the proposer has the required technical, commercial, managerial and financial capability to execute

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the project. NREDCAP will apprise the existing installed capacity, existing generating capacity, required installed capacity and generating capacity. On allotment of capacity, the allotment fee of Rs.1,50,000 per MW shall be paid at the time of entering into agreement. The project shall be completed within 24 months from the date of allotment. The project developer shall also furnish performance bank guarantee equivalent to Rs.2.00 lakhs per MW in favour of NREDCAP.

- b. Further, GoAP will accord the sanctions for Wind Solar Hybrid Projects to Developers/manufacturers based on recommendation by NREDCAP after appraising their proposal, DPR submitted, technical & financial capabilities, investment and manufacturing outlay and creation of employment in the State of Andhra Pradesh.
- c. The off-take of power from Wind solar Hybrid Projects by APDiscoms will be subject to prior approval from GoAP and also by APERC.

12. Research and Development

Government will support the technology development projects in the field of wind-solar hybrid systems. Besides, support will be provided for development of standards for hybrid systems.

13. Power to remove difficulties

If any difficulty arises in giving effect to this policy, energy department is authorized to issue clarification as well as interpretation to such provisions, as may appear to be necessary for removing the difficulty either on its own motion or after hearing those parties who have represented for change in any provision.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRA PRADESH)

AJAY JAIN
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Vice Chairman & Managing Director, NREDCAP, Tadepalli, Guntur.

The Chairman, APPCC, Vijayawada.

The Chairman & Managing Director, APTRANSCO, Vijayawada.

The Managing Director, APGENCO, Vijayawada.

The Secretary, APERC, Hyderabad

The CMDs, of APSPDCL, Tirupathi / APEPDCL, Visakhapatnam.

All Collectors & District Magistrates in the state.

The Principal Secretary to Government, Revenue Department.

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Copy to:

The Secretary, MNRE, GoI, New Delhi.

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The OSD to Minister (Energy)

The P.S. to Prl., Secretary, Energy, I&I Department.

The Adviser for Power Sector.

The GA(Cabinet) Dept.,

SF/SC (C.No.NREDAP-14023/1/2018- Computer No.547115)

// FORWARDED : : BY ORDER //

SECTION OFFICER

Solar Rooftop Policy/ Guidelines

I. Eligible Developers

All registered companies, Government entities, partnership companies/ firms/ individuals and all consumers of AP Discom(s) will be eligible for setting up of Solar Rooftop Projects (SRP) for sale of electricity to Discom/captive use or for self-consumption, in accordance with the Electricity Act-2003, as amended from time to time.

Group of persons/societies will also be eligible for setting up Solar Rooftop Projects (SRP) with SPV Technology for sale of electricity to Discom/captive use or for self-consumption.

SRP with installed capacity lower than 56 kW shall be eligible to get connected to either LT/HT service at LT/HT distribution network. SRP with installed capacity of 56 kW and up to 1000 kW shall be get connected to HT service.

Requirements:-

- A Minimum vacant roof area of 10 Sq mtr or 100 Sq. ft is required for installation of 1 KWp system.
- The Consumer shall have 3 Phase/ 1 Phase supply, either LT/HT service connection.
- Mandatory safety precautions/features shall be installed as per the norms.
- 1No. bi-directional meter shall be installed for recording of export and import energy in the place of existing billing meter. For more than 56 KW capacity plant, 2Nos bi-directional meters shall be installed.
- The standard equipment as per the norms of MNRE/APTRANSCO/DISCOM shall only be installed.

II. General Information:

- a) Eligible Developers are free to choose either Net or Gross metering option for sale of power to Discom. Applicable tariff shall be equal to the Average Pooled Power Purchase Cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of CoD will be paid for 25 years, for the projects executed under both Net metering and Gross metering basis.

The above tariffs shall be applicable for a period of 25 years for Eligible Developers who set up solar rooftop projects within the Operating Period of this policy.

- b) The Obligated Entities as per the RPPO Regulations of APERC, are eligible for adjusting the power generated from rooftop projects towards their obligation to meet RPPO, provided necessary metering is arranged for measuring the solar power as per the regulations of APERC.
- c) The metering facility will be extended for all Eligible Developers who intend to setup solar photovoltaic plants at their premises.
- d) Eligible Developers who wish to avail the metering facility will have to apply through online mode to the Discoms – either on their websites and/or through designated mee seva centers
- e) All approvals/clearances shall be disposed by the respective Discom within 14 days from the date of application
- f) The projects of capacity upto 1000 KWp at a single location will be permitted.
- g) The projects set up on the walls, roofs of the buildings and also in the open areas within the premises of the consumer are categorized as solar rooftop projects, as per the guidelines of MNRE.
- h) In case of different rooftops belong to single owner in a city or town, the combined solar power generation will be adjusted against the combined consumption recorded in various energy meters.
- i) Permission will be given to the group of persons/societies to set up Solar Power Projects and will be treated as collective generation for supply of power to the households of each society /group member. The DISCOMs will deduct the above energy from the consumed energy of individual service connections and balances (either excess or lower) can be billed on Net metering basis. No Distribution losses and charges will be collected from the Group/Society/ individuals by the DISCOMs.
- j) Eligible Developers are allowed to avail the relevant subsidies and incentives from MNRE under JNNSM scheme. The eligible subsidy for net metering systems may be processed through NREDCAP (Nodal agency) or Channel Partners of MNRE, GOI. The sanction and release of the subsidy will be as per the guidelines issued by MNRE from time to time.

- k) Eligible developer can install SPV plant under single-phase service is 3 kWp and maximum allowable SPV plant capacity under LT category is 56 kWp either at LT or HT potential. In respect of LT service, the SPV capacity is limited to the connected load of the service and in case of HT Service, the SPV plant capacity shall be limited to the CMD of that service.
- l) No prior approval of Chief Electrical Inspectorate General (CEIG) is required in case of an SRP connected at LT level of distribution network up to 10 kW capacity.
- m) All other charges shall be applicable as per the Tariff Order amended from time to time.
 - n) The applications as per the policy from Eligible Developers are to be registered in the prescribed format along with the Registration fees as shown below
 - Capacities upto 5Kwp is Rs 1000/-
 - Capacities above 5Kwp to 100 Kwp is Rs 5000/-
 - Capacities above 100Kwp to 1000Kwp is Rs 10000/-
- o) The insurance coverage can be optional for the LT Consumers opting Solar Net metering scheme. However, the consumers/ Solar Power developer may be advised to take insurance coverage to avoid risks at the time of accidents.
- p) The Solar rooftop developers/ MNRE channel partners may be allowed to attend the departmental procedures on behalf of applicant, except in case of signing the agreement.
- q) Pre existing rooftop Solar PV Projects with or without battery support can be allowed to avail net metering facility. They will not get any subsidy under solar net metering policy/ guidelines issued.

III. Application

The Eligible Developer shall make an application to Discom for setting up a SRP along with the necessary information/ document on system size, inter-connection voltage, choice of either gross or net metering option, personal information etc., by paying requisite application fee either on AP Discoms websites and/or through designated mee seva centres or through USRTP web portal of Nodal Agency NREDCAP. From USRTP the Developer can monitor and track the application right from registration to extension of subsidy after completion of the project.

The Eligible Developer/ Societies/ Groups shall pay application fee through online or by cash. The Eligible Developer shall strictly adhere to the standards specified by CEA/MNRE.

IV. Technical Feasibility:

DISCOM personnel shall carry out the technical feasibility study based on the Application submitted by the Eligible Developer. An internal review to check if the proposed SRP satisfies the standards specified by the CEA, especially with respect to inverter specifications, penetration levels, safety aspects like anti-islanding and protection devices and etc shall be undertaken. Also, the area available to install the proposed SRP will be observed. This study shall be carried out within seven (7) working days from the date of submission of application. In absence of any intimation from the DISCOM within this time period, it shall be considered as deemed approval.

DISCOM shall accord feasibility approval to consumers on a first come first serve basis. The maximum penetration limits at the LT level of distribution network is 80% (*Ratio of aggregate installed SRP capacity under the DTR to the DTR capacity*)

Feasibility study and inspection shall be the responsibility of DISCOM/ ADE in case of LT services and DE (M & P) & DE (Operations) in case of HT services. Feasibility and Synchronization approvals for LT services to be given by ADE/Operation, Feasibility and synchronization approvals for HT services to be given by Superintending Engineer/Operation.

V. Agreement and SRP Installation

The Eligible Developer and the Discom shall enter into an agreement that specifies the technical information, commercial arrangement and the clear roles and responsibilities of all concerned stakeholders as specified in Annexure-C. within 14 days of issuing Technical feasibility if Agreement is not entered by the Developer, application is deemed to be cancelled.

The SRP shall be installed within three (3) months from the date of Agreement. In case of any delay beyond three months, one time extension of 14 days shall be provided after which the agreement shall be deemed to be terminated without any reason.

VI. Pre-commissioning check and commissioning of the PV system

Post installation of the SRP, the Eligible Developer shall make an online request for inspection. The DISCOM personnel shall inspect the system within 10 working days and provide approval based on checklist mentioned in **Annexure- A**. In absence of the response within the stipulated time, it shall be considered as deemed inspection approval.

VII. Metering and Synchronization:

1 No. bi-directional meter shall be installed for export and import. For more than 56 KW capacity plant, 2Nos bi-directional meters shall be installed.

All meters must be Smart Meters as per the standards specified by the CEA regulations as amended from time to time. AP Discoms shall provide net metering (net meter along with its connected CT's, PT's wherever applicable) on cost basis. Eligible Developers shall be free to procure Meters, Current Transformers (CT), and Power Transformer (PT) either from open market or from DISCOM. If the metering equipment is purchased by the Developer, the same is to be tested at standard laboratory at the cost of Consumer only.

Eligible Developer shall raise a request for metering infrastructure through online mode/ Mee seva by paying the requisite amount. DISCOM personnel shall deliver the metering infrastructure within **15 working days** and the Eligible Developer shall be responsible for its safe-keeping during the interim period until grid synchronization.

The SRP shall be synchronized within seven (7) working days of inspection approval. Upon synchronization of the SRP with the grid, the DISCOM personnel shall inspect, calibrate and seal the meter(s) and ensure installation of safety features/precautions. A commissioning certificate would be issued by the DISCOM/CEIG subject to the test results which should confirm to the CEA requirements.

Meter reading shall be done as per the prevailing Discom procedure. The applicable customer charges shall be payable to Discom.

Eligible Developer shall be assigned a unique service number for metering and billing purposes. All eligible developers have to submit their bank details where payments shall be made through electronic transfer by APDISCOMs. The Eligible Developer shall submit a cancelled cheque with bank a/c No. & IFSC Code along with Application form.

The DISCOM official (ADE/AE) shall send test reports of the SRP along with the agreement to the concerned ERO. Billing process shall start within one month/ next Billing cycle of synchronizing the SRP. In case of HT services ADE/DE operation will submit the Test Report to Senior Accounts Officer of the concerned circle.

VIII. Energy Settlement and Billing/Invoicing:

Energy settlement shall be done on a monthly basis. Group of persons/societies setting up SRP's will be treated as collective generation for supply of power to the households of each society /group member. In case of Apartments/Group Houses, common service meter may be used for net metering.

Net Metering: The energy generated from SRP shall be adjusted against the consumption of energy from the DISCOM by the Eligible Developer/ consumer every month. In case of Groups/Societies, the energy generated shall be prorated as per the installed capacity share indicated in the Agreement between the group/society and DISCOM. This computed energy share shall be adjusted against the consumption of energy for each consumer every month.

- In case of excess generation (after energy adjustment) in any month, payment shall be made by the Discom quarterly for the net energy computed at the average Pooled Power Purchase cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of COD will be paid for a period of 25years.
- In case of excess consumption in any month, payment shall be made by the Eligible Developer /Group /Society for the net energy at the applicable tariff as determined by APERC every year.
- **Gross Metering:** The payment for energy generated from SRP will be computed at the average Pooled Power Purchase cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of COD will be paid for a period of 25years.

This shall be adjusted against the total billing demand for consumption of energy for the Eligible Developer/ consumer from the DISCOM every month. The balance amount after adjustment for the month shall be made by the Discom.

A limit shall be defined for all Eligible Developers in terms of energy, beyond which no payment shall be made by APDISCOM. Please refer example in **Annexure-E**.

IX. Inspection:

- a) DISCOM personnel reserve the right to inspect the SRP routinely at any time during the term of the Agreement. As part of the inspection, DISCOM officials have to ensure to check the following aspects
 - All protective equipment of the SPV system are functioning as per specifications.
 - The SPV system including the panels, inverters, etc continue to meet the requirements of Indian & IEC standards post installation till contract completion.
- b) An Eligible Developer, found indulging in theft of electricity or unauthorized use of electricity, shall pay the additional charges as may be levied by the DISCOM as per provisions of Electricity Act 2003. DISCOM may levy additional charge besides disconnection of electricity supply.

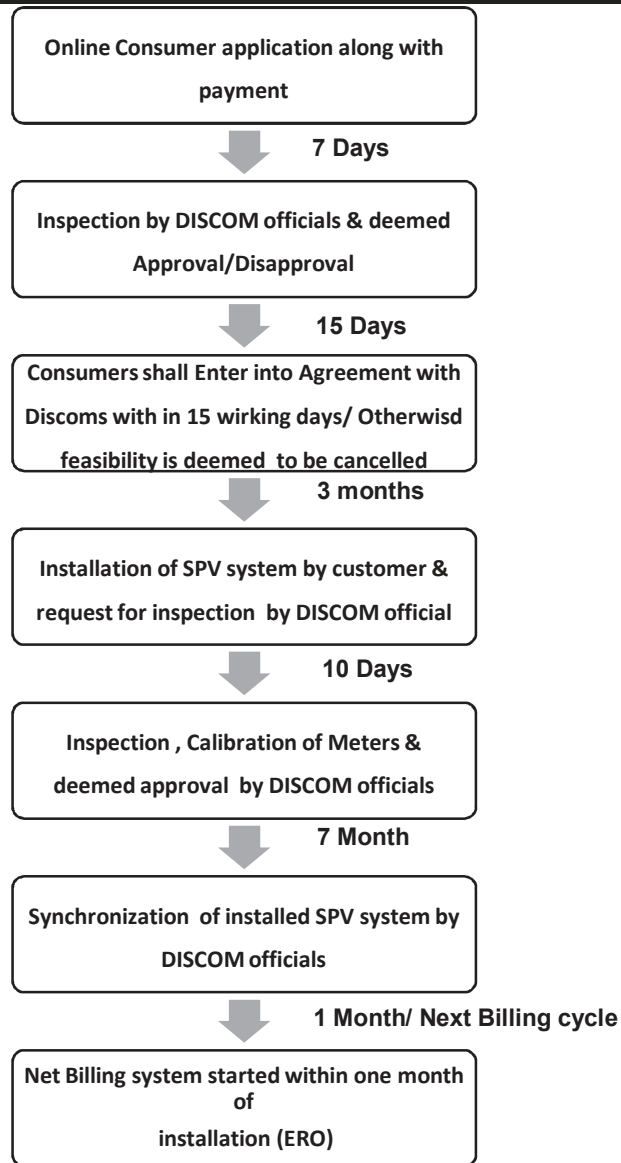
Annexures

Annexure-A

- I. Entire circuitry, including panels, inverter, bi-directional meters, cabling, manual switch, safety circuit breaker etc., should be installed by the vendor under a turnkey approach. The metering infrastructure can also be provided by APDISCOM.
- II. Mandatory safety precautions/features which have to be installed as part of SPV system are:
 - a. Certified Inverter controlled relays which can trip on grid failure and thus prevent any solar power injection to Grid when there is no power in Grid. The same is to be ensured by the consumer from time to time.
 - b. Solar Circuit should be separately grounded/ earthed.
 - c. Additional switchgear/relay (sensing phase-angle shift) required as a second rung of safety. It shall be positioned between interconnection point and the bi-directional meter.
 - d. Harmonics suppression/Filtering feature in the inverter for local network's safety and for accurate measurement of energy.
 - e. Additional manual relay / switch on the pole side to be installed at the cost of SRP developer.
- III. Hybrid Islanding is permitted, whereby the consumer can use solar generation from rooftop SPV, even when the grid is not available. If the consumer desires, he may do so by installing appropriate protection systems before synchronization. The same has to be tested & permitted by DISCOM official(s) before synchronization.
- IV. 1No. bi-directional meter shall be installed for export and import energy recording in the place of existing billing meter. For more than 56 KW capacity plant, 2Nos bi-directional meters shall be installed This bi-directional meters should be a **smart meter** with the following characteristics:
 - a. Separate registers for Export and Import with MRI downloading facility.
 - b. kVAr, kWh, kVA measuring registers for Capacity above 1 KW.
 - c. AMI facility with RS232 (or higher) communication port.
 - d. Class 1 accuracy meters for PV systems up to 10 kWp, 0.5 accuracy class meters for PV systems above 10 kWp and 0.2 class accuracy meters for HT systems (56 kWp and above).
 - e. Meters should be BIS/ISI Certified.
 - f. CT functionality meters for PV systems above 15 kWp.
- V. Vendor executing turnkey solution should be a channel partner of MNRE/NREDCAP.
- VI. If on inspection, at the time of release of permission to install a net metering solution or on any periodic inspection thereafter, non-IEC/ISI/BIS certified equipment is found to be part of net metering solution on a consumer's premises, the vendor shall be blacklisted and the same shall be notified to MNRE/NREDCAP.

- VII. A Check meter with import/export, MRI Compatible, tri-vector meter with provision to record 3-Line currents, 3-Phase voltage, V-THD & I-THD in load curve may be provided in case of Solar generation more than 56KW.

Annexure- B: Flow Chart of process & associated Service Level Agreements (SLAs)



ANNEXURE C 1 (Individual Consumer)

Solar Rooftop Net/Gross Metering Connection Agreement

(On Non-Judicial stamp paper worth Rs. 10/-)

This Agreement is executed and entered into at (location) _____ on this (date)___ day of _____(month) _____(Year)between the Eligible Consumer, M/s/Mr./Mrs. _____ S/o, D/o, W/o _____ residing at _____(address) _____which means their/his/its/ theirs, successors as first party AND _____Power Distribution Company Ltd. (herein after called as Discom) and having its registered office at _____(address) _____ as a DISCOM incorporated under the provisions of Companies Act 1956 consequent to the AP Electricity Reforms Act, 1998 (Which means its authorized representatives assigns, executors and its successors) as other party herein after called the 'Discom'.

Whereas, the eligible consumer has taken the responsibility to set up or facilitate the requisite Photovoltaic system and injection of Power into the Discom's grid

And whereas, the Discom agrees to benefit the eligible consumer for the electricity generated and as per conditions of this agreement and Solar rooftop guidelines.

Both the party hereby agrees to as follows:

1. Eligibility

1.1 Eligible consumer is required to be aware, in advance, of the standards and conditions his system has to meet for being integrated into grid/distribution system.

1.2 Eligible consumer agrees that connection of Photovoltaic system to Discom's distribution system shall be bound by requirements of state Distribution Code and/or Discom's conditions of service. The grid shall continue to perform with specified reliability, security and quality as per the Central Electricity Authority (Grid Standard) Regulations 2010 as amended from time to time.

1.3 All registered companies, Government entities, partnership companies/ firms, individuals and all consumers of APDiscom(s) will be eligible for setting up of Solar Power Projects within the State for sale of electricity/captive use, in accordance with the Electricity Act, 2003 and Andhra Pradesh Solar Power Policy, as amended from time to time.

1.4 Group of persons/societies will also be eligible for setting up Solar Rooftop Projects (SRP) for sale of electricity to Discom/captive use or for self-consumption.

2. Capacity of the SPV Plant and Maximum Contracted Load of the premises

2.1 The Eligible Developer/ consumer is proposing to install rooftop solar power plant of ____kWp capacity under Solar _____(Net/ Gross) metering facility at D.No. ____,Street ____, ____ (V), ____ (M),____ (Dist) having electrical service Connection No. ____ ,Category_____,Distribution_____ for a contracted load of ____kW/HP/KVA. The Eligible Developer have requested Discom to provide grid connectivity/ necessary permissions to connect rooftop solar power plant and supply solar energy into the distribution network of Discom at_____ voltage level which shall be extended for a period of 25 years.

3. Governing Provisions

The Eligible developer hereby undertake to comply with all the requirements of the Electricity Act, 2003, the Rules and Regulations framed under, provisions of the tariffs, applicable Charges and General Terms and Conditions of Supply prescribed by the Discom with the approval of the Andhra Pradesh Electricity Regulatory Commission herein after called as "Commission" from time to time and agree not to dispute the same.

4. Technical and Interconnection Requirements

4.1 Eligible consumer agrees that he will install, prior to connection of Photovoltaic system to Discom's distribution system, an isolation device and agrees for the Discom to have access to and operation of this, if required, for repair and maintenance of the distribution system.

4.2 Eligible consumer agrees that in case of a power outage on Discom's system, photovoltaic system will shut down, unless special transfer and isolating capabilities have been installed on photovoltaic system. The Discom shall not be obligated to accept and may require the Eligible

Developer to interrupt or reduce deliveries when necessary with a reasonable notice to the Eligible Developer.

4.3 The Eligible Developer shall strictly adhere to the standards specified by CEA/MNRE and installations of electrical equipment must comply with Indian Electricity rules, 1956.

4.4 The Eligible Developer can install SPV on building walls, roofs of the buildings and also in the open areas within the premises of the consumer.

4.5 Prior approval of Chief Electrical Inspectorate General (CEIG) is required in case of an SRP connected at LT level of distribution network with more than 10 kW capacity.

4.6 Eligible consumer agrees that Discom will specify the interface/inter-connection point and metering point.

4.7 Eligible consumer agrees to adhere to following power quality measures as per International or Indian standards and/or other such measures provided by Commission/Discom.

a. Harmonic current: Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519.

b. Synchronization: Photovoltaic system must be equipped with a grid frequency synchronization device.

c. Voltage: The voltage-operating window should minimise nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 seconds, the Photovoltaic system must isolate itself from the grid.

d. Flicker: Operation of Photovoltaic system shouldn't cause voltage flicker in excess of the limits stated in the relevant sections of IEC standards or other equivalent Indian standards, if any.

e. Frequency: When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), the Photovoltaic system shouldn't energize the grid and should shift to island mode.

f. DC Injection: Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.

g. Power Factor: While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate.

h. Islanding and Disconnection: The Photovoltaic system in the event of voltage or frequency variations must island/disconnect itself within IEC standard on stipulated period.

- i. Overload and Overheat: The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.
- j. Paralleling device: Paralleling device of Photovoltaic system shall be capable of withstanding 220% of the nominal voltage at the interconnection point
- k. The maximum penetration limits at the LT level of distribution network is 80% (*Ratio of aggregate installed SRP capacity under the DTR to the DTR capacity*)

4.8 Eligible consumer agrees to furnish all the data such as voltage, frequency, and breaker, isolator position in his system, as and when required by the Discom.

4.9 Grid Connectivity and Evacuation facility:

The power generated from a Solar Power Project shall be injected at an appropriate voltage at the sub-station and/or interconnection point of the APTransco / Discom(s). The Eligible Developer shall bear the entire cost of construction of power evacuation facilities from the project up to the interconnection point and/or up to APTransco / Discom(s) substation.

The Eligible Developer shall abide by the orders, rules, regulations and terms and conditions as approved by the Commission from time to time for operation of Solar Power Projects, power evacuation, transmission and wheeling of energy. Solar Power Projects will be exempted from paying the Supervision charges to APTransco/Discom(s) towards the internal evacuation infrastructure within the project site and up to interconnection point. Any upstream system strengthening requirement shall be borne by APTransco/ Discom(s) on a priority basis.

4.10 It is imperative to seek the technical details of the installation infrastructure from the supplier at the time of system installation and retain with the Eligible developer/ consumer.

5. Implementation Process:

Implementation of solar rooftop net/ gross metering facility will be as per the following guidelines:

- i) Under Net metering, Power is first sent to the appliances and lights in the house, and if excess remains, it is exported to the outside electricity network and its quantum recorded.
- ii) Under Gross Metering, all solar electricity generated is exported to the outside electricity network through an independent meter.
- iii) Eligible Developers are allowed to avail the relevant subsidies and incentives from MNRE and from other Departments.
- iv) The eligible subsidy may be processed through NREDCAP (Nodal agency) or Channel Partners of MNRE, GOI. The sanction and release of the subsidy will be as per the guidelines issued by MNRE from time to time.

v) Incentives/ Other Charges/Administrative Fee - No Distribution losses and charges will be collected from the Eligible Developers /Group /Society /Individuals by the DISCOMs. All other charges shall be applicable as per the Tariff Order amended from time to time. The registration and facilitation fees shall be paid by Eligible Developer to Nodal agency as specified in the Policy.

5.1 Request for Connectivity

The Eligible Consumer will submit the required information in the prescribed format to the DISCOM and get the proper acknowledgement and shall also provide related interconnection equipment as per the DISCOM's technical requirements, including safety and performance standards. To prevent a net metering the Eligible Consumer from back-feeding a de-energized line, the Eligible Consumer shall install an isolator switch that is accessible to Company personnel at all hours. The Customer shall not commence parallel operation of the net metering facility until the Customer has received approval to operate from the competent authority of DISCOM. Modifications or changes made to a Generator shall be evaluated by the DISCOM prior to modifications/changes. The Eligible Consumer shall provide detailed information describing the modifications or changes to the DISCOM in writing prior to making the modification to the generating facility. The DISCOM shall review the proposed changes to the generating facility and provide the results of its evaluation to the Eligible Consumer within forty- five (45) calendar days of receipt of the Customer's proposal. Any items that would prevent parallel operation due to violation of applicable safety standards and/or power generation limits shall be explained along with a description of the modifications necessary to remedy the violations.

5.2 Metering and Synchronization:

All meters must be Smart Meters as per the standards specified by the CEA regulations as amended from time to time. Eligible Developers shall be free to procure Meters, Current Transformers (CT), and Potential Transformer (PT) either from open market or DISCOM. If the metering equipment is purchased by the Developer, the same is to be tested at standard laboratory with consumer's expenses.

Meter reading shall be done as per the prevailing Discom procedure. The applicable customer charges shall be payable to Discom.

Billing process shall start within one month/next billing cycle after synchronizing the SRP plant.

5.3 Energy Settlement and Billing/Invoicing:

Energy settlement shall be done on a monthly basis. Group of persons/societies setting up SRP's will be treated as collective generation for supply of power to the households of each

society /group member. In case of Apartments/Group Houses, common meter may be used for net metering

Net Metering: The energy generated from SRP shall be adjusted against the consumption of energy from the DISCOM by the Eligible Developer/ consumer every month. In case of Groups/Societies, the energy generated shall be prorated as per the installed capacity share indicated in the Agreement between the group/society and DISCOM. This computed energy share shall be adjusted against the consumption of energy for each consumer every month. In case of excess generation (after energy adjustment) in any month, payment shall be made by the Discom for the net energy computed at the Average pooled Power Purchase Cost as determined by APERC every year Pooled Power Purchase cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of COD will be paid for a period of 25years. In case of excess consumption in any month, payment shall be made by the Eligible Developer /Group /Society for the net energy at the applicable tariff as determined by APERC every year.

Gross Metering: The payment for energy generated from SRP will be computed at the Average pooled Power Purchase Cost of the Discom as determined by APERC every year Pooled Power Purchase cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of COD will be paid for a period of 25years. This shall be adjusted against the total billing demand for consumption of energy for the Eligible Developer/ consumer from the DISCOM every month. The balance amount after adjustment for the month shall be made by the Discom.

A limit shall be defined for all Eligible Developers in terms of energy, beyond which no payment shall be made by APDISCOM. Please refer example in Annexure-E.

6. Access and Inspection:

6.1 The DISCOM's personal may enter the Eligible consumer's premises to inspect the Eligible consumer's protective devices and read or test the meter.

6.2 DISCOM personnel reserve the right to inspect the SRP routinely at any time during the term of the Agreement. As part of the inspection, DISCOM officials have to ensure to check the following aspects

- All protective equipment of the SPV system is functioning as per specifications.
- The SPV system including the panels, inverters, etc continue to meet the requirements of Indian & IEC standards post installation till contract completion.

6.3 An Eligible Developer, found indulging in theft of electricity or unauthorized use of electricity, shall pay the additional charges as may be levied by the DISCOM as per provisions of Electricity Act 2003. DISCOM may levy additional charge besides disconnection of electricity supply.

7. Safety

7.1 Eligible consumer shall comply with the Central Electricity Authority (Measures Relating to Safety and Electricity Supply) Regulations 2010 as amended from time to time.

7.2 Eligible consumer agrees that the design, installation, maintenance and operation of the photovoltaic system are performed in a manner conducive to the safety of the photovoltaic system as well as the Discom's distribution system.

7.3 Due to Discom's obligation to maintain a safe and reliable distribution system, eligible consumer agrees that if it is determined by Discom that eligible consumer's photovoltaic system either causes damage to and/or produces adverse effects affecting other distribution systems' consumers or Discom's assets, eligible consumer will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Discom and correct the problem at his own expense prior to a reconnection.

8. Clearances and Approvals

8.1 All the approvals/clearances required to avail the metering facility shall be disposed by the respective Discom within 14 days (7 working days) from the date of application

8.2 The eligible consumer agrees to attain all the necessary approvals and clearances before connecting the photovoltaic system to the distribution system.

8.3 Approvals shall be given only to those Eligible developer with maximum allowable capacity under single-phase service is 3 kWp and maximum allowable SPV plant capacity under LT category is 56 kWp either at LT or HT potential. For HT Service, consumer shall be responsible to match the SPV plant capacity with the DTR Capacity and shall be limited to the CMD of that service.

8.4 The SRP capacity should be up to 1000 KWp at a single location.

9. Injection of Solar Power

The Solar power produced shall be injected in to the DISCOM network only after obtaining prior approval from DISCOM and meeting all the requirements of departmental standards, viz., protection switchgear, metering, feasibility approval etc.

10. Liabilities

10.1 Eligible consumer and Discom will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Discom's distribution system.

10.2 Discom and eligible consumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or

exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.

10.3 Discom shall not be liable for delivery or realization by eligible consumer for any fiscal or other incentive provided by the central /State government.

11. Commercial Settlement

11.1 All the commercial settlement under this agreement shall be made according to Solar rooftop guidelines and regulations of Electricity Regulatory Commission.

12. Connection Costs

12.1 The eligible consumer shall bare all costs related to setting up of photovoltaic system including metering and interconnection costs.

12.2 Cost for interconnection equipment including the isolators, meters etc. are also to be borne by the eligible consumer.

13. Date of enforceability of the Agreement

This agreement will be in a force for a period of 25 years or up to the tenure of the project whichever is earlier from the date of commencement of this agreement, until the Eligible consumer meet all the requirements, rules and conditions of this Agreement and the system and its operation is in accordance with the Andhra Pradesh Solar Power Policy – 2018, and its future amendments, if any.

14. Dispute Resolution

If at any time the Discom reasonably determines that either the Eligible consumer may endanger the Discom's personnel or other persons or property, or the continued operation of the consumer's generator may endanger the integrity or safety of the Discom's electric system, or the Consumer is not operating the system in compliance with the terms and conditions of this agreement the Discom shall have the right to disconnect and lock out the SPV Generator facility from the Company's electric system until the Discom is reasonably satisfied that the SPV Generator can operate in a safe and complain manner.

Any other disputes arising under/ out of this agreement shall be resolved promptly in good faith and in an equitable manner by both the parties. Failing resolution of the dispute, party may approach the commission under Section 86 (1) (f) of EA 2003.

15. Termination

15.1 The SRP shall be installed within three (3) months from the date of Agreement. In case of any delay beyond three months, one time extension of 15 days shall be provided after which the agreement shall be deemed terminated without any reason.

15.2 The eligible consumer can terminate agreement at any time by providing Discom with 90 days prior notice.

15.3 Discom has the right to terminate Agreement on 30 days prior written notice, if eligible consumer breaches a term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Discom of the breach.

15.4 Eligible consumer agrees that upon termination of this Agreement, he must disconnect the photovoltaic system from Discom's distribution system in a timely manner and to Discom's satisfaction.

16. Re-Sale of Electric Power: The Eligible consumer shall not sell electricity generated under this agreement without the sanction in writing obtained from the DISCOM.

17. Obligation of Consumer to pay all charges levied by DISCOM The Eligible Consumer shall abide by the rules and shall pay the Maximum Demand Charges, energy charges, surcharges and other charges, if any, to the DISCOM in accordance with the notified Tariff besides the applicability of the General Terms and Conditions of Supply prescribed by the APERC from time to time.

18. Theft of electricity or unauthorized use of electricity

The Eligible consumer, found indulging in theft of electricity or unauthorized use of electricity shall pay the penal/additional charges as may be levied by the DISCOM besides disconnection of supply as per the provisions of IE Act 2003 and General Terms and Conditions of supply.

In the witness, where of Mr. _____ for an on behalf of _____ (Eligible consumer) and Mr. _____ for and on behalf of _____ (Discom) agree to this agreement.

Signature of the Eligible Developer/ Consumer

Signature of the Discom Representative

Date:

Date:

Witness 1:

Witness 2:

Signature:

Signature:

Name & Address:

Name & Address:

Date:

Date:

Annexure C 2 (Societies/Group of Consumers)

Solar Rooftop Net/Gross Metering Connection Agreement

(On Non-Judicial stamp paper worth Rs. 10/-)

This Agreement is made and entered into at (location) _____ on this (date) ___ day of _____(month) ____ (Year) between The Group of persons/society (herein after called as Eligible Developer/Consumer), Represented by Sri/Smt _____ S/o, _____ residing at _____ (address) _____ as first party AND _____ Power Distribution Company of Andhra Pradesh Ltd. (herein after called as Discom) and having its registered office at _____ (address) _____ as a DISCOM incorporated under the provisions of Companies Act 1956 consequent to the AP Electricity Reforms Act, 1998 (Which means its authorized representatives assigns, executors and its successors) as other party here in after called the "DISCOM".

Whereas, the eligible consumer has taken the responsibility to set up or facilitate the requisite Solar Photovoltaic system and injection of Power into the Discom's grid

And whereas, the Discom agrees to benefit the eligible consumer for the electricity generated and as per conditions of this agreement and Solar rooftop guidelines.

Both the party hereby agrees to as follows:

1. Eligibility

1.1 Eligible consumer is required to be aware, in advance, of the standards and conditions his system has to meet for being integrated into grid/distribution system.

1.2 Eligible consumer agrees that connection of Photovoltaic system to Discom's distribution system shall be bound by requirements of state Distribution Code and/or Discom's conditions of service. The grid shall continue to perform with specified reliability, security and quality as per the Central Electricity Authority (Grid Standard) Regulations 2010 as amended from time to time.

1.3 All registered companies, Government entities, partnership companies/ firms, individuals and all consumers of APDiscom(s) will be eligible for setting up of Solar Power Projects within the State for sale of electricity/captive use, in accordance with the Electricity Act, 2003 and Andhra Pradesh Solar Power Policy, as amended from time to time.

1.4 Group of persons/societies will also be eligible for setting up Solar Rooftop Projects (SRP) for sale of electricity to Discom/captive use or for self-consumption.

2. Capacity of the SPV Plant and Maximum Contracted Load of the premises

2.1 The Group of persons/society is proposing to install rooftop solar power plant of ____ kWp capacity under Solar _____(Net/ Gross) metering facility at D.No. ____,Street____, ____V, ____ (M)____(Dist) against Common Service Connection No_____,Category_____,Distribution_____ and having individual electrical service connections details furnished in the table below for a total contracted load of ____ kW/HP/KVA and individual installed capacity share. The Eligible Developer has requested the Discom to provide grid connectivity/ necessary permissions to connect rooftop solar power plant and supply solar energy into the distribution network of Discom at_____ voltage level for the whole tenure of the project or 25 years whichever is earlier.

2.2 The installed capacity share of members of the Group of persons/societies are as follows:

| Sl.No. | Consumer Name | Installed Capacity | share | Consumer Service number |
|--------|---------------|--------------------|-------|-------------------------|
|--------|---------------|--------------------|-------|-------------------------|

3. Governing Provisions

The Eligible developer hereby undertake to comply with all the requirements of the Electricity Act, 2003, the Rules and Regulations framed under, provisions of the tariffs, applicable Charges and General Terms and Conditions of Supply prescribed by the Discom with the approval of the Andhra Pradesh Electricity Regulatory Commission herein after called as "Commission" from time to time and agree not to dispute the same.

4. Technical and Interconnection Requirements

4.1 Eligible consumer agrees that he will install, prior to connection of Photovoltaic system to Discom's distribution system, an isolation device and agrees for the Discom to have access to and operation of this, if required, for repair and maintenance of the distribution system.

4.2 Eligible consumer agrees that in case of a power outage on Discom's system, photovoltaic system will shut down, unless special transfer and isolating capabilities have been installed on photovoltaic system. The Discom shall not be obligated to accept and may require the Eligible Developer to interrupt or reduce deliveries when necessary with a reasonable notice to the Eligible Developer.

4.3 The Eligible Developer shall strictly adhere to the standards specified by CEA/MNRE and installations of electrical equipment must comply with Indian Electricity rules, 1956.

4.4 The Eligible Developer can install SPV on building walls also.

4.5 Prior approval of Chief Electrical Inspectorate General (CEIG) is required in case of an SRP connected at LT level of distribution network with more than 10 kWp capacity.

4.6 Eligible consumer agrees that Discom will specify the interface/inter-connection point and metering point.

4.7 Eligible consumer agrees to adhere to following power quality measures as per International or Indian standards and/or other such measures provided by Commission/Discom.

a. Harmonic current: Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519.

b. Synchronization: Photovoltaic system must be equipped with a grid frequency synchronization device.

c. Voltage: The voltage-operating window should minimise nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 seconds, the Photovoltaic system must isolate itself from the grid.

d. Flicker: Operation of Photovoltaic system shouldn't cause voltage flicker in excess of the limits stated in the relevant sections of IEC standards or other equivalent Indian standards, if any.

e. Frequency: When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), the Photovoltaic system shouldn't energize the grid and should shift to island mode.

f. DC Injection: Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.

g. Power Factor: While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate.

- h. Islanding and Disconnection: The Photovoltaic system in the event of voltage or frequency variations must island/disconnect itself within IEC standard on stipulated period.
- i. Overload and Overheat: The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.
- j. Paralleling device: Paralleling device of Photovoltaic system shall be capable of withstanding 220% of the nominal voltage at the interconnection point
- k. The maximum penetration limits at the LT level of distribution network is 80% (*Ratio of aggregate installed SRP capacity under the DTR to the DTR capacity*)

4.8 Eligible consumer agrees to furnish all the data such as voltage, frequency, and breaker, isolator position in his system, as and when required by the Discom.

4.9 Grid Connectivity and Evacuation facility:

The power generated from a Solar Power Project shall be injected at an appropriate voltage at the sub-station and/or interconnection point of the APTransco / Discom(s). The Eligible Developer shall bear the entire cost of construction of power evacuation facilities from the project up to the interconnection point and/or up to APTransco / Discom(s) substation.

The Eligible Developer shall abide by the orders, rules, regulations and terms and conditions as approved by the Commission from time to time for operation of Solar Power Projects, power evacuation, transmission and wheeling of energy. Solar Power Projects will be exempted from paying the Supervision charges to APTransco/Discom(s) only in case of transmission of power from State Transmission Utility (STU) to Central transmission utility (CTU). Any upstream system strengthening requirement shall be borne by APTransco/ Discom(s) on a priority basis.

4.10 It is imperative to seek the technical details of the installation infrastructure from the supplier at the time of system installation and retain with the Eligible developer/ consumer.

5. Implementation Process:

Implementation of solar rooftop net/ gross metering facility will be as per the following guidelines:

- i) Under Net metering, Power is first sent to the appliances and lights in the house, and if excess remains, it is exported to the outside electricity network and its quantum recorded.
- ii) Under Gross Metering, all solar electricity generated is considered as Export of Energy into Electricity Network. ii) Eligible Developers are allowed to avail the relevant subsidies and incentives from MNRE and from other Departments.
- iii) The eligible subsidy may be processed through NREDCAP (Nodal agency) or Channel Partners of MNRE, GOI. The sanction and release of the subsidy will be as per the guidelines issued by MNRE from time to time.

iv) Incentives/ Other Charges/Administrative Fee Distribution losses and charges will be collected from the Eligible Developers /Group /Society /Individuals by the DISCOMs. All other charges shall be applicable as per the Tariff Order amended from time to time. The registration and facilitation fees shall be paid by Eligible Developer to Nodal agency as specified in the Policy.

5.1 Request for Connectivity

The Eligible Consumer will submit the required information in the prescribed format to the DISCOM and get the proper acknowledgement and shall also provide related interconnection equipment as per the DISCOM's technical requirements, including safety and performance standards. To prevent a net metering the Eligible Consumer from back-feeding a de-energized line, the Eligible Consumer shall install an isolator switch that is accessible to Company personnel at all hours. The Customer shall not commence parallel operation of the net metering facility until the Customer has received approval to operate from the competent authority of DISCOM. Modifications or changes made to a Generator shall be evaluated by the DISCOM prior to modifications/changes. The Eligible Consumer shall provide detailed information describing the modifications or changes to the DISCOM in writing prior to making the modification to the generating facility. The DISCOM shall review the proposed changes to the generating facility and provide the results of its evaluation to the Eligible Consumer within forty- five (45) calendar days of receipt of the Customer's proposal. Any items that would prevent parallel operation due to violation of applicable safety standards and/or power generation limits shall be explained along with a description of the modifications necessary to remedy the violations.

5.2 Metering and Synchronization:

All meters must be Smart Meters as per the standards specified by the CEA regulations as amended from time to time. Eligible Developers shall be free to procure Meters, Current Transformers (CT), and Potential Transformer (PT) either from open market or DISCOM. If the metering equipment is purchased by the Developer, the same is to be tested at standard laboratory.

Meter reading shall be done as per the prevailing Discom procedure. The applicable customer charges shall be payable to Discom.

Billing process shall start within one month of synchronizing the SRP.

5.3 Energy Settlement and Billing/Invoicing:

Energy settlement shall be done on a monthly basis. Group of persons/societies setting up SRP's will be treated as collective generation for supply of power to the households of each society /group member. In case of Apartments/Group Houses, common meter may be used for net metering

The projects set up on the roofs of the buildings and also in the open areas within the premises of the consumer are categorized as solar rooftop projects, as per the guidelines of MNRE. In case of different rooftops belong to single owner in a city or town, the combined solar power Generation will be adjusted against the combined consumption recorded in various energy meters.

The generation from the Solar Power Projects of the group of persons/societies will be treated as collective generation for supply of power to the households of each society/group member. The DISCOMs will deduct the above energy from the consumed energy of individual service connections and balances (either excess or lower) can be billed on net metering basis.

No Distribution losses and charges will be collected from the Group/Society/individuals by the DISCOMs.

Net Metering: The energy generated from SRP shall be adjusted against the consumption of energy from the DISCOM by the Eligible Developer/ consumer every month. In case of Groups/Societies, the energy generated shall be prorated as per the installed capacity share indicated in the Agreement between the group/society and DISCOM. This computed energy share shall be adjusted against the consumption of energy for each consumer every month.

In case of excess generation (after energy adjustment) in any month, payment shall be made by the Discom for the net energy computed at the Average pooled Power Purchase Cost of the Discom as determined by APERC every year Pooled Power Purchase cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of COD will be paid for a period of 25years.

In case of excess consumption in any month, payment shall be made by the Eligible Developer /Group /Society for the net energy at the applicable tariff as determined by APERC every year.

Gross Metering: The payment for energy generated from SRP will be computed at the Average pooled Power Purchase Cost of the Discom as determined by APERC every year Pooled Power Purchase cost as determined by APERC for the year during which the project is synchronized with the grid and the applicable tariff at the time of COD will be paid for a period of 25years. This shall be adjusted against the total billing demand for consumption of energy for the Eligible Developer/ consumer from the DISCOM every month. The balance amount after adjustment for the month shall be made by the Discom.

A limit shall be defined for all Eligible Developers in terms of energy, beyond which no payment shall be made by APDISCOM. Please refer example in Annexure-E.

6. Access and Inspection:

a) The DISCOM's personnel may enter the Eligible consumer's premises to inspect the Eligible consumer's protective devices and read or test the meter.

b) DISCOM personnel reserve the right to inspect the SRP routinely at any time during the term of the Agreement. As part of the inspection, DISCOM officials have to ensure that check the following aspects ☐ All protective equipment of the SPV system are functioning as per

specifications. ☐ The SPV system including the panels, inverters, etc continue to meet the requirements of Indian & IEC standards post installation till contract completion.

c) An Eligible Developer, found indulging in theft of electricity or unauthorized use of electricity, shall pay the additional charges as may be levied by the DISCOM as per provisions of Electricity Act 2003. DISCOM may levy additional charge besides disconnection of electricity supply.

7. Safety

7.1 Eligible consumer shall comply with the Central Electricity Authority (Measures Relating to Safety and Electricity Supply) Regulations 2010 as amended from time to time.

7.2 Eligible consumer agrees that the design, installation, maintenance and operation of the photovoltaic system are performed in a manner conducive to the safety of the photovoltaic system as well as the Discom's distribution system.

7.3 Due to Discom's obligation to maintain a safe and reliable distribution system, eligible consumer agrees that if it is determined by Discom that eligible consumer's photovoltaic system either causes damage to and/or produces adverse effects affecting other distribution systems' consumers or Discom's assets, eligible consumer will have to disconnect photovoltaic system immediately from the distribution system upon direction from the Discom and correct the problem at his own expense prior to a reconnection.

8. Clearances and Approvals

8.1 All the approvals/clearances required to avail the metering facility shall be disposed by the respective Discom within 14 days (7 Working days) from the date of application

8.2 The eligible consumer agrees to attain all the necessary approvals and clearances before connecting the photovoltaic system to the distribution system.

8.3 Approvals shall be given only to those Eligible developer with maximum allowable capacity under single-phase service is 3 kWp and maximum allowable SPV plant capacity under LT category is 56 kWp either at LT or HT potential. For HT Service, consumer shall be responsible to match the SPV plant capacity with the DTR Capacity and shall be limited to the CMD of that service.

8.4 The SRP capacity should be up to 1000 KWp at a single location.

9. Injection of Solar Power

The Solar power produced shall be injected in to the DISCOM network only after obtaining prior approval from DISCOM and meeting all the requirements of departmental standards, viz., protection switchgear, metering, feasibility approval etc.

10. Liabilities

10.1 Eligible consumer and Discom will indemnify each other for damages or adverse effects from either party's negligence or intentional misconduct in the connection and operation of photovoltaic system or Discom's distribution system.

10.2 Discom and eligible consumer will not be liable to each other for any loss of profits or revenues, business interruption losses, loss of contract or loss of goodwill, or for indirect, consequential, incidental or special damages, including, but not limited to, punitive or exemplary damages, whether any of the said liability, loss or damages arise in contract, or otherwise.

10.3 Discom shall not be liable for delivery or realization by eligible consumer for any fiscal or other incentive provided by the central/State government.

11. Commercial Settlement

11.1 All the commercial settlement under this agreement shall be made according to Solar rooftop guidelines and regulations of Electricity Regulatory Commission.

12. Connection Costs

12.1 The eligible consumer shall bare all costs related to setting up of photovoltaic system including metering and interconnection costs.

12.2 Cost for interconnection equipment including the isolators, meters etc. are also to be borne by the eligible consumer.

13. Date of enforceability of the Agreement

This agreement will be in a force for a period of 25 years or up to the tenure of the project whichever is earlier from the date of commencement of this agreement, until the Eligible consumer meet all the requirements, rules and conditions of this Agreement and the system and its operation is in accordance with the Andhra Pradesh Solar Power Policy – 2015 and its future amendments, if any.

14. Dispute Resolution

If at any time the Discom reasonably determines that either the Eligible consumer may endanger the Discom's personnel or other persons or property, or the continued operation of the consumer's generator may endanger the integrity or safety of the Discom's electric system, or the Consumer is not operating the system in compliance with the terms and conditions of this agreement the Discom shall have the right to disconnect and lock out the SPV Generator facility from the Company's electric system until the Discom is reasonably satisfied that the SPV Generator can operate in a safe and complain manner.

Any other disputes arising under/ out of this agreement shall be resolved promptly in good faith and in an equitable manner by both the parties. Failing resolution of the dispute, party may approach the commission under Section 86 (1) (f) of EA 2003.

15. Termination

15.1 The SRP shall be installed within three (3) months from the date of Agreement. In case of any delay beyond three months, one time extension of 15 days shall be provided after which the agreement shall be deemed terminated without any reason.

15.2 The eligible consumer can terminate agreement at any time by providing Discom with 90 days prior notice.

15.3 Discom has the right to terminate Agreement on 30 days prior written notice, if eligible consumer breaches a term of this Agreement and does not remedy the breach within 30 days of receiving written notice from Discom of the breach.

15.4 Eligible consumer agrees that upon termination of this Agreement, he must disconnect the photovoltaic system from Discom's distribution system in a timely manner and to Discom's satisfaction.

16. Re-Sale of Electric Power

The Eligible consumer shall not sell electricity generated under this agreement without the sanction in writing obtained from the DISCOM.

17. Obligation of Consumer to pay all charges levied by DISCOM

The Eligible Consumer shall abide by the rules and shall pay the Maximum Demand Charges, energy charges, surcharges and other charges, if any, to the DISCOM in accordance with the notified Tariff besides the applicability of the General Terms and Conditions of Supply prescribed by the APERC from time to time.

18. Theft of electricity or unauthorized use of electricity

The Eligible consumer, found indulging in theft of electricity or unauthorized use of electricity shall pay the penal/additional charges as may be levied by the DISCOM besides disconnection of supply as per the provisions of IE Act 2003 and General Terms and Conditions of supply.

In the witness, where of Mr. _____ for an on behalf of _____ (Eligible consumer) and Mr. _____ for and on behalf of _____ (Discom) agree to this agreement.

Signature of the Office-bearer of Group/Society

Signature of the Representative of Discom

Date:

Date:

Witness 1:

Witness 1:

Signature:

Signature:

Name & Address:

Name & Address:

Date:

Date:

Annexure-E

This check is for ensuring that the SPV system is not misused. This energy limit may be computed by using 20% CUF/PLF of the installed SPV capacity

Case-1: Consumer installs a 1000 Wp SPV system and opts for Gross / Net Metering. The SPV system 144 units per month. Any surplus injection above 144 units shall be treated as inadvertent and no payment shall be made for it.

Case-2: Consumer installs a 5 kWp SPV system and opts for Gross / Net Metering. The SPV system generates 720 units per month. Any surplus injection above 720 units shall be inadvertent and no payment shall be made for it.

Annexure D: Example of Net & Gross Billing

Assumption-1: Applicable Retail Tariff is

| Consumer Category | Unit | Fixed Charge (Rs./Month) | Energy Charge (Rs./kWh) |
|--|------|--------------------------|-------------------------|
| <i>LT-I : Domestic (Telescopic)</i> | | | |
| LT-I (A): Upto 50 Units / Month | kWh | | 1.45 |
| <i>LT-I (B): Above 50 Units/Month (Consumers above 200 units/month)</i> | | | |
| First 50 units | kWh | 0 | 2.60 |
| 51-100 units | kWh | 0 | 3.25 |
| 101-150 units | kWh | 0 | 4.88 |
| 151-200 units | kWh | 0 | 5.63 |
| 201-250 units | kWh | 0 | 6.38 |
| 251-300 units | kWh | 0 | 6.88 |
| 301-400 units | kWh | 0 | 7.38 |
| 401-500 units | kWh | 0 | 7.88 |
| Above 500 units | kWh | 0 | 8.38 |

Assumption-2: Average Pooled power Purchase cost for that year is Rs. 6.00 / kWh

Domestic Consumer installs a 2 kWp SRP and the SRP generates 288 units per month.

Case -1: Net Metering

| Month | Billed Demand/ Consumption from grid (Units) | SRP Generation (Units) | Net Energy (Rs.) | Net Monthly Payment by DISCOM (Rs.) |
|-------|--|---------------------------|---------------------|---|
| | A | B | B-A =C | C*APPPC |
| Jan | 250 | 288 | 38 | 228 |
| Feb | 350 | 288 | (62) | 0 |
| Mar | 400 | 288 | (112) | 0 |

Case -2: Gross Metering

| Month | Billed Demand / Consumption from grid (Units) A | Billed Demand / Consumption from grid (Rs.) (A * Applicable Tariff as per APERC) = B | SRP Generation (Units) C | SRP Payment (Rs.) (C* APPPC)=D | Net Monthly Payment by DISCOM (Rs.) (B-D) |
|-------|--|---|-----------------------------|-----------------------------------|--|
| Jan | 250 | 1,137 | 288 | 1,728 | 591 |
| Feb | 350 | 1,850 | 288 | 1,728 | 0 |
| Mar | 404 | 2,250 | 288 | 1,728 | 0 |

Net Metering for Group Consumers: (Total Generation of SRP in the month 1000 units.

APPPC for the current year Rs.6.00/KWH

| Name of the Consumer | % of Investment in SRP plant | Units to be allotted | Consumer Consumption in the Month | Net Payment |
|----------------------|------------------------------|----------------------|-----------------------------------|-------------------------------------|
| Consumer A | 50% | 500 | 400 | Amount to be credited for 100 Units |
| Consumer B | 30% | 300 | 350 | Bill to be issued for 50 Units |
| Consumer C | 20% | 200 | 200 | - |

Gross metering for Group Consumers

| Name of the Consumer | % of Investment in SRP plant | Units to be allotted | Consumption in the Month | Generation Amount | Bill Amount | Net effect |
|----------------------|------------------------------|----------------------|--------------------------|-------------------|-------------|----------------------------|
| Consumer A | 50% | 500 | 400 | Rs.3000 | Rs.2289 | To be credited Rs.711/- |
| Consumer B | 30% | 300 | 350 | Rs.1800 | Rs.1902 | Bill to be issued Rs.102/- |
| Consumer C | 20% | 200 | 200 | Rs.1200 | Rs.818 | To be credited Rs.382/- |

ANNEXURE I: FORM 1(A)

DISCOM APPLICATION FORM FOR SOLAR GRID INTERACTIVE ROOF-TOP AND SMALL SPV POWER PLANTS

Application form for solar grid interactive roof-top and small SPV power plants

(in terms of G.O.Ms.22 Dt:25.03.2013)

Affix recent Passport Size
Photo of the Applicant

For Office Use:

Reg. No.:

Date:

Application fee details:

DD No.:

To,

The

.....

(Designated Officer)

| | | |
|---|--|-------------------|
| 1 | Name of the applicant | |
| 2 | Applicant full Address | H.No.: |
| | | Street Name: |
| | | Village Name |
| | | Mandal name |
| | | District Name |
| | Pin code | |
| 3 | Phone/Mobile No | |
| 4 | Email ID | |
| 5 | Social Group | (SC/ST/BC/Others) |
| 6 | Applicant has to submit self-attested photo ID proof (Voter ID card/Passport/PAN card/Aadhar card/Driving licence & etc.,) | |
| | Type of ID card submitted | |

| | | |
|---------------------|--|----------------------|
| | ID card No. | |
| Site details | | |
| 7 | Address of the site for installation | H.No.: |
| | | Street Name: |
| | | Village Name |
| | | Mandal name |
| | | District Name |
| | Pin code | |
| 8 | SCNo. | |
| 9 | Category | |
| 10 | Connected Load | |
| 11 | Distribution/Section | ----- KW |
| 12 | If Non-Domestic, Specify type of building (Shop/Industry/Govt./Educational/others (specify)) | |
| 13 | Pole No. | |
| 14 | DTR Code/Location | |
| 15 | a) Shade free area available for installation for solar panel (Minimum requirement is nearly 15 m ²) | ----- m ² |
| | b) Proposed Capacity under this policy | -----KW |
| 16 | Average monthly consumption of electricity | ----- Units |

DECLARATION

I hereby declare that the information furnished above is true to the best of my knowledge and behalf. If false, APSPDCL has the right to reject/cancel the application. Further, I hereby agree with the specifications, terms and conditions stipulated by APSPDCL for the selection and installation of roof-top solar power plant.

Place:

Signature:

Date:

Name:

CHECK LIST :

- | | |
|---------------------------------------|----------|
| 1.Copy of photo ID card | (YES/NO) |
| 2.Copy of electricity bill | (YES/NO) |
| 3.Demand Draft | (YES/NO) |
| 4.Self addressed Rs. Stamped envelope | (YES/NO) |

ANNEXURE II: FORM 1(B)

DECLARATION FOR GROUPS/SOCIETIES

We hereby declare that the information furnished above is true to the best of my knowledge and belief. If found false, APSPDCL has the right to reject/cancel the application. Further, I hereby agree with the specifications, terms and conditions stipulated by APSPDCL for the selection and installation of roof-top solar power plant.

Place:

Date:

| S. No. | Consumer Name | Installation capacity share (%) | Consumer Service Number | Signature for consent |
|--------|---------------|---------------------------------|-------------------------|-----------------------|
| | | | | |
| | | | | |
| | | | | |

ANNEXURE III: FORM 1(C)

ACKNOWLEDGEMENT

Your application for setting up of solar grid interactive roof -top and small SPV power plant under policy on net metering in accordance with of G.O.Ms.No.22, Dt. 25.03.2013 has been received along with registration fee. The details of DD are as below:

The following Registration Number has been allotted to your application.

| | |
|----------------------|--|
| Registration Number | |
| Date of Registration | |

(To be filled by Office)

Designated Officer/APSPDCL

ANNEXURE IV: FORM 2

INSPECTION FORMAT FOR RELEASING OF ROOF TOP SOLAR GENERATING UNIT

| | | |
|----------|--|--|
| A | Name of the applicant | |
| 1 | S/C No | |
| 2 | Category | |
| 3 | Distribution | |
| 4 | Pole number | |
| 5 | Section | |
| 6 | Address | |
| 7 | Mobile No | |
| B | Meter Details | |
| 1 | Meter make | |
| 2 | Serial number | |
| 3 | Capacity | |
| 4 | Meter constant | |
| 5 | Initial reading (Tri vector parameters) | |
| 6 | i) Import | |
| 7 | ii) Export | |
| 8 | Name of the laboratory where the meter is tested (copy of test results to be enclosed) | |
| C | Grid Tie Inverter / Connector | |
| 1 | Make | |
| 2 | Serial number | |
| 3 | Capacity | |
| 4 | Input voltage | |
| 5 | Output voltage | |
| 6 | If grid supply fails, status of contactor (on or off) | |
| D | SPV Module | |
| 1 | Make | |
| 2 | Serial number | |
| 3 | Type of module | |

| | | |
|----------|---|--|
| 4 | Capacity of each module | |
| 5 | Number of modules | |
| 6 | Total capacity of module | |
| E | Details of protective system available (feasibility shall be given only on availability of the above) | |

Enclosure: 1) Single line diagram of SPV generator

2) Specification sheets of all equipment

Divisional Engineer

M&P, -----

Divisional Engineer

Operation, -----

TECHNICAL FEASIBILITY FORMAT FOR THE SOLAR ROOF TOP SPV UNIT

| | | |
|----------|--|--|
| A | Name of the applicant | |
| 1 | S/C No | |
| 2 | Category | |
| 3 | Distribution | |
| 4 | Pole number | |
| 5 | Section | |
| 6 | Address | |
| 7 | Mobile No | |
| B | Distribution Transformer Details | |
| 1 | Name of the SS | |
| 2 | DTR capacity in KVA | |
| 3 | Voltage ratio | |
| 4 | Total Connected load on the DTR(in KVA) | |
| 5 | Addl. Loads sanctioned so far (in KVA) | |
| 6 | Already proposed loads (in KVA) | |
| 7 | Total Load on DTR : $X=4+5+6$ (in KVA) | |
| 8 | SPV Generators already connected capacity in KW | |
| 9 | Proposed SPV generators capacity in KW | |
| 10 | Total generation capacity $Y=8+9$ (in KW) | |
| 11 | Difference between load and generation capacity $Z=X-Y$ | |
| 12 | Whether the transformer capacity is adequate to cater the proposed generator in addition to the existing loads and generators capacity with NPDCL and other sources (if any) | |
| C | FEEDER DETAILS | |
| 1 | Name of the 11KV feeder | |
| 2 | Name of 33/11 SS from which 11KV feeder is emanating | |
| 3 | Type and size of the conductor | |
| 4 | Current carrying capacity of the feeder | |
| 5 | Total connected DTR capacity on this 11KV feeder(KVA) | |
| 6 | SPV generators connected on this feeder, if any, and their Capacity | |

| | | |
|---|--|--|
| 7 | Maximum load reached on the feeder in Amps & KVA | |
| 8 | Remarks | |
| D | Whether technically feasible or not to export the power from proposed SPV generator (Yes or No) | |

Enclosure: LT Sketch

Divisional Engineer

Operation,

ANNEXURE V: FORM 3(A)

Intimation for Removal of Deficiency in the Application due to reasons including operational constraints
(To be filled by DISCOM)

To:

(Consumer applicant's name) M/S / Mr. / Mrs. _____

Date: _____

Ref: Your application No. _____ dated _____

Subject: Intimation for Removal of Deficiency

This is to inform you that we have received your above mentioned application and on scrutiny have found that:

The application is not complete and following are the lacunae observed:

- Adequate transformer capacity not available;

- _____

(others, if any)

Please complete the application formality by fulfilling the above lacunae within 30 days of receipt of this letter. In case you have not completed the formality within this period your application shall stand cancelled and paid fees, if any, shall not be refunded.

Furthermore, it is found that due to above mentioned constrains it is not feasible for the DISCOM to provide connectivity at all/ up to the applied capacity (tick appropriate). However, the connectivity is feasible for a reduced capacity of _____ KWp.

Based on this communication, the applicant can:

1. Either accept the connectivity at reduced capacity and approach the DISCOM (Division Office) to process the case;
2. Or, withdraw the application.

Signature of Officer:

Designation (AE/ADE):

ANNEXURE VI: FORM 3(B)

Intimation for Non-Feasibility and termination of the Application
(To be filled by DISCOM)

To:

(Consumer applicant's name) M/S / Mr. / Mrs. _____

Date: _____

Ref: Your application No. _____ dated _____

Subject: Intimation for Non feasibility and termination of Application

This is to inform you that we have received your above mentioned application and on Technical scrutiny have found that:

The application is not feasible at this stage due to the following reasons:

- _____
- _____ (others, if any)

The application hereby stands terminated. The application fee shall be refunded within 7 days from the date of issue of this letter.

Signature of Officer:

Designation (AE/ ADE):

ANNEXURE VII: FORM 4

Response of Applicant to Intimation for Removal of Deficiencies of the Application due to reasons including operational constraints

(To be filled by Applicant)

To:

The Divisional Engineer

_____ (Distribution Licensee Name)

_____ (Name of the Division)

_____ (Name / Address of office)

Date:

Subject: Intimation for Non-Feasibility of the Application due to reasons including operational constraints

The applicant will exercise the following option (tick the appropriate choice):

1. I accept the connectivity at reduced capacity as intimated by the DISCOM vide letter dated _____ and request the DISCOM to process the case;
2. Or I withdraw my application;

Name and Signature of Applicant:

Application Number:

ANNEXURE VIII: FORM 5

**Approval Letter for Consumer with respect to
The Application for Net Metering and Grid Connectivity of Grid Connected Solar PV
System**

(To be filled by the DISCOM)

Date:

To:

(Applicant's name) M/s / Mr. / Mrs. _____

(Consumer No.) _____

Ref: Your application No. _____ dated _____

With reference to your above mentioned application number, approval is herewith accorded for installing RTSPV of _____ KWp in your premises as per following terms and conditions:

1. It is recommended that you select an empanelled system installer of your choice to install the RTSPV system. A list of empanelled installers of grid-connect PV systems by MNRE (Ministry of New and Renewable Energy, Government of India) / NREDCAP (New & Renewable Energy Development Corporation of Andhra Pradesh Ltd.) is available.
2. All components of RTSPV system must comply with applicable BIS/IEC standards. Please find attached a list of standards to be complied with attached with this approval letter.
3. Applicant must submit the copy of Manufacturers Test Certificates for all components for having complied with relevant BIS/IEC standards of the selected model along with work completion report.
4. In case of any changes required at the premises of proposed site due to this proposed installation, these shall be performed by the applicant at his /her own cost.
5. The grid connectivity of the system shall be in accordance with Solar Rooftop Policy/Guidelines and any amendments thereof from time to time
6. In case applicant desires to procure Net meter from DISCOM, he/she needs to intimate the same to DISCOM by filling Form 7 along with Net meter fee at least 30 days in prior to expected installation (fee details & technical specifications can be found on website of DISCOM)
7. In case the applicant desires to purchase the Net meter on its own (with prior permission from DISCOM), the same shall be purchased from DISCOM approved vendors (as per DISCOMs approved technical specifications). These meters shall be successfully tested from DISCOM or

their authorized laboratory.

8. The DISCOM shall install meter and synchronize the RSTPV system with the grid only on receiving NOC from CEI/EI¹. For systems exempt from NOC from CEI/EI, consumer need to submit safety certificate issued by a concerned DISCOM engineer vide G.O.Ms 21.
9. Installed system must comply with safety requirements as stated in CEA/APERC Regulations and all standards referred to in those regulations.
10. Please submit the following documents after installation of RTSPV system:
 - a. Inspection Report by Chief Electrical Inspector/ Electrical Inspector, Government of A.P., safety certificate issued by Chartered Engineer, as applicable;
 - b. Work Completion report in provided format;
 - c. Test Certificate of Net meter from DISCOM approved laboratory, if applicable;
 - d. Copy of signed Net Metering Interconnection Agreement.

This approval is valid for 180 days from the date of this letter and the RTSPV system is to be commissioned within this period, failing which the approval will be treated as cancelled.

You may download all technical specifications, standards and other requirements of the solar rooftop system from _____ (link to website of documents download)

Signature of Officer:

Name and Designation (AE/ADE):

Date:Stamp:

¹As per G.O. Order 36 and 38 dated 01.11.2016 & 20.12.2016 respectively government has exempted mandatory inspection by CEI up to 33 KV

ANNEXURE IX: FORM 6(A)

To be updated as per Annexure C1 of Solar Rooftop Policy Guidelines

ANNEXURE X: FORM 6(B)

To be updated as per Annexure C2 of Solar Rooftop Policy Guidelines

ANNEXURE XI: FORM 7(A)

Intimation of Meter Procurement

(To be filled by Applicant)

To,

_____ (Concerned Authority)

_____ (Name of the DISCOM)

_____ (Date)

Ref: Application No. _____ dated _____

Dear Sir,

With reference to above- mentioned Application number and receiving the Letter of Approval after the technical feasibility, I/we intend to install _____ KWp of RTSPV system vide letter No _____ dated _____. In this regards, I/we request DISCOM to provide a meter of class _____ for RTSPV installation. The meter shall be as per the Net/ Gross metering clause in Solar Rooftop Policy/Guidelines...

I/We agree to pay fee of INR _____ - as mentioned in DISCOM website via online mode/ DD _____/ cheque _____.

Name of Consumer/Sign _____

ANNEXURE XII: FORM 7(B)

Assigning Meter

(To be filled by the DISCOM)

_____ (Name of the Applicant)

_____ (Consumer No.)

Ref: Your Application No. _____ dated _____

1. Net meter of class _____ is available/ not available (tick (✓) appropriate) with DISCOM.
2. Appropriate meter will be sent by DISCOM test lab and shall be dispatched on the day of final check and synchronization of RTSPV system with the DISCOM's grid.
3. The DISCOM will issue test certificate to consumer prior to final checks and synchronization of the system. The Consumer has to submit test certificate along with Work Completion Report

Signature of Officer

Name and Designation of the Authorized Officer

Date

Stamp

Note: -

- a) Applicant must bring a copy of Letter of Approval.
- b) In case meter is not available with DISCOM it can be procured from external agency
- c) If meter is procured from outside agency, a letter intimating Meter No., Class and other specifications described as per CEA regulations, - shall be submitted to the DISCOM.

ANNEXURE XIII: FORM 7(C)

Request for Meter Testing

(To be filled by Applicant)

Date:

To

_____ (Concerned Authority)

_____ (Name of the DISCOM)

Ref: Application No. _____ dated _____

Dear Sir,

With reference to above-mentioned Application number and receiving the Letter of Approval after the technical feasibility, I/we intend to install _____ KWp of RTSPV system vide letter No _____ dated _____. In this regards, I/we have procured the meter from -----.

As per the clause _____ of meter testing of Solar Rooftop Policy/Guidelines, I request DISCOM to kindly test meter of specification -----.

I/We agree to pay fee of INR _____ as mentioned by the DISCOM for testing of meter through online mode/ DD _____ / cheque _____.

Name of Consumer/Signature

Application number

ANNEXURE XIV: FORM 7(D)

Intimation regarding Completion of Testing of Meter for Installation with RTSPV System

(To be filled by DISCOM)

_____ (Name of the Applicant)

_____ (Consumer No.)

Date

Ref: Application No. _____ dated _____

Dear Sir,

With reference to the above mentioned Application number and your letter dated _____, regarding testing of meter, hereby inform you that your meter with specification _____ is tested. The same will be installed after the synchronization check of the system.

Signature of Officer

Name and Designation of the Authorized Officer

Date

Stamp

ANNEXURE XV: FORM 8

Work Completion Report

(To be submitted by the applicant for systems inspection)

To,

The Chief Electrical Inspector/ Electrical Inspector.....(Control Area)

Government of Andhra Pradesh (if RTSPV to be inspected by CEI/EI)

ADE/SE-Operation Officer..... (if RTSPV size is exempted from inspection by CEI/EI)

CC: Office of (Concerned) ADE(In case of LV system), DISCOM (In case submitted to CEI/EI)

CC: To NREDCAP in case of subsidised consumers, if applicable

Sir/Madam,

Sub: Submission of work completion report (to be submitted by the applicant) for system documentation requirements.

Ref: Our Application No.: _____ dated: _____

With reference to the above, I hereby confirm to you that we have completed the work of installation of the renewable energy system and submit the following basic information for your perusal and request you to arrange to Inspect and Commission the system at the earliest:

A. Details of the Solar PV module

| | | |
|----|----------------------------------|--|
| 1. | Model No. | |
| 2. | Name and address of manufacturer | |
| 3. | Capacity of each Module (Wp) | |
| 4. | No. of Modules | |
| 5. | Total Capacity (kWp) | |
| 6. | Date of Installation | |
| 7. | Applicable Standard (BIS/IEC) | |

B. Details of the Inverter

| | | |
|-----|---|--------|
| 1. | Name and address of the inverter manufacturer | |
| 2. | Brand Name of the inverter | |
| 3. | Model No. | |
| 4. | AC capacity of individual inverter (kW) | |
| 5. | No. of inverters installed | |
| 6. | Total AC capacity of inverter (kW) | |
| 7. | Serial Nos. | |
| 8. | Date of Installation | |
| 9. | Applicable Standard (BIS/IEC) | |
| 10. | Is anti-islanding protection provided? | Yes/No |

C. Module Mounting Structure

| | | |
|----|--|--------|
| 1. | Does the Module Mounting Structure withstand wind capacity up to 150 kmph? | Yes/No |
| 2. | Is total load of the structure +panel less than 60 kg/m ² ? | Yes/No |
| 3. | Applicable Standard (BIS/IEC) | |

D. Details of the Cables: DC

| | | |
|----|-----------------------------|--|
| 1. | Make / Name of manufacturer | |
| 2. | Size & Type | |
| 3. | Applicable Standard (IEC) | |

E. Details of the AC wiring

| | | |
|----|-----------------------------|--|
| 1. | Make / Name of manufacturer | |
| 2. | Size & Type | |
| 3. | Applicable Standard (IEC) | |

F. Details of the DC distribution box

| | | |
|----|---|--|
| 1. | Make / Name of manufacturer | |
| 2. | Sl. No. | |
| 3. | High quality suitable capacity MOVs/ SPDs along with suitable reverse blocking diodes | |
| 4. | MCB /Isolator quantity & capacity | |
| 5. | Size & Type | |
| 6. | Applicable Standard (IEC) | |

G. Details of the AC distribution box

| | | |
|----|---------------------------------|--|
| 1. | Make / Name of manufacturer | |
| 2. | Sl. No. | |
| 3. | AC Surge Protection Device | |
| 4. | MCB /MCCB quantity &capacity | |
| 5. | Size & Type | |
| 6. | Applicable Standard (IEC) | |

H. Details of the Earthing

| | | |
|---|---|----------------------------------|
| 1 | Earth resistance (shall be less than 5 ohms) | |
| 2 | Size of the Earth wire / flat* | |
| 3 | Three separate Earthing points Modules,mounting structure &DC Surge protection device Inverter, AC Surge protection device Lightening Arrester | Yes / No Yes / No Yes / No |
| 4 | Size & Type | |
| 5 | Applicable Standard (BIS/IEC) | |

Note:*Earthing shall be done in accordance IS 3043-1986, provided that Earthing conductors shall have a minimum size of 4 mm² copper wire or 10 mm² aluminium wire or 3 mm² X 70 mm² hot dip galvanized iron flat strip.

I. Details of the Net meter details, if purchased by consumer (please enclose the test report of the net meter tested at the laboratory of the DISCOM/designated agency)

| | | |
|----|--------------------------------------|--|
| 1. | Make | |
| 2. | Serial No. | |
| 3. | Procured from DISCOM/ Outside Agency | |
| 4. | Manufacturer's Name | |
| 5. | Capacity | |
| 6. | Type / Model | |
| 7. | Single ph./Three ph. | |
| 8. | Rated Current & CT Ratio | |
| 9. | Reference Voltage & PT Ratio | |

| | | |
|-----|-------------------------------|--|
| 10. | Date of Test by MT, DISCOM | |
| 11. | Applicable Standard (BIS/IEC) | |
| 12. | Month & Year of Manufacture | |
| 13. | Class of meter | |

J. Details of the Caution signage

K. Provision of manual and automatic switches: Yes / No

L. G.P.S. Co-ordinates of the RTSPV System Installation

(i) Latitude:

(ii) Longitude:

M. Whether Operation and Maintenance Manual provided to the consumer: Yes/ No

Certified that the above said RTSPV system was installed and the equipment used comply with the Technical and Safety standards as specified by the MNRE/ CEA/ MERC/ DISCOM under net metering program.

Signature of the Applicant

Name and Signature of the System Installer

Name and Address with Seal

Name: _____

Name of the firm and address:

Date: _____

Date: _____

Enclosures:

1. Test report of net meter tested at the laboratory of the DISCOM.
2. Copy of the IEC/IS Test certificates of PV modules, Inverter, Cable etc.
3. Data sheets/Drawing for the array mounting System.
4. Staad Pro report – Module mounting structure. (If required)
5. Actual Single line wiring diagram (SLD) of the SPV System and estimated energy generation report. (PVsyst/ PVSol/ etc.)
6. Copy of Maintenance & Operation information manual provided by the System Installer
7. Copy of Interconnection Agreement

Certificate from CEI / EI, wherever applicable

ANNEXURE XVI: FORM 9

Intimation to the DISCOM for readiness of the system for System Checks, Synchronization with the DISCOM grid and Installation of Meters.

(To be submitted by the Applicant)

To,

The Executive Engineer

_____ (Name of the Division)

_____ (Name of the DISCOM)

_____ (Address of the Division Office)

Sir/Madam,

- Sub:** 1. System Checks;
2. Synchronization with the DISCOM Grid;
3. Installation of Meter(s);

Ref: Our Application No.: _____

With reference to the above, I hereby confirm to you that the RTSPV system has been installed as per the technical and safety standards laid out by CEA/ APERC/ DISCOM.

The system is ready for synchronization with the DISCOMs grid and installation of meter(s).

Name of the Applicant: _____

Signature: _____

Enclosures:

1. NOC from CEI/EI, if applicable
2. A copy of Work Completion Report as submitted to the CEI/ EI/ DISCOM Engineer, as applicable.
3. Manufacturer's test certificate of all the components used in installation of the RTSPV system.

ANNEXURE XVII: FORM 10

Guidelines for pre-commissioning check before and after connecting the RTSPV system with DISCOM Network and steps for maintenance of network where such connectivity exists

(For DISCOMs internal purpose only)

1. Mandatory safety precautions / features:

The following are mandatory safety precautions which will be taken care before and after commissioning of grid connected Solar PV system.

- (a) An inbuilt Inverter relay which trips on DISCOM supply failure and prevent any solar power injection to the DISCOM Network when there is no power from DISCOM. The anti-islanding protection shall be tested during the release of connection.
- (b) The Solar PV system should be separately grounded / earthed. A minimum of two Separate dedicated and interconnected earth electrodes must be used for the earthing of the PV system support structure, with a total earth resistance not exceeding 5 ohms.
- (c) Lightning Arrestor also must be provided for SPV.
- (d) Manual isolator switch at an easily accessible location with locking facility shall be provided.
- (e) Caution Stickers shall be used with the green back ground and the text "Solar PV Systems" written in white letters. The size of these stickers shall be 10 CM (width) x 7 CM (height) with the text clearly printed in the center of the sticker.(applicable to only 50 kW and above)
- (f) All SPV consumers should have a mandatory sign board fitted near the existing meter reading terminal stating that 'This service is fitted with a LT grid connected SPV plant'. The Solar PV system Caution Stickers shall be fixed at the following locations. (applicable to only 50 kW and above)
 - i. On or near to meter of service with grid connected solar PV system;
 - ii. On The Consumer main switch, of a service connected with a grid connected Solar PV System;
 - iii. On LT poles with grid connected Solar PV Systems at height of about 1.50 meter from the ground;
 - iv. On LT feeder pillars with grid connected Solar PV System on the street-facing door of the feeder pillar.
 - v. On each of the LT take off poles of a Distribution Transformer to which Solar PV Systems are connected.
 - vi. On substation end of HT feeder having Solar PV System.
 - vii. A List of serviced connections of grid connected Solar PV Systems shall be available at the Division office and 33/11 KV S/S.

- viii. A record may be maintained at the Division office of each SPV plant commissioning date and other details.
 - ix. The SPV connected details of pole / pillar box /DT/ SS feeder end wise may be maintained at Division office.
- (f) During planned / forced maintenance work on DISCOMs network, before taking up the work in hand, besides ensuring all other provisions such as line earthing, de-energization of the line section where the work is to be carried out as per prevailing norms further it should be ensured that supply from such small solar roof-top PV power plants are not back feed and supply should also be disconnected by manual isolating switch with locking facility installed in the premises of such consumers and ensuring proper earthing.

2. The Check List before release of connection.

A. Component Inspection Checklist:

| Sr. No. | Item type | Yes | No |
|---------|--|-----|----|
| 1 | Installation Lay-out – is it as per drawing? (Applicable only for 50 kW above) | | |
| 2 | Inverter IS/ IEC standards qualified | | |
| 3 | PV panel IS / IES standards qualified | | |
| 4 | PV isolators / PV cables IS / IES standards qualified | | |
| 5 | AC disconnect manual switch provided with locking arrangement | | |

B. Grid connected Functional Safety Checklist:

| Sr. No. | Item type | Yes | No |
|---------|---|-----|----|
| 1 | Check whether solar generation stops automatically when DISCOM supply made off (inverter/PCU cut off) | | |
| 2 | Bi-directional flow recorded on Net meter | | |
| 3 | Solar Generation meter Ok? | | |
| 4 | Check all Earthing points as per standard | | |
| 5 | Solar and Bi-directional meter tested & sealed by DISCOM meter testing lab | | |
| 6 | Check whether manual Isolating switch is installed at accessible location | | |
| 7 | Check whether manual Isolating switch stops feeding supply in DISCOM network when in OFF position | | |

ANNEXURE XVIII: FORM 11

Synchronization with the DISCOM grid, Installation of Meter(s) and COD.

(To be filled by the DISCOM)

To,

(Applicant's name) M/s / Mr. / Mrs. _____
(Consumer No.) _____

Ref: Your application No. _____ dated _____

Sir/Madam,

Sub:

1. Synchronization with the DISCOM Grid;
2. Installation of Meter(s);
3. Commercial Operation Date.

Ref: Our Application No.: _____

Synchronization test of Solar Rooftop PV system of kWp, installed on the roof of your installation bearing Application No.: has been conducted and your RTSPV system found satisfactory and successfully synchronized with the DISCOMs grid. Meter with no has been installed and sealed.

Yours faithfully,

Signature of Officer:

Name and Designation (ADE/DE):

Date:

Stamp:

ANNEXURE XIX: FORM 12

Intimation for Removal of Deficiency in the system installed

(To be filled by the DISCOM)

To:

(Consumer applicant's name) M/S / Mr. / Mrs. _____

Date: _____

Ref: Your application No. _____ dated _____

Subject: Intimation for Removal of Deficiency found during inspection

As requested on _____ (Date on which Form 9 was filled and submitted) to carry out inspection & synchronization of your _____ KWp system we have found out that the system does not adhere to :

- a) E.g.: Earthing standards are not followed
- b) _____
- c) _____

We request you to rectify the mistakes within 15 days and submit Form-9 again along with Xerox copy of this letter

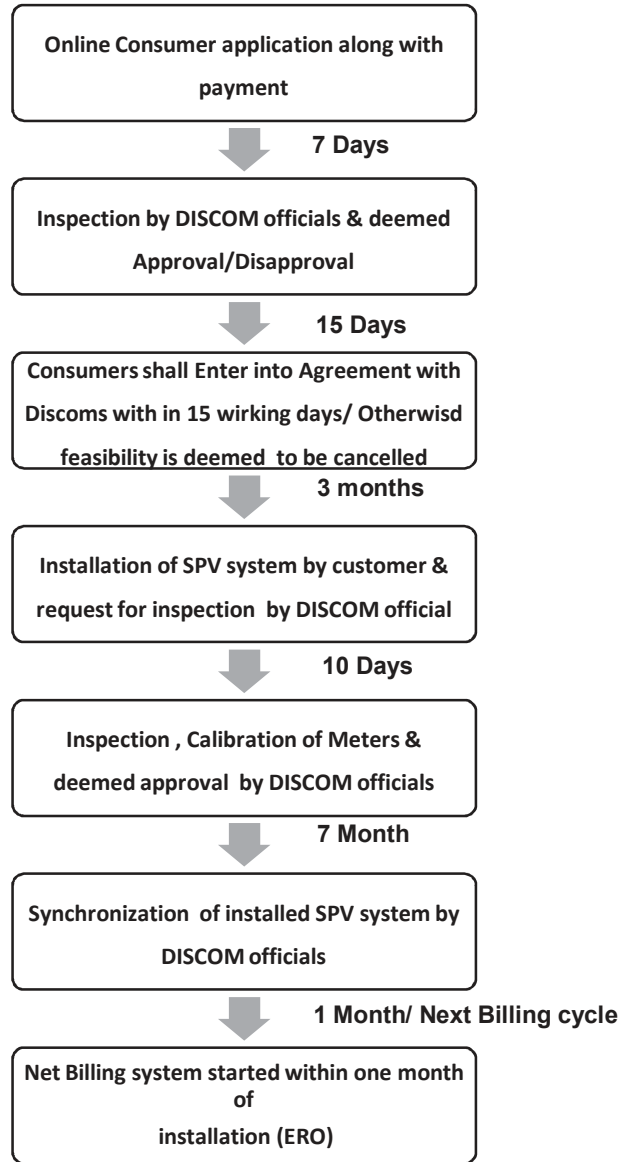
Signature of Officer:

Designation (AE/ADE):

Annexure-A

- VIII. Entire circuitry, including panels, inverter, bidirectional meters, cabling, manual switch, safety circuit breaker etc., should be installed by the vendor under a turnkey approach. The metering infrastructure can also be provided by APDISCOM.
- IX. Mandatory safety precautions/features which have to be installed as part of SPV system are:
- f. Certified Inverter controlled relays which can trip on grid failure and thus prevent any solar power injection to Grid when there is no power in Grid. The same is to be ensured by the consumer from time to time.
 - g. Solar Circuit should be separately grounded/ earthed.
 - h. Additional switchgear/relay (sensing phase-angle shift) required as a second rung of safety. It shall be positioned between interconnection point and the bi-directional meter.
 - i. Harmonics suppression/Filtering feature in the inverter for local network's safety and for accurate measurement of energy.
 - j. Additional manual relay / switch on the pole side to be installed at the cost of SRP developer.
- X. Hybrid Islanding is permitted, whereby the consumer can use solar generation from rooftop SPV, even when the grid is not available. If the consumer desires, he may do so by installing appropriate protection systems before synchronization. The same has to be tested & permitted by DISCOM official(s) before synchronization.
- XI. A single bi-directional meter shall be installed for export and import. This bi-directional meter should be a **smart meter** with the following characteristics:
- g. Separate registers for Export and Import with MRI downloading facility.
 - h. kVAR, kWh, kVA measuring registers for Capacity above 1 KW.
 - i. AMI facility with RS232 (or higher) communication port.
 - j. Class 1 accuracy meters for PV systems up to 10 kWp, 0.5 accuracy class meters for PV systems above 10 kWp and 0.2 class accuracy meters for HT systems (56 kWp and above).
 - k. Meters should be BIS/ISI Certified.
 - l. CT functionality meters for PV systems above 15 kWp.
- XII. Vendor executing turnkey solution should be a channel partner of MNRE.
- XIII. If on inspection, at the time of release of permission to install a net metering solution or on any periodic inspection thereafter, non-IEC/ISI/BIS certified equipment is found to be part of net metering solution on a consumer's premises, the vendor shall be blacklisted and the same shall be notified to MNRE.
- XIV. A Check meter with import/export, MRI Compatible, tri-vector meter with provision to record 3-Line currents, 3-Phase voltage, V-THD & I-THD in load curve may be provided in case of Solar generation more than 56KW.

Annexure- B: Flow Chart of process & associated Service Level Agreements (SLAs)



Annexure D: Example of Net & Gross Billing

Assumption-1: Applicable Retail Tariff is

| Consumer Category | Unit | Fixed Charge (Rs./Month) | Energy Charge (Rs./kWh) |
|---|------|--------------------------|-------------------------|
| LT-I : Domestic (Telescopic) | | | |
| LT-I (A): Upto 50 Units / Month | kWh | | 1.45 |
| LT-I (B): Above 50 Units/Month (Consumers above 200 units/month) | | | |
| First 50 units | kWh | 0 | 2.60 |
| 51-100 units | kWh | 0 | 3.25 |
| 101-150 units | kWh | 0 | 4.88 |
| 151-200 units | kWh | 0 | 5.63 |
| 201-250 units | kWh | 0 | 6.38 |
| 251-300 units | kWh | 0 | 6.88 |
| 301-400 units | kWh | 0 | 7.38 |
| 401-500 units | kWh | 0 | 7.88 |
| Above 500 units | kWh | 0 | 8.38 |

Assumption-2: Average Pooled power Purchase cost for that year is Rs. 6.00 / kWh

Domestic Consumer installs a 2 kWp SRP and the SRP generates 288 units per month.

Case -1: Net Metering

| Month | Billed Demand/ Consumption from grid (Units) | SRP Generation (Units) | Net Energy (Rs.) | Net Monthly Payment by DISCOM (Rs.) |
|-------|--|---------------------------|---------------------|---|
| | A | B | B-A =C | C*APPPC |
| Jan | 250 | 288 | 38 | 228 |
| Feb | 350 | 288 | (62) | 0 |
| Mar | 400 | 288 | (112) | 0 |

Case -2: Gross Metering

| Month | Billed Demand / Consumption from grid (Units) A | Billed Demand / Consumption from grid (Rs.) (A * Applicable Tariff as per APERC) = B | SRP Generation (Units) C | SRP Payment (Rs.) (C* APPPC)=D | Net Monthly Payment by DISCOM (Rs.) (B-D) |
|-------|---|--|------------------------------------|--|---|
| Jan | 250 | 1,137 | 288 | 1,728 | 591 |
| Feb | 350 | 1,850 | 288 | 1,728 | 0 |
| Mar | 404 | 2,250 | 288 | 1,728 | 0 |

Annexure-E

This check is for ensuring that the SPV system is not misused. This energy limit may be computed by using 20% CUF/PLF of the installed SPV capacity

Case-1: Consumer installs a 500 Wp SPV system and opts for Gross / Net Metering. The SPV system generates 72 units per month. Any surplus injection above 72 units shall be treated as inadvertent and no payment shall be made for it.

Case-2: Consumer installs a 5 kWp SPV system and opts for Gross / Net Metering. The SPV system generates 720 units per month. Any surplus injection above 720 units shall be treated as inadvertent and no payment shall be made for it.

Annexure-F: Schematic

