

3. Andhra Pradesh Solar Power Corporation has also recently announced tenders for DPR for the establishment of following Solar Projects: 1. 2000MW [Pedda Dasari Pally] 2. 800MW [M Kambala Dinne] 3. 600MW [Uruchintala] 4. 3300MW [Kolimigundla] 5. 2000MW [Mudigubba] 6. 1000MW [Chandrasekharapuram] and 7. 1000MW [Rudrasamundram]. Total: 10,700MW

4. These Solar Power Projects of >10,000 MW are in addition to the existing RE Power of 8,500 MW mentioned by the DISCOMS.

5. If 'the smooth integration of 8500MW RE which is variable in nature, with the Grid having system demand of 9000 to 10000 MW is difficult task' for the DISCOMS, then how do they propose to integrate 19,200 MW [10700 + 8500] with the same Grid having system demand of 9000 to 10000 MW?

6. And, if 19,200 MW can somehow be integrated with the Grid, then the total Solar Rooftop Power which presently at 115.4MW is much less than 1% of that capacity can easily be accommodated.

7. And if, still the injection of energy into the grid from rooftop solar is a cause of concern for the DISCOMS, then, they should actually stop gross metering and have only netmetering. Because for any given capacity, in netmetering it is only the excess remaining after self consumption that gets exported into the grid, whereas in gross metering the entire generation of the capacity gets exported!

***The DISCOMs have submitted 'The DISCOMs are supplying power whenever solar power is not there in the system and is acting as a standby power to the consumers having Solar Rooftop. The DISCOMs have to pay for infrastructure cost from interface point of Generator and APTRANSCO and upto the point of consumers and have to pay fixed costs to APTRANSCO and Generating Companies and it has to meet its own distribution business fixed cost. The SRP consumer is generating power at the consumption point and supplying the excess power to the grid if available.***

1. The loss is only assumed; on basis of revenue not collected from the consumer opting for SRT. There are no audited figures available. But in reality the energy exported by SRT consumer is immediately consumed by similar loads nearby **at the same price and without any T&D Losses.**

2. Also, DISCOM gets RPO benefits on account of the units deemed to have been purchased from RE sources, for all units adjusted against the consumers' bills due to Net Metering. DISCOMs in turn sell such RECs

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This saving in power purchase is at consumption end, leading to increased saving in power purchase at the Generator busbar, factoring in Transmission Losses and Distribution Losses.

4. Further, due to distributed generation located at consumption end, Distribution Losses would also reduce. The excess energy exported is consumed by other consumers' within the locality (or) at feeder level for HT Consumers. DISCOM need not procure this additional energy from the other feeders.

5. Net Metering is promoted by the Central Government to reduce burden on DISCOMS on power management due to:

**Avoided generation capacity cost (AGCC):** Rooftop solar can decrease the contracted capacity for new PPAs, and DISCOMs can reduce their fixed expenses significantly, while avoiding generation capacity cost.

**Avoided power purchase cost (APPC):** Rooftop solar substitutes the most expensive energy procured by the DISCOM at any given time interval if the DISCOM follows a merit order dispatch.

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**Avoided distribution capacity cost (ADCC):** Rooftop solar requires a simple distribution

network, relieving load on the distribution system. DISCOMs can reduce expenses on installation and maintenance of additional network components with simultaneous decongestion. The savings due to deferred capital investment resulting from the decongestion, along with reduced operations and maintenance costs, make up the avoided distribution capacity infrastructure and related.

**Avoided working capital requirement (AWCC):** Reduced power purchases, avoided generation capacity, and revenue from the sale of energy from rooftop solar in the distribution grid reduce the DISCOM's overall expenditure. This will reflect in reduction in the working capital requirement of the DISCOMs and will lower their debt servicing obligation.

## **SUBMISSIONS**

### **Our Submission No 1:**

1. Utility scale mega solar power plants of thousands of MWs at a single location need extensive T&D network. In solar power procurement costs from such plants more than one third goes to T&D expenditure. Solar power is suitable for decentralized power generation. The energy required by consumers can be generated near the consumption point, obviating the need for costly T&D network..

2. Rooftop solar has an edge over other forms of power generation for its lesser transmission losses. It supports peak load requirement of the grid and helps in flattening the load curve. A distributed web of localized, net-metered solar installations will help DISCOMs run and maintain a more balanced and reliable grid for following reasons:

**Netmetering based rooftop solar contributes to Grid Stability** by providing active power, and also reactive power to the grid, which helps provide stable voltage.

**Netmetering based rooftop solar requires lower infrastructure upgrades** when coupled with some natural balancing within area of substations. DISCOMs save hundreds of Crores they spend annually to maintain their network, for any new capacity additions through centralized power generation.

**Netmetering is irreplaceable in the implementation of the smart grid.** The technology integration for net-metering is a part of smart-grids. In Puducherry, adoption of smart grid and net-metering, already proved, it reduces pilferage, stems AT&C losses, and helps DISCOM become profitable

**Netmetering based rooftop solar reduces need for large parcels of land for new power infrastructure** by using rooftops instead of acres of land for ground mounted solar projects. The average residential rooftop is around 150-200 sq.m, total realizable potential of rooftop solar in India is 57-76 GW by 2024. That equals to over 380,000 acres of land area! If net-metering is comprehensively adopted then pressure of land acquisition for solar generation by the State Government is significantly reduced.

3. **DISCOMS themselves acknowledge the benefits of rooftop solar:** In their Petition No 32/2019 Dated: 19.01.2019 to the Hon'ble Commission, **APEPDCL had submitted**, under **benefits for the DISCOM** from Solar Rooftop the following: **Better Energy Management, Peak Demand Sharing, Easing of Distribution & Transmission Constraints, Easing of Capacity Enhancement Costs, Avoiding Purchase of Expensive Short Term Power, Reduction Of Subsidy Burden On DISCOM.**

## **Our Submission No 2.**

Continued regulatory support for Solar Netmetering is required to ensure that the Solar Rooftop capacity addition in the State meets the target set by the Government:

**1.** Other states in the country are continuing to promote Net Metering in a big way.

- Government of Karnataka increased subsidies for Net Metering vide notification dated 15.03.2020 by 40% for domestic consumers.
  - Governments of Rajasthan and Uttar Pradesh have increased Capacity limit of Net Metering Systems to 2 MWp at single location.
  - Government of Uttar Pradesh has State Subsidy of Rs.15,000 to Rs.30,000 for domestic consumers.
  - Government of Gujarat allocates fund in budget for FY 2020-21 to promote Group Captive Solar Roof top installations in domestic sector.
- Government of Goa is extending 20% State Subsidy

**2.** Some of our State Govt Departments, Municipal Corporations, Central Govt Departments, PSUs etc have Projects that are already planned, approved by their General Body, financial provision approved, tenders already published, work order placed, or systems being installed. Also, RE projects in Solar City and Smart City are developed as per guidelines of Central and State Government, and grid support to bank unutilized energy has been considered. Many projects have been planned on Build Own Operate and Transfer (BOOT) basis having minimum 15 years contract. Any change in Net Metering Regulations at this stage, will destroy the financial viability of all these Projects.

**3.** The increase in capacity of rooftop solar as projected by the DISCOMs is very marginal. But in this incremental increase in installed capacity, a few hundred small and medium sized businesses earn their livelihood in State of AP. They in turn support a few thousand families through direct employment. And in turn support other small local businesses related to their activity. This small increment sustains the economy at the local level and has a multiplier effect. As it is, difficulties in living conditions have become more pronounced on account of COVID-19 and the overall economic crisis

### Our Submission No 3.

Netmetering is vital to sustain the limited growth of solar rooftop. Removing it will irreversibly shut down any growth of solar rooftop.

1. The Parliamentary Standing Committee on Energy had recently submitted its report on Demand For Grants for MNRE. Considering the poor performance of the Solar Rooftop sector till date, and the unlikeliness of India reaching the Target 40GW SRT by 2022, at that rate; the Committee made the following observations and recommendations: *'the Committee are of the considered view that the Ministry should focus on this programme on a **Mission Mode** so as to give it a fillip. The Committee, therefore, recommends that:*

i) *The process of subsidy disbursement should be made simpler and faster and the Ministry should widely advertise the benefits of having a Roof-top Solar Projects and the incentives provided by the Government for the same so as to spread awareness among the masses.*

ii) Proper implementation of Net-Metering should be ensured.

iii) The Ministry should have regular review meetings with the implementing agencies. MNRE had informed the Committee there is disparity in metering regulations/tariff orders across States due to diverse parameters. MNRE also informed it had requested Forum Of Regulators [FOR] to develop model regulations for which the States may adopt

2. The Forum of Regulators (FOR), have submitted their Report on Metering Regulation and Accounting Framework for Grid Connected Rooftop Solar PV in India (2019) & consequently released their Draft Model Regulation for Grid Interactive Distributed Renewable Energy Sources.

In these regulations **Netmetering has been retained, and also its scope has been enhanced.**

3. On proposals received from its DISCOMs, MERC had earlier released draft guidelines excluding Netmetering and implementing Netbilling[Gross Metering]. Overwhelming responses rejecting that proposal included that of Shri Nitin Gadkari ji, then Minister (Ministry of Road Transport and Highways), Government of India in his letter addressed to Hon'ble Union Power Minister has suggested as under:

*'Net Metering should be optional along with Net Billing till target is achieved or up to 2022.'* *'The Hon'ble Prime Minister during UN Climate Action Summit 2019 had pledged to increase RE capacity in the country to 175 GW by 2022. The proposed Draft Regulations shall be a deterrent in achieving the country's RE target.'*

### Maharashtra ERC has re included Net Metering in its recent Regulations

4. **The Hon'ble Commission** had given its Order In the matter of Approval of Load Forecasts and Resource Plans for 4th and 5th Control Period on 15.04.2019. In response to the points on Non-promotion of rooftop Solar Plants by the learned objector Sri. M. Thimma Reddy, both DISCOMs have submitted that they are taking a lot of interest for promotion of solar rooftop units. And the Hon'ble Commission had expressed its view as: **'Every effort should be made to reach the targets in expansion of solar roof topplants'**

5. The salutary objectives in Section 86[1] in the draft amendments of the Electricity Act 2003 include: *'(1) The State Commission shall discharge the following functions, namely:--(c) facilitate intra-State transmission and wheeling of electricity and promote smart grid, **net metering**, ancillary support and decentralised distributed generation; and (e) promote cogeneration from renewable sources of energy and generation of electricity from renewable sources of energy'*

#### **Our Submission No 4.**

1. The narration which precludes the amendments mentioned in the GO.Ms 35 Dt 18.11.2019 is: *"Governments have observed that the statutory audit has reported an abnormal spurt in Power Purchase cost and deteriorated financial position of the A.P. DISCOMs. Taking into consideration the financial deterioration of APDISCOMS and in order to strengthen the financial position of the Power Utilities, Government after careful examinations of the matter hereby make the following amendments to the above policies."*

The DISCOMS have also submitted: 'Considering the present scenario, the Govt of AP issued an amendment to the Solar/Wind Power Policy vide GO.Ms.No.35 Dt: 18.11.2019, wherein it was mentioned, that the applicable tariff for either net metering/gross metering shall not exceed difference of pooled variable cost and balancing cost (or) the applicable tariff at the time of COD whichever is less.'

2. From the above it is evident that **the Govt of AP had already considered all the points made by the DISCOMS in this petition; and had chosen to amend only the applicable tariff for metering as far as the Solar Rooftop part of the policy is concerned. Leaving all other aspects pertaining to Solar Rooftop intact, including the consumer being given the right to chose either Netmetering or Grossmetering!**

3. The Hon'ble Commission had already given its Order In the matter of Approval of Load Forecasts and Resource Plans for 4th and 5th Control Period on 15.04.2019. In it the DISCOMs had factored the quantum of capacity increase of rooftop solar for the entire period already.

We, request the Hon'ble Commission in exercise of the various powers bestowed upon it vide the Electricity Act 2003, to bring about only the amendment related to applicable tariff, made under GO.Ms 65 Dt 18.11.2019 by the Govt of AP and summarily set aside all other amendments proposed by both DISCOMS

We, also request the Hon'ble Commission to provide us an opportunity to make submissions in person, during the public hearing.

Thanking You Sir,

Your's Sincerely

FOR SOLAR SYSTEMS

A.V.V.V.Prasad

M/s Solar Systems,

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**ANDHRA PRADESH SOLAR INTEGRATORS  
WELFARE ASSOCIATION** (Regd. No. 267/2019)

Regd. Office : 2-15-48/4/19, Sector-9, MVP Colony Visakhapatnam-530017, Andhra Pradesh  
Contact : 50-77-3, Ground Floor, Sai Satya Nilayam, Seethammapeta, Visakhapatnam-530016  
Mob : 9866194904, 7416199777 E-Mail : apsiwa2018@gmail.com



Date: 03.06.2020

To : **The Secretary**  
**A.P Electricity Regulatory Commission**  
4<sup>th</sup> Floor, Singareni Bhavan, Red Hills  
Hyderabad: 500004

Respected Sir,

**Sub: Submission of objections and suggestions on the amendment proposed to Modalities [Guidelines] for implementing Solar Rooftop Policy 2018, in OP No. 8 of 2020**

With reference to your public notice dated: 09-03-2020, inviting objections and suggestions on the subject issue, we the President and members of Andhra Pradesh Solar Integrators Welfare Association are submitting the following points for the kind consideration of the Hon'ble Commission:

The DISCOMs have submitted: *'It is requested that only gross metering concept may be permitted and a generic tariff may be fixed on the costs involved instead of making payment based on Average pooled purchase cost.'*

Our Response:

1. As per the provisions of the Solar Rooftop Power Policy 2018: *"All Registered Companies, Government Entities, Partnership Companies/Firms/Individuals and all consumers of AP DISCOMs 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". 'Eligible Developers are free to choose either Net or Gross metering option for sale of power to DISCOM.'* *"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."*

2. It is evident from the above, that only under Netmetering the concept of self consumption exists. In Gross Metering there is no self consumption.

3. By enforcing only Gross Metering for grid connectivity, the fundamental right to Captive Use/Self Consumption as accorded by the Electricity Act-2003 to the consumer is being denied. The proposed system of Gross Metering does not allow consumers to set off the energy from their own RE system against their own consumption, which has to be necessarily sold to the Distribution Licensee. This violates the fundamental right of the Consumer to set up captive power plant, given to it under Section 9 of the Act. The proposed amendment to netmetering also impinges upon the salutary objective of Section 86 (1)(e) of EA, 2003.

The DISCOMs have submitted: *'In Gross Metering, the DISCOM is paying to the SRP Consumer at the rate of Average Pooled Power Purchase Cost for all units generated by the SRP. But now days the solar power tariff rates have come down approximately to Rs2.50 per unit in the country.'* *"In the existing policy, provision is made for Long Term Contract for 25 years and twenty five years is too long period and this may be modified to 10 year*

Our Response:

1. Under Gross Metering System, consumers have to sell energy generated by their rooftop solar system to DISCOM at grid tariff. And for their own consumption, same consumers have to buy energy from DISCOM at retail tariff.

2. The DISCOMs are also suggesting Gross Metering at Rs2.50 per unit. A 10KW unit can export 1440 units max per month. That translates to Rs3,610 per month. At Rs 4,00,000 as cost of 10KW systems and 10% Annual Rate of Interest on Loan, With EMI of 3,625 per month. The payback period on Loan is 25 Years. During this period the consumer continues to pay a large portion of their Electricity Bill based on retail tariff, every month.

Gross Metering is an unviable option for the customers, and hence has failed in its implementation.

The DISCOMs have submitted *“the generation cost of SRP is coming down year by year and the Retail Supply Tariffs [RST] of consumers are on upward direction. The present per MW installation cost of Solar Rooftop Plant is around Rs 5.Crores. This has become an incentive to Solar Rooftop Developers and is affecting the DISCOM revenues’*

Our Response:

1. It is precisely because the RST to consumers is increasing year by year, that the consumers need to substitute high cost conventional day power with low cost solar power.

2. It is for the same reason that consumers also use energy efficient appliances, energy saving devices and implement energy conservation systems and processes. It can be argued that the DISCOMs are losing revenue on account of such measures also. Should the consumers be penalized for those measures as well?

3. However, any apprehension the DISCOMs may have, that the Rooftop Systems would have uncontrolled growth is misplaced; for the following reasons:

**(3a.)** There are multiple built in checks in place within the existing Netmetering policy itself, to regulate any uncontrolled growth including:

- i. Capacity of Plant at any location, limited to Sanctioned Load/CMD [OR] 1MW whichever is less.
  - ii. Number of Sanctioned Plants, limited to 80% of the DTR Capacity. [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)].
  - iii. The Number of Units Generated, limited by taking 20%CUF/PLF of plant that approximates to 144Units/PerMonth/PerKW. Any additional generation is deemed inadvertent and not taken into account.
  - iv. Mandatory Levy of CMD Charges
  - v. Adjustment of Generated units in current month billing only. One Month settlement period
- (e.)Additionally, technical issues and most importantly the absence of a strong ecosystem for low cost debt financing, limit scope for rapid expansion of solar rooftop.

**(3b.)**The Hon’ble Commission had given its Order Dt: 15<sup>th</sup> April 2019 In the matter of Approval of Load Forecasts and Resource Plans etc to cover the 4<sup>th</sup> Control Period [FY2019-20 to FY2023-24] and 5<sup>th</sup> Control Period [FY2024-25 to FY2028-29]. The DISCOMs have submitted that against 40GW Rooftop Solar Target of Govt of India by 2022, the target for State of AP is 2000MW. The Year wise target capacity is as below:

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Capacity[MW]	10	240	250	300	350	400	450	2000

Both DISCOMS have also submitted their individual projections for Solar Rooftop Installations [KW] from FY19-FY29 [10 Yrs]. Extract for the period upto FY22 is below:

Year	FY19	FY20	FY21	FY22	Total[Cumulative]
APSPDCL MW	11.278	12.708	14.365	16.289	54.64 MW
APEPDCL MW	1.365	1.623	1.930	2.298	7.22 MW



**(3c.)**The Hon'ble Commission had released its Order on Tariff for Retail Sale of Electricity during FY2020-21, Dt: 10<sup>th</sup> Feb 2020. The DISCOMS had submitted that as on 30.11.2019 the total installed Capacity of Solar Rooftop by APSPDCL is 71.75MW [1,934 Nos] and APEPDCL is 43.65MW [1,720 Nos].

So the total Capacity of Rooftop Solar installed across the State of AP till 30.11.2019 is 115.4MW only.

And by 2022 the Maximum Rooftop Solar Capacity would be  $115.4 + 54.64 + 7.216 = 177.3$  MW only

Incidentally the Netmetering Policy has been introduced and has been in effect since 2013, in AP.

**(3d.)**As per MNRE, against the total target of 40GW, the actual capacity of solar rooftop installed across all the States in India as on 31<sup>st</sup> March 2019 is 1,427MW only.

Incidentally, this is less than the 2000MW target of AP State itself.

In all these years, with all incentives and support being extended; and with Netmetering implemented; the whole Country itself had not installed more than 1427 MW.

So the likelihood of >1800MW [Balance of Target] of additional Rooftop Capacity being installed in AP by end of 2022 is unrealistic.

The DISCOMs have submitted *"the present installed capacity of Solar and Wind in the State is around 8500 MW. The smooth integration of this much RE (Solar and Wind power) power of 8500 MW which is variable in nature, with the Grid having system demand of 9000 to 10000 MW is difficult task. Under the falling price regime of Solar/Wind power generation, coupled with incentives granted to these Generators, there is no healthy competition envisaged in the Electricity Act, 2003 in this scenario, presently promotion of RE power is not envisaged and not warranted."*

Our Response:

**1.** The Solar/Wind Power Generation by Generators as mentioned applies to Utility Scale Power Projects. Solar Rooftop is not a Utility Scale Power Project and does not come into that purview.

Utility Scale Power Projects are IPPs. The electricity generated is directly sold to DISCOM through PPA. Solar Rooftop is for Prosumers. The settlement is done through net metering or gross metering.

**2.** The DISCOMs filed their petitions to the Hon'ble Commission 'Seeking amendments to the Modalities/Guidelines to the existing Solar Rooftop [SRT] Policy, 2018 on 10.02.2020 [APSPDCL] and 14.02.2020[APEPDCL]. On 15.02.2020, The Government of Andhra Pradesh released its GO.Ms No. 5 for 'formation of the Andhra Pradesh Green Energy Corporation Limited (APGECL) (to establish 10,000 MW of Solar Power Projects in the State) to ensure nine hours day time free power supply to the Agriculture sector on a sustainable basis'. Incidentally, CMD, APEPDCL and CMD, APSPDCL [both the petitioners] are themselves among the 9 subscribers to the memorandum [shareholders] for the incorporation of APGECL [the Company].

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### **Our Submission No 3.**

Netmetering is vital to sustain the limited growth of solar rooftop. Removing it will irreversibly shut down any growth of solar rooftop.

1. The Parliamentary Standing Committee on Energy had recently submitted its report on Demand For Grants for MNRE. Considering the poor performance of the Solar Rooftop sector till date, and the unlikeliness of India reaching the Target 40GW SRT by 2022, at that rate; the Committee made the following observations and recommendations: *'the Committee are of the considered view that the Ministry should focus on this programme on a **Mission Mode** so as to give it a fillip. The Committee, therefore, recommends that:i) The process of subsidy disbursement should be made simpler and faster and the Ministry should widely advertise the benefits of having a Roof-top Solar Projects and the incentives provided by the Government for the same so as to spread awareness among the masses.ii) **Proper implementation of Net-Metering should be ensured.** iii) The Ministry should have regular review meetings with the implementing agencies.'*

MNRE had informed the Committee there is disparity in metering regulations/tariff orders across States due to diverse parameters. MNRE also informed it had requested Forum Of Regulators [FOR] to develop model regulations for which the States may adopt

2. The Forum of Regulators (FOR), have submitted their Report on Metering Regulation and Accounting Framework for Grid Connected Rooftop Solar PV in India (2019) & consequently released their Draft Model Regulation for Grid Interactive Distributed Renewable Energy Sources.

In these regulations **Netmetering has been retained, and also its scope has been enhanced**

3. On proposals received from its DISCOMs, MERC had earlier released draft guidelines excluding Netmetering and implementing Netbilling[Gross Metering]. Overwhelming responses rejecting that proposal included that of Shri Nitin Gadkari ji, then Minister (Ministry of Road Transport and Highways), Government of India in his letter addressed to Hon'ble Union Power Minister has suggested as under:

*'Net Metering should be optional along with Net Billing till target is achieved or up to 2022.'* *'The Hon'ble Prime Minister during UN Climate Action Summit 2019 had pledged to increase RE capacity in the country to 175 GW by 2022. The proposed Draft Regulations shall be a deterrent in achieving the country's RE target.'*

### **Maharashtra ERC has reincluded Net Metering in its recent Regulations**

4. **The Hon'ble Commission** had given its Order In the matter of Approval of Load Forecasts and Resource Plans for 4th and 5th Control Period on 15.04.2019. In response to the points on Non-promotion of rooftop Solar Plants by the learned objector Sri. M. Thimma Reddy, both DISCOMs have submitted that they are taking a lot of interest for promotion of solar rooftop units. And the Hon'ble Commission had expressed its view as: **'Every effort should be made to reach the targets in expansion of solar roof top plants'**

5. The salutary objectives in Section 86[1] in the draft amendments of the Electricity Act 2003 include: '(1) The State Commission shall discharge the following functions, namely:--(c) facilitate intra-State transmission and wheeling of electricity and promote smart grid, **net metering**, ancillary support and decentralised distributed generation; and (e) promote cogeneration from renewable sources of energy and generation of electricity from renewable sources of energy'

**Our Submission No 4.**

1. The narration which precludes the amendments mentioned in the GO.Ms 35 Dt 18.11.2019 is: "Governments have observed that the statutory audit has reported an abnormal spurt in Power Purchase cost and deteriorated financial position of the A.P. DISCOMs. Taking into consideration the financial deterioration of APDISCOMS and in order to strengthen the financial position of the Power Utilities, Government after careful examinations of the matter hereby make the following amendments to the above policies."

The DISCOMS have also submitted: 'Considering the present scenario, the Govt of AP issued an amendment to the Solar/Wind Power Policy vide GO.Ms.No.35 Dt: 18.11.2019, wherein it was mentioned, that the applicable tariff for either net metering/gross metering shall not exceed difference of pooled variable cost and balancing cost (or) the applicable tariff at the time of COD whichever is less.'

2. From the above it is evident that **the Govt of AP had already considered all the points made by the DISCOMS in this petition; and had chosen to amend only the applicable tariff for metering as far as the Solar Rooftop part of the policy is concerned. Leaving all other aspects pertaining to Solar Rooftop intact, including the consumer being given the right to chose either Netmetering or Gross metering!**

3. The Hon'ble Commission had already given its Order In the matter of Approval of Load Forecasts and Resource Plans for 4th and 5th Control Period on 15.04.2019. In it the DISCOMs had factored the quantum of capacity increase of rooftop solar for the entire period already.

We, request the Hon'ble Commission in exercise of the various powers bestowed upon it vide the Electricity Act 2003, to bring about only the amendment related to applicable tariff, made under GO.Ms 65 Dt. 18.11.2019 by the Govt of AP and summarily set aside all other amendments proposed by both DISCOMs

We, also request the Hon'ble Commissions to provide us an opportunity to make submissions in person, during the public hearing.

Thanking You

Your's Sincerely

For **Andhra Pradesh Solar Integrators Welfare Association**



**B. VISWA PRASAD,**  
(President)



Date: 04.06.2020

To : The Secretary

A.P Electricity Regulatory Commission  
4<sup>th</sup> Floor, Singareni Bhavan, Red Hills  
Hyderabad: 500004



Respected Sir,

**Sub: Submission of objections and suggestions on the amendment proposed to Modalities [Guidelines] for implementing Solar Rooftop Policy 2018, in OP No. 8 of 2020**

With reference to your public notice dated: 09-03-2020, inviting objections and suggestions on the subject issue, we Rockland Industries Pvt Ltd are submitting the following points for the kind consideration of the Hon'ble Commission:

The DISCOMs have submitted: 'It is requested that only gross metering concept may be permitted and a generic tariff may be fixed on the costs involved instead of making payment based on Average pooled purchase cost.'

Our Response:

1. As per the provisions of the Solar Rooftop Power Policy 2018: "All Registered Companies, Government Entities, Partnership Companies/Firms/Individuals and all consumers of AP DISCOMs 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". 'Eligible Developers are free to choose either Net or Gross metering option for sale of power to DISCOM.' "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."

2. It is evident from the above, that only under Netmetering the concept of self consumption exists. In Gross Metering there is no self consumption.

3. By enforcing only Gross Metering for grid connectivity, the fundamental right to Captive Use/Self Consumption as accorded by the Electricity Act-2003 to the consumer is being denied. The proposed system of Gross Metering does not allow consumers to set off the energy from their own RE system against their own consumption, which has to be necessarily sold to the Distribution Licensee. This violates the fundamental right of the Consumer to set up captive power plant, given to it under Section 9 of the Act. The proposed amendment to netmetering also impinges upon the salutary objective of Section 86 (1)(e) of EA, 2003.

The DISCOMs have submitted: 'In Gross Metering, the DISCOM is paying to the SRP Consumer at the rate of Average Pooled Power Purchase Cost for all units generated by the SRP. But now days the solar power tariff rates have come down approximately to Rs2.50 per unit in the country.' "In the existing policy, provision is made for Long Term Contract for 25 years and twenty five years is too long period and this may be modified to 10 years'

Our Response:

1. Under Gross Metering System, consumers have to sell energy generated by their rooftop solar system to DISCOM at grid tariff. And for their own consumption, same consumers have to buy energy from DISCOM at retail tariff.

2. The DISCOMs are also suggesting Gross Metering at Rs2.50 per unit. A 10KW unit can export 1440 units max per month. That translates to Rs3,610 per month. At Rs 4,00,000 as cost of 10KW systems and 10% Annual Rate of Interest on Loan, With EMI of 3,625 per month. The payback period on Loan is 25 Years.



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Director





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During this period the consumer continues to pay a large portion of their Electricity Bill based on retail tariff, every month.

Gross Metering is an unviable option for the customers, and hence has failed in its implementation.

The DISCOMs have submitted "the generation cost of SRP is coming down year by year and the Retail Supply Tariffs [RST] of consumers are on upward direction. The present per MW installation cost of Solar Rooftop Plant is around Rs 5.Crores. This has become an incentive to Solar Rooftop Developers and is affecting the DISCOM revenues'

Our Response:

1. It is precisely because the RST to consumers is increasing year by year, that the consumers need to substitute high cost conventional day power with low cost solar power.

2. It is for the same reason that consumers also use energy efficient appliances, energy saving devices and implement energy conservation systems and processes. It can be argued that the DISCOMs are losing revenue on account of such measures also. Should the consumers be penalized for those measures aswell?

3. However, any apprehension the DISCOMs may have, that the Rooftop Systems would have uncontrolled growth is misplaced; for the following reasons:

(3a.) There are multiple built in checks in place within the existing Netmetering policy itself, to regulate any uncontrolled growth including:

- i. Capacity of Plant at any location, limited to Sanctioned Load/CMD [OR] 1MW whichever is less.
- ii. Number of Sanctioned Plants, limited to 80% of the DTR Capacity. [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)].
- iii. The Number of Units Generated, limited by taking 20%CUF/PLF of plant that approximates to 144Units/PerMonth/PerKW. Any additional generation is deemed inadvertent and not taken into account.
- iv. Mandatory Levy of CMD Charges
- v. Adjustment of Generated units in current month billing only. One Month settlement period

(e.)Additionally, technical issues and most importantly the absence of a strong ecosystem for low cost debt financing, limit scope for rapid expansion of solar rooftop.

(3b.)The Hon'ble Commission had given its Order Dt: 15<sup>th</sup> April 2019 In the matter of Approval of Load Forecasts and Resource Plans etc to cover the 4<sup>th</sup> Control Period [FY2019-20 to FY2023-24] and 5<sup>th</sup> Control Period [FY2024-25 to FY2028-29]. The DISCOMs have submitted that against 40GW Rooftop Solar Target of Govt of India by 2022, the target for State of AP is 2000MW. The Year wise target capacity is as below:

Year	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Capacity[MW]	10	240	250	300	350	400	450	2000

Both DISCOMS have also submitted their individual projections for Solar Rooftop Installations [KW] from FY19-FY29 [10 Yrs]. Extract for the period upto FY22 is below:

Year	FY19	FY20	FY21	FY22	Total[Cumulative]
APSPDCL MW	11.278	12.708	14.365	16.289	54.64 MW
APEPDCL MW	1.365	1.623	1.930	2.298	7.22 MW

(3c.)The Hon'ble Commission had released its Order on Tariff for Retail Sale of Electricity during FY2020-21, Dt: 10<sup>th</sup> Feb 2020. The DISCOMS had submitted that as on 30.11.2019 the total installed Capacity of Solar Rooftop by APSPDCL is 71.75MW [1,934 Nos] and APEPDCL is 43.65MW [1,720 Nos].

So the total Capacity of Rooftop Solar installed across the State of AP till 30.11.2019 is 115.4MW only.

And by 2022 the Maximum Rooftop Solar Capacity would be 115.4 + 54.64 + 7.216 = 177.3MW only

Incidentally the Netmetering Policy has been introduced and has been in effect since 2013, in AP.

(3d.)As per MNRE, against the total target of 40GW, the actual capacity of solar rooftop installed across all the States in India as on 31<sup>st</sup> March 2019 is 1,427MW only.

Incidentally, this is less than the 2000MW target of AP State itself.

In all these years, with all incentives and support being extended; and with Netmetering implemented; the whole Country itself had not installed more than 1427 MW.



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So the likelihood of >1800MW [Balance of Target] of additional Rooftop Capacity being installed in AP by end of 2022 is unrealistic.



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The DISCOMs have submitted "the present installed capacity of Solar and Wind in the State is around 8500 MW. The smooth integration of this much RE (Solar and Wind power) power of 8500 MW which is variable in nature, with the Grid having system demand of 9000 to 10000 MW is difficult task. Under the falling price regime of Solar/Wind power generation, coupled with incentives granted to these Generators, there is no healthy competition envisaged in the Electricity Act, 2003 in this scenario, presently promotion of RE power is not envisaged and not warranted."

Our Response:

1. The Solar/Wind Power Generation by Generators as mentioned applies to Utility Scale Power Projects. Solar Rooftop is not a Utility Scale Power Project and does not come into that purview. Utility Scale Power Projects are IPPs. The electricity generated is directly sold to DISCOM through PPA. Solar Rooftop is for Prosumers. The settlement is done through net metering or gross metering.
2. The DISCOMs filed their petitions to the Hon'ble Commission 'Seeking amendments to the Modalities/Guidelines to the existing Solar Rooftop [SRT] Policy, 2018 on 10.02.2020[APSPDCL] and 14.02.2020[APEPDCL]. On 15.02.2020, The Government of Andhra Pradesh released its GO.Ms No. 5 for 'formation of the Andhra Pradesh Green Energy Corporation Limited (APGECL) (to establish 10,000 MW of Solar Power Projects in the State) to ensure nine hours day time free power supply to the Agriculture sector on a sustainable basis'. Incidentally, CMD, APEPDCL and CMD, APSPDCL [both the petitioners] are themselves among the 9 subscribers to the memorandum [shareholders] for the incorporation of APGECL [theCompany].
3. Andhra Pradesh Solar Power Corporation has also recently announced tenders for DPR for the establishment of following Solar Projects: 1. 2000MW [Pedda Dasari Pally] 2. 800MW [M Kambala Dinne] 3. 600MW [Urichintala] 4. 3300MW [Kolimigundla] 5. 2000MW [Mudigubba] 6. 1000MW [Chandrasekharapuram] and 7. 1000MW [Rudrasamundram]. Total: 10,700MW
4. These Solar Power Projects of >10,000 MW are in addition to the existing RE Power of 8,500 MW mentioned by the DISCOMS.
5. If 'the smooth integration of 8500MW RE which is variable in nature, with the Grid having system demand of 9000 to 10000 MW is difficult task' for the DISCOMS, then how do they propose to integrate 19,200 MW [10700 + 8500] with the same Grid having system demand of 9000 to 10000 MW?
6. And, if 19,200 MW can somehow be integrated with the Grid, then the total Solar Rooftop Power which presently at 115.4MW is much less than 1% of that capacity can easily be accommodated.
7. And if, still the injection of energy into the grid from rooftop solar is a cause of concern for the DISCOMS, then, they should actually stop gross metering and have only netmetering. Because for any given capacity, in netmetering it is only the excess remaining after self consumption that gets exported into the grid, whereas in gross metering the entire generation of the capacity gets exported!

The DISCOMs have submitted 'The DISCOMs are supplying power whenever solar power is not there in the system and is acting as a standby power to the consumers having Solar Rooftop. The DISCOMs have to pay for infrastructure cost from interface point of Generator and APTRANSCO and upto the point of consumers and have to pay fixed costs to APTRANSCO and Generating Companies and it has to meet its own distribution business fixed cost. The SRP consumer is generating power at the consumption point and supplying the excess power to the grid if available.

Our Response:

1. The loss is only assumed; on basis of revenue not collected from the consumer opting for SRT. There are no audited figures available. But in reality the energy exported by SRT consumer is immediately consumed by similar loads nearby **at the same price and without any T&D Losses**.
2. Also, DISCOM gets RPO benefits on account of the units deemed to have been purchased from RE sources, for all units adjusted against the consumers' bills due to Net Metering. DISCOMs in turn sell such RECs



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3. Reduction of every unit of sale also leads to lower power purchase to that extent, which results in corresponding savings in variable cost of power purchase.

This saving in power purchase is at consumption end, leading to increased saving in power purchase at the Generator busbar, factoring in Transmission Losses and Distribution Losses.

4. Further, due to distributed generation located at consumption end, Distribution Losses would also reduce. The excess energy exported is consumed by other consumers' within the locality (or) at feeder level for HT Consumers. DISCOM need not procure this additional energy from the other feeders.

5. Net Metering is promoted by the Central Government to reduce burden on DISCOMS on power management due to:

**5.a Avoided generation capacity cost (AGCC):** Rooftop solar can decrease the contracted capacity for new PPAs, and DISCOMs can reduce their fixed expenses significantly, while avoiding generation capacity cost.

**5.b Avoided power purchase cost (APPC):** Rooftop solar substitutes the most expensive energy procured by the DISCOM at any given time interval if the DISCOM follows a merit order despatch.

**5.c Avoided transmission charges (ATRC):** Higher rooftop solar capacities avoid procurement of additional transmission capacity; this accounts for as savings by avoided transmission charges.

**5.d Avoided distribution capacity cost (ADCC):** Rooftop solar requires a simple distribution network, relieving load on the distribution system. DISCOMs can reduce expenses on installation and maintenance of additional network components with simultaneous decongestion. The savings due to deferred capital investment resulting from the decongestion, along with reduced operations and maintenance costs, make up the avoided distribution capacity infrastructure and related.

**5.e Avoided working capital requirement (AWCC):** Reduced power purchases, avoided generation capacity, and revenue from the sale of energy from rooftop solar in the distribution grid reduce the DISCOM's overall expenditure. This will reflect in reduction in the working capital requirement of the DISCOMs and will lower their debt servicing obligation.

#### SUBMISSIONS

##### Our Submission No 1:

1. Utility scale mega solar power plants of thousands of MWs at a single location need extensive T&D network. In solar power procurement costs from such plants more than one third goes to T&D expenditure. Solar power is suitable for decentralized power generation. The energy required by consumers can be generated near the consumption point, obviating the need for costly T&D network..

2. Rooftop solar has an edge over other forms of power generation for its lesser transmission losses. It supports peak load requirement of the grid and helps in flattening the load curve. A distributed web of localized, net-metered solar installations will help DISCOMs run and maintain a more balanced and reliable grid for following reasons:

**2.a Netmetering based rooftop solar contributes to Grid Stability** by providing active power, and also reactive power to the grid, which helps provide stable voltage.

**2.b Netmetering based rooftop solar requires lower infrastructure upgrades** when coupled with some natural balancing within area of substations. DISCOMs save hundreds of Crores they spend annually to maintain their network, for any new capacity additions through centralized power generation.

**2.c Netmetering is irreplaceable in the implementation of the smart grid.** The technology integration for net-metering is a part of smart-grids. In Puducherry, adoption of smart grid and net-metering, already proved, it reduces pilferage, stems AT&C losses, and helps DISCOM become profitable

**2.d Netmetering based rooftop solar reduces need for large parcels of land for new power infrastructure** by using rooftops instead of acres of land for ground mounted solar projects. The average residential rooftop is around 150-200 sq.m, total realizable potential of rooftop solar in India is 57-76 GW by 2024. That equals to over 380,000 acres of land area! If net-metering is comprehensively adopted then pressure of land acquisition for solar generation by the State Government is significantly reduced.



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