Discussion Paper

TARIFF FRAMEWORK FOR PROCURMENT OF POWER BY DISTRIBUTION LICENSEES FROM WIND-SOLAR HYBRID PROJECTS AND OTHER COMMERCIAL ISSUES FOR THE STATE OF GUJARAT

August, 2020

Gujarat Electricity Regulatory Commission

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Executive Summary

The Government of Gujarat (GoG) has notified the 'Gujarat Wind-Solar Hybrid Power policy-2018' on 20thJune 2018 with an intention to harness the huge RE potential of the State through 'hybridization' of the two sources of energy. Solar and Wind energy potential of the State is mostly concentrated in the areas of Saurashtra, Kutch and North Gujarat region. Prior to this, the Ministry of New and Renewable Energy (MNRE) has notified 'National Wind-Solar Hybrid Policy' on 14thMay 2018.

Previously, the Commission has issued a generic tariff orders for procurement of power by Distribution Licensees and others from solar power projects/wind power projects in Gujarat on 17thAugust 2015 and 30thAugust, 2016 respectively.

Thereafter, the Ministry of New and Renewable Energy (MNRE) has issued Competitive Bidding Guidelines (CBG) and informed all SERC's to encourage procurement of power from Solar (>5 MW) and Wind (> 25MW) through competitive bidding route under Section 63 of the EA 2003. The Commission in its recent discussion papers on "Tariff framework for procurement of power by Distribution licensees and others from Solar /Wind Energy projects for the state of Gujarat" proposes to discontinue the practice of determination of Feed –in – Tariff and recommended procurement of power through competitive bidding in wake of successful discovery of lower tariffs by the State Distribution licensees, Solar Energy Corporation of India (SECI) and other entities.

The Commission noted that 'Gujarat Wind-Solar Hybrid Power Policy-2018' has recommended procurement of power by distribution licensees from Wind Solar Hybrid Power projects set up in the State of Gujarat through Competitive bidding route for Type A (Existing projects) as well as Type B (New projects).

MNRE has notified the Draft tariff based competitive bidding guidelines for procurement of power from Wind-Solar Hybrid projects as per provisions under Section 63 of the EA 2003. SECI as well as the distribution licensees in some other states have successfully conducted competitive bidding process wherein, the discovered tariff is substantially lower than the 'generic tariff' determined by the Commission in its previous Solar and Wind tariff Orders.

In view of above, the recent rapid price reductions in the cost of solar Photovoltaic (PV) technology the Commission proposes procurement of power by distribution licensees from Wind Solar Hybrid Power projects set up in the State of Gujarat through Competitive bidding route during the control period of this tariff Order to be notified by the Commission.

In view of above, the Commission proposes to determine the tariff for all prospective Wind-Solar Hybrid power projects (Type A (Existing projects) and Type B(New Projects)), based on the rates discovered through competitive bidding under Section 63 of the Act or by following competitive bidding process followed by SECI/MNRE etc.

Further, there could be cases of Wind-Solar Hybrid power projects below the threshold limit of eligibility for participating in Competitive Bidding. It is proposed that the tariff for such projects shall

be considered equal to the Tariff discovered through Competitive Bidding by State own DISCOMs, in different time period of 6 months of the year as under:

For Type – A (Existing projects):

The purchase of power from existing wind/solar capacity shall be in accordance with the respective PPAs with Distribution licensees. The purchase of power from additional /new capacity shall be at the weighted average tariff (for respective RE addition capacity i.e. Wind or Solar), available as on 1st April (as discovered in the Competitive Bidding by GUVNL during previous six months October-March and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during April-September. Similarly, the weighted average tariff (for respective RE addition capacity i.e. Wind or Solar), available as on 1st October (as discovered in the Competitive Bidding by GUVNL during previous six months April-September and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during October-March.

For Type-B (New Projects)

The purchase of power from such projects shall be at the weighted average tariff (of Wind, Solar & Wind-Solar Hybrid), available as on 1st April (as discovered in the Competitive Bidding by GUVNL during previous six months October-March and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during April-September. Similarly, the weighted average tariff (of Wind, Solar & Wind-Solar Hybrid), available as on 1st October (as discovered in the Competitive Bidding by GUVNL during previous six months April-September and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during October-March.

In case weighted average tariff is not available for particular 6 months period then latest weighted average tariff available for 6 months period as discussed above shall be considered.

The distribution licensees shall place on its website the applicable tariff on which it will buy the energy generated from such Wind Solar Hybrid Power Projects. The rate will be updated every 6 months.

Key proposals under the discussion paper

- The Commission proposes to determine the tariff for Type A (Existing projects) as well as Type B (New projects) based on the rates discovered through competitive bidding route as per Section 63 of the EA 2003.
- The power procurement from Wind-Solar hybrid projects proposed to be used for fulfilment of Solar RPO and Non-Solar RPO in the proportion of rated capacity of Solar and Wind power in the plant respectively.
- The choice of capacity mix between Wind and Solar shall be the discretion of the Developer or as per the individual schemes as notified by the State or Central Government from time to time. However, at the locations of having good wind power potential, the Solar PV capacity to

be added as the Solar-hybrid component could be relatively smaller. Similarly, in case of the sites where the Wind Power Density (WPD) is relatively lower or moderate, the component of the Solar PV capacity could be relatively on a higher side.

- Forecasting and Scheduling of power from Wind Solar Hybrid Power projects shall be governed by the provisions under GERC (Forecasting, Scheduling, Deviation Settlement and Related Matters of Wind and Solar Generation Sources) Regulations, 2019.

Other Commercial issues

Metering

- For the purpose of commercial settlement and energy accounting, the metering point shall be at the receiving end sub-station of GETCO.
- The injection of energy from wind/solar capacity shall be worked out separately at the receiving end sub-station of GETCO on the basis of meter reading of common meter installed at receiving end sub-station appropriately apportioned as per the respective meter reading of wind and solar meters.
- In case of Type-A projects (Existing Projects) the metering/injection point shall continue to be as per existing agreement with GETCO /DISCOM.
- In case of Type-B Projects (New Projects) that are AC or DC integrated, the metering point shall be at the receiving end of the GETCO substation.

Wheeling of Electricity

- The payment of transmission charges shall be applicable on sanctioned/allocated transmission capacity at the rate as applicable to any normal Open Access Consumer.
- Transmission losses shall be applicable on energy feed-basis as applicable to any other wind or solar project.
- **For captive use**: In case of injection at 66 KV and drawl at 11 KV voltage level, wheeling of electricity generated from the Hybrid Project to desired location(s) within the State shall be allowed on payment of transmission charges and transmission losses as stated above and 50% of wheeling charges and 50% of distribution losses of the energy fed to the grid at the receiving end sub-station of GETCO, as applicable to normal Open Access Consumers, and as amended by GERC from time to time.
- **Third party sale:** Wheeling of Power for third party sale shall be allowed on payment of transmission charges and transmission losses as stated above, wheeling charges and losses on the energy fed into grid as measured at receiving sub-station of GETCO, as applicable to normal open access consumer. Set-off of wheeled energy at recipients' end shall be carried out in the same 15-minute time block. Further, concession of 50% of Cross Subsidy Surcharge and Additional Surcharge, as applicable to normal Open Access Consumers, shall be applicable.

- Hybrid Project Developers, who desire to wheel electricity to more than one location for captive use/third-party sale, shall pay 5 paise per unit on energy fed in the grid to the concerned DISCOM in whose area power is consumed in addition to above mentioned transmission charges and losses, as applicable.
- In case, total injection of power from the Hybrid Project exceeds such allocated/sanctioned transmission capacity, such power shall be considered as inadvertent flow of power and shall not be considered for any commercial settlement.

Energy Accounting

i. Case 1: If the Consumer does not claim the renewable attribute of Solar/Wind energy for meeting its Solar and Non-Solar RPO, energy injection worked out at the receiving end sub-station of GETCO shall be set-off against the consumption during the Consumer's billing cycle.

   (a) For net import of power, DISCOM shall charge applicable tariff of respective category to the Consumer including fixed/ demand charge, energy charges, peak charge, other charges/ penalty etc. as applicable to other Consumers.

   (b) Surplus power, after giving set-off, shall be compensated by the concerned Distribution Licensee at the rate Rs. 1.75 per unit or the rate, if any, specified by the Commission for Surplus Injection Compensation (SIC) from time to time. Fixed/ demand charge, peak charge, other charges/ penalty, etc. shall be as applicable to other Consumers.

   (c) The entire generation shall be considered for fulfilling solar and non-solar RPO of DISCOM.

ii. Case 2 (a): If the Consumer claims the renewable attributes of solar/wind energy consumed for meeting its solar/non-solar RPO, then energy accounting shall be based on 15-minute time block-basis.

   (a) For net import of power, the DISCOM shall charge applicable tariff of respective category to the Consumer including fixed/ demand charge, energy charges, peak charge, other charges / penalty, etc. as applicable to other Consumers.

   (b) Surplus power, after giving set off, shall be compensated by the concerned Distribution Licensee at the rate Rs. 1.75 per unit or the rate, if any, specified by the Commission for Surplus Injection Compensation (SIC) from time to time. Fixed/ demand charge, peak charge, other charges / penalty, etc. shall be as applicable to other Consumers.

   (c) The surplus energy purchased shall be considered for fulfilling solar and non-solar RPO of DISCOM.

iii. Case 2 (b): If registered under REC mechanism and supply power within the State: Energy accounting shall be based on a 15-minute time block-basis.

(a) For net import of power, the DISCOM shall charge applicable tariff of respective category to the Consumer including fixed/ demand charge, energy charges, peak charge, other charges/ penalty, etc. as applicable to other Consumers.

(b) Surplus power, after giving set off, shall be compensated by the concerned Distribution Licensee at the rate Rs. 1.50 per unit or the rate, if any, specified by the Commission for Surplus Injection Compensation (SIC) from time to time. Fixed/ demand charge, peak charge, other charges/ penalty, etc. shall be as applicable to other Consumers.

iv. For Type-A Projects (Existing Projects), the energy accounting for consumption of power for captive use / third party sale from existing wind/solar project shall be governed by existing Regulations / Orders / wheeling agreement. If these provisions are different, the above provisions shall be applicable only for wheeling of power from new/additional wind/solar capacity.

Projects under REC Mechanism

- Hybrid Projects availing open access for captive use/third-party sale under REC mechanism shall be governed as per CERC REC Regulations.
- Such projects shall be allowed to wheel the electricity on payment of applicable transmission charges/losses, wheeling charges/losses and other charges as applicable to other normal Open Access Consumers.
- Cross Subsidy Surcharge and Additional Surcharge shall be applicable as applicable to normal Open Access Consumers.

Renewable Purchase Obligation (RPO)

Obligated Entities may fulfil their RPO by purchasing wind/solar power at the tariff determined by GERC or tariff discovered through competitive bidding process/reverse competitive bidding process undertaken separately for wind and solar keeping in view the interest of Consumers, as the case may be.

Forecasting and Scheduling

Hybrid Projects shall require to follow the provisions as prescribed under the GERC (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2019 notified on 19thJanuary, 2019 and its amendments issued from time to time.

Reactive Power

The Reactive Energy Charges as approved by the Commission in tariff Orders for the Gujarat Energy Transmission Corporation Ltd. (GETCO) from time to time shall be applicable to such projects.

Restrictions

- Second hand WTGs/ solar modules or other equipment shall not be eligible for installation under this Policy.
- For captive and third party models, the power contracted from the hybrid project shall be 50% of the sanctioned load of consumer for each solar and wind respectively.
- However, Consumers may set up Hybrid Project to extent of meeting RPO without limit of Contracted Demand/Sanctioned Load.

CDM Benefits

The Clean Development Mechanism (CDM) benefits shall be shared on net proceeds, starting from 100% to Developer in the first year after commissioning, and thereafter reducing by 10% every year till the sharing becomes equal (50:50) between the Developer and the Power Procurer, in the sixth year. Thereafter, the sharing of CDM benefits shall remain equal till the time that benefit accrues.

Security Deposit

i. The Hybrid Power Developer setting up new project (Type-B) shall be required to provide Bank Guarantee @ Rs. 3 lacs per MW to GETCO based on allotment of transmission capacity and in case the Developer fails to commission the Hybrid capacity within the time period mentioned hereunder, GETCO shall encash the Bank Guarantee.

ii. The Developer shall commission new Hybrid capacity at least 10% of the allotted capacity within one month of charging of evacuation line, failing which, the Developer shall be liable to pay long term transmission charges for 10% of allotted capacity till such 10% of allotted capacity is commissioned.

Hybrid Capacity in MW	**Period for commissioning the entire evacuation line along with bays and metering system**
1 MW to 100 MW	1.5 years from date of allotment of transmission capacity
101 MW to 200 MW	2 years from date of allotment of transmission capacity
201 MW to 400 MW	2.5 years from date of allotment of transmission capacity
401 MW to 600 MW	3.5 years from date of allotment of transmission capacity

Table of Contents

Executive Summary 3

List of Figures 11

List of Tables 11

Abbreviations 12

PREFACE 14

CHAPTER 1 INTRODUCTION 15

1.1 Background 15

1.2 The Electricity Act, 2003 15

1.3 National Electricity Policy (NEP) 16

1.4 Tariff Policy 2016 17

1.5 National Wind-Solar Hybrid Power Policy 2018 19

1.6 MNRE Guidelines for Tariff based competitive bidding for setting up 2500 MW ISTS connected Wind Solar Hybrid Projects (No F NO 238/78/2017-Wind dated 25 May 2018 20

1.7 MNRE Draft Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Solar Hybrid Projects (No. 238/22/2019-Wind dated 11.10.2019) 21

1.8 Gujarat Wind-Solar Hybrid Power Policy 2018 23

1.9 Renewable Purchase Obligation in Gujarat 29

1.10 Wind – Solar Resource Characteristics study for Gujarat 30

CHAPTER 2 STUDY OF COMPETITIVE BIDDING RESULTS FOR WIND SOLAR HYBRID 31

2.1 Introduction 31

2.2 SECI Wind-Solar Hybrid Power Projects (Tranche-I) 31

2.3 SECI Wind-Solar Hybrid Power Projects (Tranche-II) 32

2.4 SECI Wind-Solar Hybrid Power Projects (Tranche-III) 33

2.5 Maharashtra Wind – Solar Hybrid Tender 33

CHAPTER 3 TARIFF FRAMEWORK, GENERAL PRINCIPLES AND OTHER COMMERCIAL CONSIDERATIONS 35

3.1 Tariff Framework 35

3.2 General Principles 36

3.3 Wind-Solar Hybrid System & Power Evacuation 39

3.4 Operation and maintenance of dedicated lines 42

3.5 Transmission and Wheeling Charges 42
3.5.1 Third Party Sale 42
3.5.2 Wheeling of power for Captive Use 43
3.5.3 Wheeling of power to more than one locations 43
3.6 Energy Accounting 43
3.7 Projects under REC Mechanism 45
3.8 Restrictions 45
3.9 CDM Benefits 45
3.10 Security Deposit 46

List of Figures

Figure 1: AC configuration for Existing /ongoing Hybrid projects 25
Figure 2: AC/DC configuration for New Hybrid projects 26
Figure 3: Wind and Solar Generation in Gujarat 2018 30

List of Tables

Table 1 Renewable Purchase Obligation in Gujarat FY 2017-18 to 2021-22 29
Table 2 Tariff Discovered in SECI hybrid Tender (Tranche – I) 31
Table 3 Tariff Discovered in SECI hybrid Tender (Tranche – II) 32
Table 4 Ceiling tariff specified in SECI hybrid Tender (Tranche – III) 33
Table 5 Tariff Discovered in AEML hybrid Tender 34
Table 6 Tariff Discovered in TPCL hybrid Tender 34
Table 7 Security Deposit 46

Abbreviations

%	**Percentage**
ABT	Availability-Based Tariff
AC	Alternating Current
AREPGL	Adani Renewable Energy Park Limited
AEML	Adani Electricity Mumbai Ltd.
APPC	Average Pooled Purchase Cost
BOO	Build, Own and Operate
CBG	Competitive Bidding Guidelines
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CERC	Central Electricity Regulatory Commission
COD	Date of Commercial Operation
CPSU	Central Public Sector Undertaking
CUF	Capacity Utilization Factor
DISCOM	Distribution Companies
DC	Direct Current
FY	Financial Year
GEDA	Gujarat Energy Development Agency
GERC	Gujarat Electricity Regulatory Commission
GETCO	Gujarat Energy Transmission Corporation Ltd.
GoG	Government of Gujarat
GoI	Government of India
GUVNL	Gujarat Urja Vikas Nigam Limited
HPD	Hybrid Project Developer
HPG	Hybrid Project Generator
HPP	Hybrid Power Project
HPPC	Haryana Power Purchase Centre
IPCL	India Power Corporation Limited
IREDA	Indian Renewable Energy Development Agency
ISTS	Inter-State Transmission
JNNSM	Jawaharlal Nehru National Solar Mission
KV	Kilo Volt
kW	Kilo Watt
kWh	Kilo Watt hours
kVARh	Kilo Volt Ampere Reactive Hour
M	Meter
m/s	meter per second
MERC	Maharashtra Electricity Regulatory Commission
MNRE	Ministry of New and Renewable Energy
MW	Mega Watt
MWh	Mega Watt hour
NEP	National Electricity Policy
NTP	National Tariff Policy

O&M	Operation and Maintenance
PPA	Power Purchase Agreement
PSA	Power Supply Agreement
PSPCL	Punjab State Power Corporation Limited
PV	Photovoltaic
R&D	Research & Development
RE	Renewable Energy
REC	Renewable Energy Certificate
RfS	Request for Selection
RPO	Renewable Purchase Obligation
RPS	Renewable Purchase Standards
Rs	Rupees
RTC	Round the Clock
SECI	Solar Energy Corporation of India
SERC	State Electricity Regulatory Commission
T&D	Transmission & Distribution
TPC-D	Tata Power Company Ltd - Distribution
V	Volt
WPD	Wind Power Density
WTG	Wind Turbine Generators

PREFACE

The Government of Gujarat (GoG) has notified the '**Gujarat Wind-Solar Hybrid Power policy-2018'** on 20thJune 2018 with an intention to harness the huge RE potential of the state through 'hybridization' of the two sources of energy. Solar and Wind energy potential of the state is mostly concentrated in the areas of Saurashtra, Kutch and North Gujarat region subsequent to notification of '**National Wind-Solar Hybrid Policy'** by the Ministry of New and Renewable Energy (MNRE) dated 14th May 2018.

'**Gujarat Wind-Solar Hybrid Power policy-2018'** has outlined certain provisions for tariff for procurement of power by distribution licensee from Type A (existing projects) and Type B (new projects). The Commission intends to provide clarity on tariff determination framework for procurement of power by the distribution licensees from Wind-Solar Hybrid projects since the Commission is dealing with this subject first time. The tariff determination framework presented in this discussion paper is based on the broad principles specified under Sections 61(h), 62(1)(a), and 86(1)(b) &(e) of the Electricity Act, 2003, and National Electricity Policy, 2005, and Tariff Policy, 2016 and power conferred to the Commission under it.

CHAPTER 1 INTRODUCTION

1.1 Background

In exercise of the powers conferred under Sections 3 (1), 61 (h), 62 (1) (a), and 86 (1) (b)& (e) of the Electricity Act, 2003, National Electricity Policy, 2005, and Tariff Policy, 2016 and all other powers enabling it in this behalf, the Gujarat Electricity Regulatory Commission (GERC or Commission) presents this Discussion Paper on the tariff framework for procurement of power by Distribution Licensees and others from Wind – Solar Hybrid power projects to be commissioned prospectively. The Commission while framing this discussion paper have considered the provisions stated under the 'Gujarat Wind-Solar Hybrid Power policy-2018' notified by GoG as well as 'National Wind –Solar Hybrid Power Policy' notified by MNRE.

1.2 The Electricity Act, 2003

The following provisions of the Act provide the enabling legal framework for promotion of Renewable Sources of energy by the State Electricity Regulatory Commissions (SERCs):

Section 61 (h) of the Act provides that, while specifying the terms and conditions of determination of tariff, the Commission shall be guided by the objective of promotion of co-generation and generation of electricity from renewable sources of energy.

Section 62 (1) (a) of the Act provides for determination of tariff for supply of electricity by a generating company to a distribution licensee.

Section 86 (1) (b) of the Act regulates the procurement process of electricity by the distribution licensees as under**:**

"regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;"

Section 86 (1) (e) of the Act mandates promotion of co-generation and generation of electricity from renewable sources of energy**:**

"Promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee."

Section 3 (1) of the Act requires the Central Government to formulate, inter alia, the National Electricity Policy in consultation with the Central Electricity Authority (CEA) and State Governments for inter-alia, development of the renewable sources of energy. The provision is quoted below**:**

"The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilisation of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy."

1.3 National Electricity Policy (NEP)

Clause 5.2.20 of the NEP stipulates the need for fully exploiting the feasible potential of non-conventional energy sources, as reproduced below:

"5.2.20 Feasible potential of non-conventional energy resources, mainly small hydro, wind and bio-mass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures."

Clause 5.6.1 stipulates about the need for Technology Development and R&D on non-conventional energy systems, as reproduced below:

"*Special efforts would be made for research, development demonstration and commercialisation of non-conventional energy systems. Such systems would need to meet international standards, specifications and performance parameters*."

Clause 5.12 stipulates several conditions for promotion and harnessing of renewable energy sources. The salient features of the said provisions of NEP are reproduced below.

5.12.1: Non-conventional sources of energy being the most environment-friendly, there is an urgent need to promote generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of projects based on non-conventional and renewable sources of energy. Cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources. Progressively, the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase by distribution companies shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional technologies compete, in

terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies.

1.4 Tariff Policy 2016

In compliance with the Section (3) of the Act, the Central Government has notified the revised Tariff Policy on 28thJanuary, 2016. The Tariff Policy elaborates the role of Regulatory Commissions, the mechanism for promoting renewable energy, the time-frame for implementation, etc. Clause 5.2 of the Tariff Policy provides as under:

"Provided also that the State Government can notify a policy to encourage investment in the State by allowing setting up of generating plants, including from renewable energy sources out of which a maximum of 35% of the installed capacity can be procured by the Distribution Licensees of that State for which the tariff may be determined under Section 62 of the Electricity Act, 2003."

Clause 6.4 of the Tariff Policy addresses various aspects associated with promoting and harnessing renewable sources of energy generation including co-generation from renewable energy sources, as reproduced below**:**

1) "Pursuant to provisions of Section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage of the total consumption of electricity in the area of a distribution licensee for purchase of energy from renewable energy sources, taking into account availability of such resources and its impact on retail tariffs. Cost of purchase of renewable energy shall be taken into account while determining tariff by SERCs. Long term growth trajectory of Renewable Purchase Obligations (RPOs) will be prescribed by the Ministry of Power in consultation with MNRE.

Provided that cogeneration from sources other than renewable sources shall not be excluded from the applicability of RPOs.

(i)** Within the percentage so made applicable, to start with, the SERCs shall also reserve a minimum percentage for purchase of solar energy from the date of notification of this policy which shall be such that it reaches 8% of total consumption of energy, excluding Hydro Power, by March 2022 or as notified by the Central Government from time to time**.

(ii) Distribution Licensee(s) shall compulsorily procure 100% power produced from all the Waste-to-Energy plants in the State, in the ratio of their procurement of power from all sources including their own, at the tariff determined by the Appropriate Commission under Section 62 of the Act.

(iii) It is desirable that purchase of energy from renewable sources of energy takes place more or less in the same proportion in different States. To achieve this objective in the current scenario of large availability of such resources only in certain parts of the country, an appropriate mechanism such as Renewable Energy Certificate (REC) would need to be promoted. Through such a mechanism, the renewable energy based generation companies can sell the electricity to local distribution licensee at the rates for conventional power and can recover the balance cost by selling certificates to other distribution companies and obligated entities enabling the latter to meet their renewable power purchase obligations. The REC mechanism should also have a solar specific REC.

(iv) Appropriate Commission may also provide for a suitable regulatory framework for encouraging such other emerging renewable energy technologies by prescribing separate technology based REC multiplier (i.e. granting higher or lower number of RECs to such emerging technologies for the same level of generation). Similarly, considering the change in prices of renewable energy technologies with passage of time, the Appropriate Commission may prescribe vintage based REC multiplier (i.e. granting higher or lower number of RECs for the same level of generation based on year of commissioning of plant).

2) States shall endeavour to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government.

However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003. While determining the tariff from such sources, the Appropriate Commission shall take into account the solar radiation and wind intensity which may differ from area to area to ensure that the benefits are passed on to the consumers.

3) The Central Commission should lay down guidelines for pricing intermittent power, especially from renewable energy sources, where such procurement is not through competitive bidding. The tariff stipulated by CERC shall act as a ceiling for that category.

4) In order to incentivize the Distribution Companies to procure power from renewable sources of energy, the Central Government may notify, from time to time, an appropriate bid-based tariff framework for renewable energy, allowing the tariff to be increased progressively in a back-loaded or any other manner in the public interest during the period of PPA, over the life cycle of such a generating plant. Correspondingly, the procurer of such bid-based renewable energy shall comply with the obligations for payment of tariff so determined.

5) In order to promote renewable energy sources, any generating company proposing to establish a coal/lignite based thermal generating station after a specified date shall be required to establish such renewable energy generating capacity or procure and supply renewable energy equivalent to such capacity, as may be prescribed by the Central Government from time to time after due consultation with stakeholders. The renewable energy produced by each generator may be bundled with its thermal generation for the purpose of sale. In case an obligated entity procures this renewable power, then the SERCs will consider the obligated entity to have met the Renewable Purchase Obligation (RPO) to the extent of power bought from such renewable energy generating stations.

Provided further that in case any existing coal and lignite based thermal power generating station, with the concurrence of power procurers under the existing Power Purchase Agreements, chooses to set up additional renewable energy generating capacity, the power from such plant shall be allowed to be bundled and tariff of such renewable energy shall be allowed to be pass through by the Appropriate Commission. The Obligated Entities who finally buy such power shall account towards their renewable purchase obligations.

Provided also that scheduling and despatch of such conventional and renewable generating plants shall be done separately.

6) In order to further encourage renewable sources of energy, no inter-State transmission charges and losses may be levied till such period as may be notified by the Central Government on transmission of the electricity generated from solar and wind sources of energy through the inter-State transmission system for sale.

7) Appropriate Commission may provide regulatory framework to facilitate generation and sale of electricity from renewable energy sources particularly from roof-top solar system by any entity including local authority, Panchayat Institution, user institution, cooperative society, Non-Governmental Organization, franchisee or by Renewable Energy Service Company. The Appropriate Government may also provide complementary policy support for this purpose."

1.5 National Wind-Solar Hybrid Power Policy 2018

The Ministry of New and Renewable Energy (MNRE) notified the National Wind-Solar Hybrid Policy on 14thMay 2018.

"2.1 The main objective of the policy is to provide a framework for promotion of large grid connected wind-solar PV hybrid system for efficient utilization of transmission infrastructure and land. It also aims at reducing the variability in renewable power generation and achieving better grid stability".

"2.2 Policy also aims to encourage new technologies, methods and way-outs involving combined operation of wind and solar PV Plants."

The policy seeks to provide support for new hybrid projects as well as hybridisation of existing wind/solar power projects. The policy also permits use of battery storage in the hybrid project for optimising the output and further reduces the variability.

The Policy state that 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

The Policy also state that the 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

1.6 MNRE Guidelines for Tariff based competitive bidding for setting up 2500 MW ISTS connected Wind Solar Hybrid Projects (No F NO 238/78/2017-Wind dated 25 May 2018.

The provisions under the MNRE competitive bidding guidelines are given below. These guidelines are used by SECI for conducting bidding under **Trench – I** project:

i) The objectives of the scheme is to facilitate installation of new wind-solar hybrid projects at a price discovered through transparent bidding process.

ii) Capacity under the scheme: The scheme will be implemented for setting up 2500 MW capacity Inter-State Transmission(ISTS) connected wind solar hybrid power projects on build, own and operate basis.

Salient features of the guidelines are as follows:

a) SECI shall be the nodal agency for implementation of the scheme. The selection of hybrid projects under the scheme will be through a transparent e-bidding process followed by e-reverse auction for procurement of hybrid power at tariff discovered through bidding process.

b) Eligible bid capacity for bidding will be minimum 200 MW and maximum 500 MW by a bidder with project capacity at least 50 MW at one project site.

c) Hybrid project developers will be allowed to install any rated capacity of wind and solar energy generation systems at a project site subject to fulfillment of definition of wind-solar hybrid project as per wind-solar hybrid policy.

d) The HPDs will be allowed to install any storage facility to optimally manage the power output from their hybrid project.

e) DISCOMs and bulk customers that requires renewable power to fulfill their solar and non-solar RPO under respective RPO regulations will be eligible to buy hybrid power under the scheme.

f) SECI shall sign Power Purchase Agreement (PPA) with selected bidders at tariff discovered through reverse auction and also back-to-back Power Sale Agreement (PSA) with buyers at a pooled price of the total capacity allotted.

g) The duration of PPA and PSA will be 25 years from the date of commercial operation of the project.

h) SECI will be entitled to charge trading margin as mutually agreed with buyer or as decided by the CERC for long term power purchases, whichever is less.

i) The bidders may avail fiscal and financial incentives available for such projects as per prevailing conditions and rules.

j) No separate Central Financial Assistance is envisaged for implementation of the scheme.

1.7 MNRE Draft Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Solar Hybrid Projects (No. 238/22/2019-Wind dated 11.10.2019)

The provisions under the MNRE competitive bidding guidelines are given below. These guidelines are used by SECI for conducting bidding under **Trench - III** projects:

"3.1. These Guidelines are being issued under the provisions of Section 63 of the Electricity Act, 2003 for long-term procurement of electricity through competitive bidding process, by the Procurer(s)', from grid connected Wind Solar Hybrid Power Projects ('HPP') having, (a) individual size of 5 MW and above at one site with minimum bid capacity of 25 MW for intra-state projects; and (b) individual size of 50 MW and above at one site with minimum bid capacity of 50 MW for inter-state projects,

subject to the condition that the rated power capacity of one resource is **at least 25% of the rated power capacity of other resource.**

Thus, for a 100 MW project to be treated as hybrid project, the minimum resource (wind or solar) should not be less than 20 MW.

3.2. Storage may be added to the hybrid project

a) to reduce the variability of output power from wind solar hybrid project;

b) 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 project required for charging of storage facility; and

c) ensuring availability of firm power for a particular period. In case of clause 3.2 (b) above, the additional capacity of wind and solar power in the project shall be declared by Hybrid Power Generator (HPG) at the time of bid submission.

3.3. Unless explicitly specified in these Guidelines, the provisions of these Guidelines shall be binding on the Procurer, Authorized Representative and Intermediary Procurer. The process to be adopted in event of any deviation proposed from these Guidelines is specified in Clause 23 of these Guidelines."

Salient features of MNRE competitive bidding Guidelines are as under:

a) Guidelines are formulated to provide the necessary framework and mechanism for transparent bidding process as required under Section 63 of the Act for implementation of the Scheme for setting up of 2500 MW ISTS-connected Wind-Solar Hybrid Power Projects.

b) The Scheme as well as the Guidelines envisage setting up 2500 MW capacity of ISTS-connected new Wind-Solar Hybrid Power Projects on Build, Own and Operate (BOO) basis through open and transparent competitive bidding to provide hybrid power at tariff discovered through reverse bidding process.

c) SECI will be the nodal agency for implementation of Scheme and will prepare RfS document and invite bids for selection of wind-solar hybrid power projects under the Scheme through e-bidding process followed by e-reverse auction. The interested bidders shall register themselves on a web-based portal identified by SECI for e-bidding/ e-reverse auction.

d) The selection of bids will be done by SECI based on the lowest tariff offered in the ascending order as quoted by the bidders during the e-reverse auction till the entire bid capacity is allotted.

e) SECI shall sign Power Purchase Agreement with Hybrid Power Developer (HPDs) at bidded tariff and also enter into back-to-back Power Supply Agreement (PSA) with buyers at a pooled price of total capacity allotted. Duration of PPA and PSA would be 25 years from Commercial Operation Date of the Project. SECI will be entitled to charge trading margin as mutually agreed with buyer or as decided by Central Electricity Regulatory Commission for long-term power purchase, whichever is less.

f) Under the Scheme, minimum bid capacity shall be 200 MW with at least 50 MW of project capacity at each project site. Maximum bid capacity that can be allotted to one company including its Parent, Affiliate or Ultimate Parent or any Group Company will be 500 MW.

g) Selection of Project shall be done through single stage two envelopes, e-bidding and e-reverse auction as detailed in the RfS documents to be issued by SECI. Based on the RfS notification issued by SECI, separate Technical and Financial bids will be submitted by the developer in its application. The financial bid will clearly indicate tariff offered (in India Rupees) against the total bid capacity for which bid is submitted.

h) A copy of the Standard Power Purchase Agreement to be executed between SECI and the HPD shall be provided by SECI along with invitation for submission of response to RfS.

1.8 Gujarat Wind-Solar Hybrid Power Policy 2018

'Gujarat Wind-Solar Hybrid Power policy-2018' notified by Government of Gujarat on 20th June, 2018 aims to harness the huge RE potential of the state through "hybridization" of the two sources of energy. Solar and Wind energy potential of the state is mostly concentrated in the areas of Saurashtra, Kutch and North Gujarat region.

The main objectives of this Policy are:

-------"1. To provide a framework for promotion of large grid-connected wind-solar PV hybrid systems for optimal and efficient utilization of the transmission infrastructure and land, and reducing the variability in renewable power generation thus achieving better grid-stability.

2. To encourage new technologies, methods and solutions to facilitate the combined operation of wind and solar PV plants and to promote the integration with emerging technologies like energy storage systems."

The important features of the policy are highlighted below:

"3. ELIGIBLE UNIT

Any individual, company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person, shall be eligible for setting up of new Wind-Solar Hybrid Projects OR shall be eligible to add wind/solar capacity at the existing wind/solar power projects, respectively, either for the purpose of captive use and/or for the selling of electricity, in accordance with the Electricity Act, 2003, as amended from time to time. The wind and solar generation may be metered separately at the pooling/sending end sub-station."

"4. STATE GOVERNMENT FACILITATION & NODAL AGENCY

Gujarat Energy Developer Agency (GEDA) shall be the State Government Nodal Agency for facilitation and implementation of the Gujarat Wind-Solar Hybrid Power Policy-2018. The Nodal Agency shall facilitate and assist the Project Developers to undertake the activities in achieving the objectives the policy. Energy storage technology will also be facilitated by the State Government."

"5. IMPLEMENTATION STRATEGY

5.1 For simplicity purpose, wind-solar hybrid power generation plants are divided into two categories: (i) ***Type-A*** *Projects (Existing/under construction project) (ii) Type-B Projects (New projects)*

(i) ***Type-A*** *projects (Existing / under construction projects)*

This includes conversion of existing / under construction wind or solar power plants which are registered with GEDA and for which evacuation permission is granted by GETCO before issuance of this Policy. The installed wind/solar capacity shall be considered based on Power Purchase Agreement (PPA)/Wheeling Agreement.

(ii) ***Type-B*** *Projects (New Projects)*

This includes new wind-solar hybrid power generation projects which are not registered with GEDA or for which evacuation permission is not granted by GETCO till the date of issuance of this policy.

5.2 AC or DC configuration of wind-solar hybrid power projects

(i) ***Type A*** *Projects (Existing / under construction projects)*

Only A.C. integration is permissible. AC output of both, the wind and solar system shall be integrated at pooling /sending end substation as the case may be. Both Wind and solar systems shall use separate set of electrical lines and equipment for connecting at pooling /sending end substation of the Hybrid project. The solar and wind generation is mandatorily required to be metered separately at pooling /sending end substation in order to cater to separate RPO with suitable control equipment.

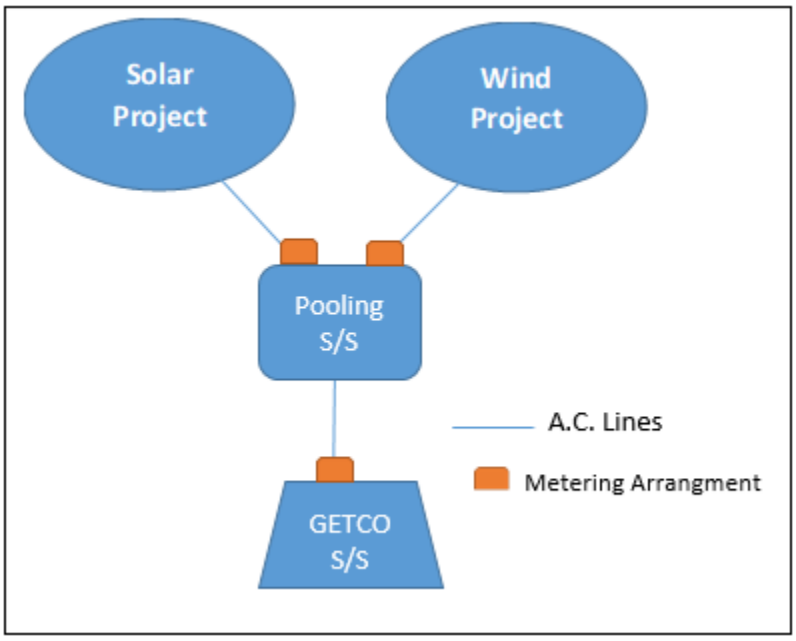

Figure 1: AC configuration for Existing /ongoing Hybrid projects

(ii) ***Type B Projects*** *(New Projects)*

In the absence of a common RPO and Tariff:

In this case, only AC integration shall be allowed. Separate electrical lines and meters needs to be laid for wind and solar respectively until the pooling/sending end sub-station of the hybrid project.

In the presence of a common RPO and tariff:

In this case, AC or DC integration shall be allowed. Common electrical lines may be used up to the pooling substation of the hybrid project. DC integration shall be contingent to the availability of DC metering standards, which may be evolved in due course of time.

Under all circumstances, the Developer shall lay a dedicated line for evacuation of power from the pooling/sending end sub-station of Hybrid Project to the receiving end sub-station of GETCO as per system study undertaken by GETCO. Energy injection from Wind & Solar capacity at receiving end of GETCO sub-station shall be worked out separately on the basis of meter reading of common meter installed at receiving end sub-station appropriately apportioned as per the respective meter reading of wind and solar meters.

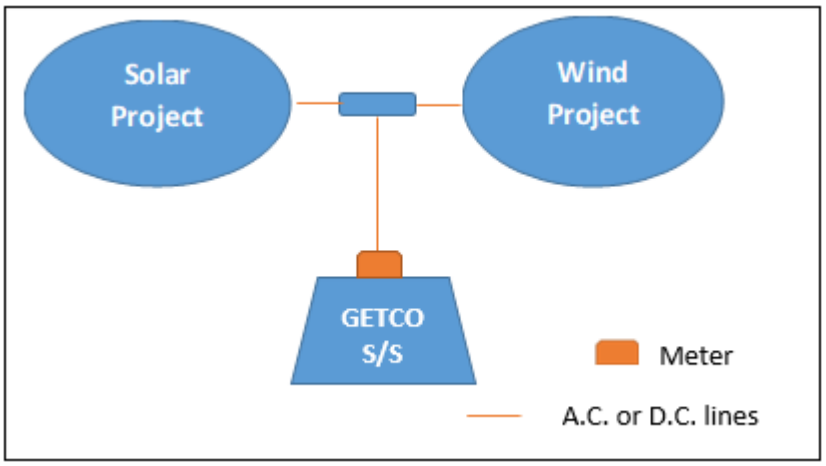

Figure 2: AC/DC configuration for New Hybrid projects

*5.3 Hybridization of **Type- A Projects** (Existing Project)*

i The total power injection from solar-wind hybrid project into the grid shall not be more than the transmission capacity /grid connectivity allowed /sanctioned by GETCO for this purpose. In case any augmentation in existing evacuation system is required due to addition of wind /solar capacity, developer has to undertake such work up to GETCO's receiving end substation at their own cost.

ii The solar/wind power generated from the Hybrid Project shall be measured at the pooling/sending end sub-station, and energy injection at the receiving end sub-station of GETCO shall be worked out on apportioned basis as per the common meter reading at the receiving end sub-station.

iii The additional solar /wind power from the Hybrid project may be allowed to wheel for Captive use or third party sale or sale of power to DISCOMs. For transmission and wheeling of power, the applicable charges and losses shall be specified in the policy.

iv Hybrid Project Developer shall approach GETCO for evacuation system planning upto the receiving station.

5.4. ***Type-B Project*** *(New Project)*

i The developers of Hybrid Projects shall establish the evacuation line at their own cost up to the receiving end sub-station of GETCO.

ii The solar/wind power generated from the Hybrid Project shall be measured/apportioned at the pooling/sending end sub-station, and energy injection at the receiving end sub-station of GETCO shall be worked out on apportioned basis as per the common meter reading at the receiving end sub-station.

iii The developer has the option for wheeling of Wind and Solar power for their Captive use or third party sale or sale of power to DISCOMs. For transmission and wheeling of power, the applicable charges and losses shall be specified in the policy.

iv Hybrid Project Developer shall approach GETCO for evacuation system planning upto the receiving station."

"6. CAPACITY INSTALLATION

For ***Type –A*** *project, development of additional solar capacity in existing wind power plant of vice-versa is allowed. In case of* ***Type-B Projects*** *(New Projects): The choice of capacity mix between wind and solar shall be* ***the discretion of the Developer or as per the individual schemes as notified by the State or Central Government from time to time."***

7. WIND-SOLAR HYBRID SYSTEM & POWER EVACUATION

Wind Solar Hybrid Power Generation System, or the Hybrid Project, means the system of combined generation of wind and solar power at existing or new solar/wind power projects (or) co-located where injection of wind or solar power is at the interconnection point of the pooling sub-station of existing wind farms/ sending end sub-stations of existing solar power installations.

Under the scheme of wind-solar hybrid power generation, wind and solar PV systems may be connected at the same intersection point at pooling/ sending end sub-station. 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, it is desired that:

i At the locations of having good wind power potential, the solar PV capacity to be added as the solar-hybrid component could be relatively smaller.

ii Similarly, in case of the sites where the power density is relatively lower or moderate, the component of the solar PV capacity could be relatively on a higher side.

iii Evacuation capacity for the purpose of connectivity and injection of power shall be worked out as follows:

***For Type A Project (Existing Projects)** where open access is already allowed to the extent of rated capacity of transmission line /sub-station of GETCO, evacuation of power from additional solar /wind capacity to be set up is allowed up to the capacity of transmission line /substation of GETCO. No transmission charges are payable for evacuation of such additional capacity. However, the transmission losses and wheeling charges /losses shall be applicable as to any normal project.*

In case the capacity margin exists in the transmission system /substation of GETCO or augmentation is possible to evacuate the power from additional wind /solar capacity and if such work is undertaken by GETCO after receiving end substation. The developer has to pay transmission charges, transmission losses and wheeling charges /losses as per any other RE project proponent.

***In case of Type-B Projects (New Projects)**, the developer of Hybrid Project shall establish a dedicated line at its own cost for evacuation of power up to receiving end sub-station of GETCO where the Project Developers desires to inject power in the state grid. From there onwards, GETCO shall ensure transmission system and connectivity. Transmission charges shall be applicable on the basis of sanctioned/ allocated transmission capacity. However, Developer shall ensure that power injection shall never increase beyond sanctioned/allocated transmission capacity. Transmission charges and losses, and wheeling charges and losses shall be applicable as applicable to any other open access for wind and solar projects."*

8. TARIFF FOR SALE TO DISCOMS

Distribution Licensees may purchase power from Hybrid Projects, wind and solar separately as follows for meeting their RPOs.

*8.1 In case of **Type –A** project (Existing projects)*

*The purchase of power from existing project shall be according to respective PPA. Whereas the sale and purchase of power from additional /new capacity shall be at **the tariff discovered through competitive bidding undertaken by DISCOMs separately for Wind and Solar power purchase**.*

*8.2. In case of **Type-B** Projects (New Projects)*

*The purchase of wind/solar power shall be at a **tariff discovered through competitive bidding** (reverse bidding whenever required) undertaken by DISCOMs separately for Wind and Solar Power Purchase until a **common tariff mechanism** and RPO for the hybrid project is evolved.*

1.9 Renewable Purchase Obligation in Gujarat

The Gujarat Electricity Regulatory Commission (Procurement of Energy from Renewable Sources) (Second Amendment) Regulations, 2018, (Notification No. 01 of 2018) dated 21st April, 2018 has specified the minimum renewable power purchase by the obligated entities for the financial year (FY) 2017-18 to 2021-22 as shown in Table below.

As per this regulation, the obligated entities have the obligation to purchase electricity (in kWh) from specified RE sources. The said purchase shall be at a defined minimum percentage of the total consumption of its consumers including T&D losses during a year.

This renewable purchase obligation applies to:

- distribution licensees; and
- any other captive and open-access users consuming electricity (i) generated from conventional captive generating plant having capacity of 5 MW and above for their own use and/or (ii) procured from conventional generation through open access and third party sale

Table 1 Renewable Purchase Obligation in Gujarat FY 2017-18 to 2021-22

Year	Total RPO	Non Solar RPO		Solar RPO	Total Wind & Solar
		Wind	Biomass, Bagasse, MSW and Hydro	Solar	
2017-18	10.00%	7.75%	0.5%	1.75%	9.5%
2018-19	12.70%	7.95%	0.5%	4.25%	12.20%
2019-20	14.30%	8.05%	0.75%	5.5%	13.55%
2020-21	15.65%	8.15%	0.75%	6.75%	14.90%
2021-22	17.00%	8.25%	0.75%	8.0%	16.25%

Source: GERC (Procurement of Energy from Renewable Sources) (Second Amendment) Regulations, 2018.

Further, this regulation recognises the certificates issued within the scope of Central Electricity Regulatory Commission's (CERC) Notification No. L-1/12/2010-CERC dated 14th January, 2010 as the valid instruments for the discharge of the mandatory obligations set out in these regulations for the

obligated entities to purchase electricity from renewable energy sources termed as Renewable Energy Certificates (REC).

1.10 Wind – Solar Resource Characteristics study for Gujarat

Solar and Wind sources of electricity are complementary to each other. It is a general perception that the months having good sunshine tend to be less windy and months having good wind speed tend to be less sunny. This is evident from the generation pattern of the wind and solar power projects. The result for similar analysis for year 2018 is depicted in the graph - monthly percentage share of electricity generation from wind and solar for the state of Gujarat for year 2018 as shown below:

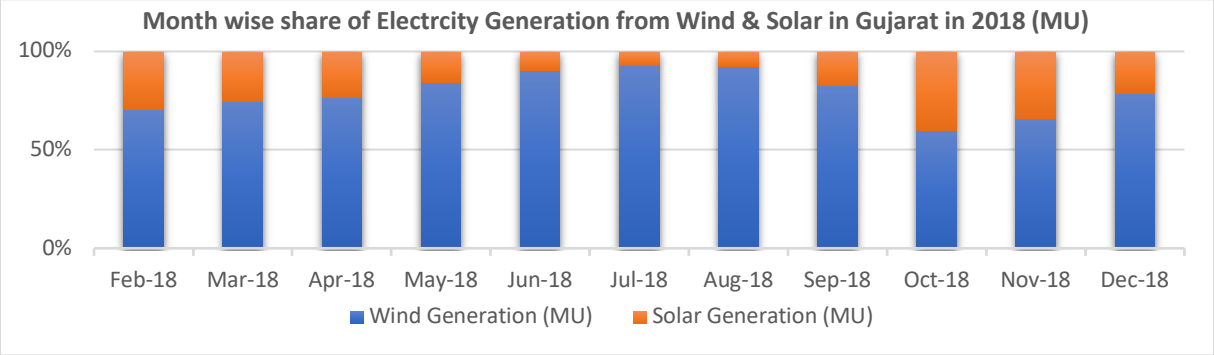

Figure 3: Wind and Solar Generation in Gujarat 2018

End of Chapter 1

CHAPTER 2 STUDY OF COMPETITIVE BIDDING RESULTS FOR WIND SOLAR HYBRID

2.1 Introduction

Solar Energy Corporation of India Ltd (SECI), a Central Public Sector Undertaking (CPSU) under the administrative control of MNRE, was set up on 20thSeptember, 2011 to facilitate the implementation of JNNSM and achievement of targets set therein. The Government later converted it into a Section-3 Company under the Companies Act, 2013. Earlier, it was only focussing on Solar Energy sector, but with the conversion to a Company, its mandate was broadened to cover the entire Renewable Energy domain. SECI has now been playing the role of a nodal agency for conducting e-reverse auction for procurement for power for solar and wind projects. SECI first started with the competitive bidding of Solar but with huge response of investors, it also floated the tenders for procurement of Wind power. Afterwards, SECI has also published tender for supply of round the clock (RTC) power, peak power as well as power procurement from Wind –Solar Hybrid projects as per guidelines issues by MNRE. Most of the tenders floated by SECI were oversubscribed and the Tariff offered by the bidders was also much lower than the Tariff of conventional sources.

2.2 SECI Wind-Solar Hybrid Power Projects (Tranche-I)

SECI had issued Request for Selection (RfS) along with draft Power Purchase Agreement (PPA) and Power Sale Agreement (PSA) documents for setting up of 2500 MW ISTS connected Wind-Solar Hybrid Projects (Tranche-I) as per the MNRE guidelines on June 22, 2018. Subsequently, the capacity under the RfS was revised to 1200 MW. The hybrid projects are scheduled to be commissioned in the year 2021-22 and the Projects would help the Buying Utilities/Distribution Licensees in meeting their Renewable Purchase Obligations (RPOs) requirements apart from providing power at very economical rates. After reverse auction, two projects of total 840 MW capacities were finalised and Letters of Award was issued on 25.01.2019. SECI had agreed to sell the entire 840 MW (i.e. cumulative awarded capacity/accepted cumulative capacity) of hybrid power to the Buying Utilities/DISCOMs at the rate of Rs. 2.6972/kWh ((i.e. weighted average pooled rate of two bids) plus the trading margin of Rs.0.07/kWh upon the commissioning of the above capacity. Based on the request of the Buying Utilities/2DISCOMs, SECI had entered into PSAs for 400 MW capacity with Chhattisgarh State Power Distribution Company Limited and 440 MW power with Haryana Power Purchase Centre (HPPC).

The discovered tariff, capacity and project locations are given below.

Table 2 Tariff Discovered in SECI hybrid Tender (Tranche – I)

Sl No	Name of the project	Capacity (in MW)	Location	Tariff (Rs./ kWh)
1	SBE Renewable Ten Private Limited	450 (150 and 100)	Karnataka / Tamil Nadu	2.67
2	Mahoba Solar (UP) Private Limited	390 (three projects of 100 MW and another 90 MW)	Gujarat	2.69

Source: CERC order dated 28.02.2020 in Petition No 56/AT/2020

2.3 SECI Wind-Solar Hybrid Power Projects (Tranche-II)

Subsequently, SECI had issued RfS for setting up of 1200 MW ISTS connected Wind-Solar Hybrid Power Projects (Tranche-II) as per competitive bidding guidelines laid down by the Ministry of New and Renewable Energy (MNRE) for setting up of 2,500 MW of ISTS connected wind-solar hybrid projects. SECI was designated as the nodal agency for the implementation of the project. SECI had invited bids for the setting up of 1,200 MW of ISTS connected wind-solar hybrid power projects (Tranche II) on 8thMarch 2019. The projects were scheduled to be commissioned in 2021-22. The tender was undersubscribed, and bids received were only for 900 MW against the tendered capacity of 1,200 MW. The e-reverse auction was carried out on May 27, 2019, and Adani Renewable Energy Park (Gujarat) Limited (AREPGL) was declared as the successful bidder after conclusion of e-reverse auction process and determination of tariff. The tariff was Rs. 2.69/kWh for a capacity of 600 MW. Based on the request of the distribution licensees, 500 MW was allocated to Punjab State Power Corporation Limited (PSPCL), and 100 MW was allocated to India Power Corporation Limited (IPCL). Later, SECI entered into PPAs (300 MW each) with Adani Green Energy Nine Limited, SPV of the Successful bidder, namely, Adani Renewable Energy Park (Gujarat) Limited. The details of the bidding results are given below.

Table 3 Tariff Discovered in SECI hybrid Tender (Tranche – II)

Sl No	Name of the project	Capacity (in MW)	Location	Tariff (Rs./ kWh)
1	Adani Renewable Energy Park (Gujarat) Limited (AREPGL)	600 (300 MW each)	Rajasthan	2.69

Source: CERC order dated 21.05.2020 in Petition No 307/AT/2020

2.4 SECI Wind-Solar Hybrid Power Projects (Tranche-III)

The Solar Energy Corporation of India (SECI) has issued third tender (Tranche – III) in the hybrid series for setting up 1,200 MW of grid-connected wind-solar hybrid power projects in the country to be connected at interstate transmission (ISTS) level. A ceiling tariff of Rs. 2.88 per kWh has been set for this tender. As per the tender, the minimum project size of a single hybrid power project must be 50 MW and the maximum limit is 300 MW. The minimum capacity utilisation factor should be 30%. The projects are to be set up on a Build-Own-Operate (BOO) basis.

Table 4 Ceiling tariff specified in SECI hybrid Tender (Tranche – III)

Particular	Ceiling Tariff specified (Rs/kWh)
SECI Wind-Solar Hybrid Power Projects (Tranche-III)	2.88

Source: SECI

2.5 Maharashtra Wind – Solar Hybrid Tender

A. Bid floated by Adani Electricity Mumbai Ltd (AEML)

Mumbai utility Adani Electricity Mumbai Ltd (AEML) initiated a competitive bidding on 18thJuly, 2019 for procurement of 350 MW grid connected Wind-Solar Hybrid Power capacity on long term basis, with green shoe option of procurement of additional 350 MW, to meet its RPO. The salient features of the Bid were as follows:

- Single Stage Bidding Process with e-reverse auction
- Long Term PPA for 25 years from COD
- SCOD to be achieved within 18 months of signing PPA
- CUF of at least 50% to be quoted by the Bidder, permissible yearly variation of +/- 10%.
- Delivery Point will be Maharashtra Periphery
- Financial Closure to be achieved in 12 months of signing of PPA

AEML received bids from 6 bidders with cumulative capacity of 1500 MW. The technical bids were opened on 19thAugust, 2019 and the financial bids of the five qualified bidders were opened on 4th September, 2019 and e-reverse auction was also conducted on the same day. Based on the reverse auction result, L1 bidder was Rosepetal Solar Energy Private Limited and the said bidder was selected for entire quantum of 350 MW(additional 350 MW under green shoe option) with discovered tariff of Rs 3.35/kWh for its inter-state hybrid project.

In this matter, Maharashtra Electricity Regulatory Commission (MERC)vide its order dated 8.01.2020 in Case No 281 of 2019 ruled that AEML has option to renegotiate with selected bidder i.e. M/s

Rosepetal Solar Energy Private Ltd for lower tariff of Rs. 3.24 per unit. Bidder can offer lower rate with same configuration or by re-configuring Wind and Solar mix or by working out any other method to have the least possible clipping of energy while complying with minimum 50% CUF condition. Based on the same MERC decided the tariff as Rs. 3.24/kWh for the Wind-Solar hybrid project.

Table 5 Tariff Discovered in AEML hybrid Tender

Sl No	Name of the bidder	Capacity (in MW)	Tariff (Rs / kWh)
1	Adani Electricity Mumbai Ltd (AEML)	700 MW	3.24

Source: MERC order dated 08.01.2020 in Case No 281 of 2019

B. Tata Power Company Ltd - Distribution (TPC-D) Plan

Recently, another Mumbai Utility, Tata Power Company Ltd - Distribution (TPC-D)sought approval for the Bidding Documents for long term procurement (25 years) of 225 MW capacity from grid connected Wind-Solar Hybrid Power Projects through competitive bidding process from MERC. MERC has approved the bidding documents with the deviations sought. As per the approval, minimum CUF should be 35% at the delivery point and wind capacity is limited to 50% of the total project capacity.

Table 6 Tariff Discovered in TPCL hybrid Tender

Sl No	Name of the bidder	Capacity (in MW)	Tariff (Rs / kWh)
1	Tata Power Green Energy Limited (TPGEL)	225 MW	2.59

Source: MERC order dated 10.08.2020 in Case No 152 of 2020

End of Chapter 2

CHAPTER 3 TARIFF FRAMEWORK, GENERAL PRINCIPLES AND OTHER COMMERCIAL CONSIDERATIONS

3.1 Tariff Framework

The Commission has already directed the Distribution Licensees to procure power from Solar and Wind Projects through competitive bidding under Section 63 of the Act or by following competitive bidding process followed by SECI/MNRE etc. The tariff determined by the Commission in the respective category of renewable energy orders will act as a ceiling tariff.

Further, the Commission has directed the Distribution Licensees through letter dated 18thMarch, 2017, which states as under:

"The Commission has observed that, as per the provisions of the National Tariff Policy, procurement from renewable energy projects by distribution licensees is recommended through competitive bidding to keep the tariff low. Accordingly, the Govt. of India and various State Governments have initiated competitive bidding process for procurement of power from wind and Solar energy projects, in which the discovered tariff for Solar and Wind energy projects has shown a substantial reduction".

The Commission noted the tariff related provisions under the 'Gujarat Wind-Solar Hybrid Policy 2018' which states that for ***Type – A*** *(existing projects), the purchase of power shall be according to respective PPA. Whereas the sale and purchase of power from additional /new capacity shall be at* ***the tariff discovered through competitive bidding undertaken by DISCOMs separately for Wind and Solar power purchase****.* In case of **Type-B** (New Projects)*, the* purchase *of wind/solar power shall be at a* ***tariff discovered through competitive bidding*** *(reverse bidding whenever required) undertaken by DISCOMs separately for Wind and Solar Power Purchase until a* ***common tariff mechanism*** *and RPO for the hybrid project is evolved.*

The Commission noted that the MNRE has notified the tariff based competitive bidding guidelines for procurement of power from Wind-Solar Hybrid projects as per provisions under Section 63 of the EA 2003. SECI as well as the distribution licensees in some state have successfully conducted competitive bidding process wherein the discovered tariff is substantially lower than the 'generic tariff' determined by the Commission in its previous solar and wind tariff Orders. Further, the power procurement from wind-solar hybrid projects 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 plant respectively.

In view of above the Commission feels it appropriate to adopt the tariff for Type A (existing projects) as well as Type B (new projects) based on the rates discovered through competitive bidding process.

In view of above, the Commission proposes to determine the tariff for all prospective Wind-Solar Hybrid power projects, based on the rates discovered through competitive bidding under Section 63 of the Act or by following competitive bidding process followed by SECI/MNRE etc.

Further, there could be cases of Wind-Solar Hybrid power projects below the threshold limit of eligibility for participating in Competitive Bidding. It is proposed that the tariff for such projects shall be considered equal to the Tariff discovered through Competitive Bidding by State own DISCOMs, in different time period of 6 months of the year as under:

For Type – A (Existing projects):

The purchase of power from existing wind/solar capacity shall be in accordance with the respective PPAs with Distribution licensees. The purchase of power from additional /new capacity shall be at the weighted average tariff (for respective RE addition capacity i.e. Wind or Solar), available as on 1stApril (as discovered in the Competitive Bidding by GUVNL during previous six months October-March and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during April-September. Similarly, the weighted average tariff (for respective RE addition capacity i.e. Wind or Solar), available as on 1stOctober (as discovered in the Competitive Bidding by GUVNL during previous six months April-September and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during October-March.

For Type-B (New Projects)

The purchase of power from such projects shall be at the weighted average tariff (of Wind, Solar & Wind-Solar Hybrid), available as on 1st April (as discovered in the Competitive Bidding by GUVNL during previous six months October-March and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during April-September. Similarly, the weighted average tariff (of Wind, Solar & Wind-Solar Hybrid), available as on 1st October (as discovered in the Competitive Bidding by GUVNL during previous six months April-September and adopted by the Commission) shall be applicable for the projects to be commissioned under PPAs signed during October-March.

In case weighted average tariff is not available for particular 6 months period then latest weighted average tariff available for 6 months period as discussed above shall be considered.

The distribution licensees shall place on its website the applicable tariff on which it will buy the energy generated from such Wind Solar Hybrid Power Projects. The rate will be updated every 6 months.

3.2 General Principles

Under this section the general principles such as control period, tariff period, plant life etc. has been discussed.

3.2.1 Control period:

The Commission proposes that the control period of the tariff framework under this discussion paper shall be effective from the date of this Order to 31stMarch, 2023.

As per Clause 2 of the Gujarat Wind Solar Hybrid Power Policy, Wind Turbine Generator(s)/Solar PV Generation Project (s) developed during the Operating Period of this Policy shall become eligible for the benefits and incentives declared under this Policy for a period of twenty-five (25) years from the date of commissioning or the life span of such Wind Turbine Generator (s)/Solar Generation Project (s), whichever is earlier.

3.2.2 Useful life of plant:

The Commission in its Wind Tariff Order (Order No.2 of 2020) dated 30.04.2020 had considered the project life of Wind Power Plants to be of 25 Years. Also in case of Solar Tariff Order (Order No. 3 of 2020) dated 08.05.2020 the useful life of SPV projects was considered as 25 years. CERC also considers the useful life of hybrid projects as 25 years from date of Commercial Operation (COD). In the recent biddings also terms of PPA is 25 years from Commercial Operation Date. In view of above, for the grid connected Wind-Solar Hybrid Power Projects the Commission proposes;

"The Useful Life for the Wind Solar Hybrid Power Projects to be commissioned under PPAs signed during the new Control Period shall be considered as 25 years from their date of commissioning for Type-B (New Projects), whereas in case of Type-A (Existing Projects) it shall be considered only for additional /new capacity."

3.2.3 Tariff period:

The tariff period for the tariff proposed by the Commission for procurement of electricity from Wind-Solar Hybrid Power Projects will be of 25 years from the date of commissioning of such projects.

3.2.4 Eligible Unit:

Any individual, company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person, shall be eligible for setting up of new wind-solar Hybrid Projects OR shall be eligible to add wind/solar capacity at their existing solar/wind power projects, respectively, either for the purpose of captive use and/or for selling of electricity, in accordance with the Electricity Act, 2003, as amended from time to time. The wind and solar generation may be metered separately at the pooling/sending end Sub-Station.

The Wind-Solar Hybrid power projects to be commissioned under PPAs signed during the new control period will be eligible to sell power to distribution licensees of Gujarat at the tariff approved by the Commission under this Tariff framework.

3.2.5 Forecasting and scheduling for Wind Solar hybrid power:

The Wind-Solar Hybrid Projects shall require to follow the provisions as prescribed under the GERC (Forecasting, Scheduling, Deviation Settlement and Related Matters of Solar and Wind Generation Sources) Regulations, 2019 notified dated 19th January, 2019 and its amendments issued from time to time.

3.2.6 Applicability of Merit order dispatch principle:

Like Wind and Solar power plants, the Wind-Solar Hybrid Power Projects irrespective of the plant capacity shall be treated as 'MUST RUN' power plants and shall not be subjected to merit order dispatch principles.

3.2.7 Reactive Energy Charges

The Reactive Energy Charges as approved by the Commission in tariff orders for the Gujarat Energy Transmission Corporation Ltd. (GETCO) from time to time shall be applicable to such projects.

3.2.8 Metering point and interconnection point:

The metering and interconnectivity shall be as under:

a. Energy generation from wind /solar capacity shall be measured separately at the pooling/sending end sub-station on 15-minute time block by installing ABT compliant meters by the project developers. The project developers shall also have to install Remote Terminal Unit (RTU) for transferring the real time data to SLDC for its monitoring purpose. Further, ABT compliant meter shall be installed on each wind turbine/solar projects.

b. For the purpose of commercial settlement and energy accounting, the metering point shall be at the receiving end sub-stations of GETCO. The injection of energy from wind/solar capacity shall be worked out separately at the receiving end sub-stations of GETCO on the basis of meter reading of common meter installed at receiving end sub-stations appropriately apportioned as per the respective meter reading of wind and solar meters.

c. In case of Type-A projects (Existing Projects), the metering/injection point shall continue to as per existing agreement with GETCO /DISCOM.

d. In case of Type-B Projects (New Projects) that are AC or DC integrated, the metering point shall be at the receiving end of the GETCO substations. Separate meters will be required to be

installed for both wind and solar PV systems in view of the different tariff and RPO. In case of common hybrid tariff and common RPO, a single meter for both wind and solar shall suffice.

e. For Type-A Projects (Existing Projects), both wind and solar PV systems shall use separate set of internal electrical lines and equipment, and connect to the pooling/sending-end sub-stations of the Hybrid Projects. The projects shall be mandatorily metered separately.

f. Internal connectivity between solar and wind capacity prior to pooling/sending-end sub-station shall be allowed for Type B Projects (New Projects) once a common RPO and hybrid tariff are present.

Energy metering and communication facility shall be provided by the project developers hybrid power projects in accordance with the following regulations/codes/orders and their subsequent amendments.

1) Central Electricity Authority (Installation and Operation of meters) Regulations 2014 and its subsequent amendments

2) Gujarat Electricity Grid Code 2013 and its subsequent amendments

3) GERC (Terms and Conditions of Intra-State Open Access) Regulations, 2011 and its subsequent amendments

4) GERC Distribution Code 2004 and its subsequent amendments

However, for the purpose of energy accounting, all projects shall have to provide ABT compliant meters at generators and if the power is to be wheeled to consumer's premises, then ABT compatible meter is to be installed at the consumer premises also.

3.3 Wind-Solar Hybrid System & Power Evacuation

1. **Hybridization of Type-A Projects (Existing Projects):**

   Existing Wind power or Solar Power Projects Developers, willing to install Solar PV plant or wind turbine generators, respectively, at the existing location to avail benefits under GoG Policy, shall be allowed to do so with following conditions:

   i. The total power injection (combined wind and solar) into the grid shall not be more than the transmission capacity/grid connectivity allowed/sanctioned by GETCO for this

purpose. In case, addition/augmentation in the existing evacuation system is required as per the system study undertaken by GETCO due to addition of wind/ solar capacity, Developers shall undertake such addition/augmentation in the system up to the receiving end sub-stations of GETCO at their own cost. However, the primary focus is to optimize the utilization of existing transmission infrastructure and technologies, and design approaches towards minimum augmentation is encouraged.

ii. The additional solar/wind power from the Hybrid Projects may be allowed to wheel power for captive use or for sale of power to a third-party or sale to DISCOMs. For transmission and wheeling of power, the applicable charges and losses shall be as specified in this Order.

iii. The Developers shall approach GETCO for determining the transmission capacity available to evacuate the additional wind/ solar power or any augmentation that may be required. GETCO shall provide the relevant data with regards to the transmission capacity utilization on its existing network.

2. Type-B Projects (New Projects):

i. The Developers of Hybrid Projects shall establish the evacuation line at their own cost up to the receiving end sub-station of GETCO.

ii. The Developer has option for wheeling of wind and solar power for their captive use or third-party sale or sale of power to the DISCOMs. For transmission and wheeling of power, the applicable charges and losses shall be as specified in this Order.

iii. Hybrid Project Developer shall approach GETCO for evacuation system planning up to the receiving stations.

For both Type-A and Type-B Hybrid Projects, the Developer shall ensure for capacity allocation/sanction of transmission capacity at least equal to installed capacity of wind or solar project, whichever is higher. In case, total injection of power from Hybrid Project exceeds such allocated/sanctioned transmission capacity, such power shall be considered as inadvertent flow of power and shall not be considered for commercial settlement.

Wind-Solar Hybrid Power Generation System, or the Hybrid Project, means the system of combined generation of wind and solar power at existing or new solar/wind power projects (or) collocated where injection of wind or solar power is at the interconnection point of the

pooling sub-station of existing wind farms/ sending-end sub-stations of existing solar power installations.

Under the scheme of wind-solar hybrid power generation, wind and solar PV systems may be connected at the same inter connection point at pooling/sending-end sub-stations. 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, it is desired that:

i. At the locations of having good wind power potential, the solar PV capacity to be added as the solar-hybrid component could be relatively smaller.

ii. Similarly, 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.

iii. Evacuation capacity for the purpose of connectivity and injection of power shall be worked out as follows:

A. For Type-A Projects (Existing Projects) where

(a) open access is already granted to the extent of rated capacity of transmission line/ sub-station of GETCO and injection of power from additional wind/ solar capacity to be set up, is restricted up to rated capacity of transmission line/ substation of GETCO. The same shall be allowed without applicability of transmission charges on such additional capacity. However, the transmission losses and wheeling charges/losses shall be made applicable to such capacity as applicable to any other solar or wind project as the case may be. In case total hybrid generation exceeds the transmission capacity limit, it shall be considered as inadvertent injection of power for which no payment or credit shall be given or under any exigency which requires curtailment of generation, the generation from additional/new wind/ solar capacity shall be curtailed first.

(b) there is capacity margin in the existing transmission system/ sub-stations of GETCO after taking into account open access already granted to the existing wind/solar projects or any augmentation and strengthening of transmission system after receiving-end sub-stations is undertaken by GETCO for allocation/sanction of transmission capacity for allowing additional wind/ solar capacity, the transmission charges and losses, and wheeling charges and losses shall be applicable on such additional sanctioned/allocated capacity as applicable to any other solar/ wind projects as the case may be. However, if any augmentation in the existing transmission

system is required due to addition of such solar/wind capacity, up to receiving end substations of GETCO, the same shall be undertaken by the Developers at its own cost.

B. For Type-B Projects (New Projects)

The Developer of Hybrid Projects shall establish a dedicated line at its own cost for evacuation of power up to receiving end sub-stations of GETCO as per system study undertaken by GETCO where the Project Developer desires to inject power in the State Grid. From there onwards, GETCO shall ensure transmission system and connectivity. Transmission charges shall be applicable on the basis of sanctioned/ allocated transmission capacity. However, Developer shall ensure that power injection shall never increase beyond sanctioned/allocated transmission capacity. In case total hybrid generation exceeds the transmission capacity limit, it shall be considered as inadvertent injection of power for which no payment or credit shall be given. Transmission charges and losses, and wheeling charges and losses shall be applicable as applicable to any other open access for wind and solar projects.

3.4 Operation and maintenance of dedicated lines

The Operation and Maintenance of dedicated evacuation line shall be carried out at the cost of Developer of Hybrid Projects as per applicable technical standards and best practices.

3.5 Transmission and Wheeling Charges

Gujarat Wind Solar Hybrid Policy 2018 has specified transmission and wheeling charges for wheeling power from wind solar hybrid projects for third party sale and captive use. The Commission in its other RE tariff Orders (Wind, Solar, Biomass, Bagasse, Cogen etc.) had time to time specified transmission and wheeling charges and transmission and wheeling losses for wheeling of power under Open Access.

The Commission propose following norms for wheeling of power from Wind Solar Hybrid Projects for third party sale/captive use during the control period.

3.5.1 Third Party Sale

a. Wheeling of Power for third party sale from Hybrid power projects shall be allowed on payment of transmission charges applicable on sanctioned/allocated transmission capacity, transmission

losses on energy feed basis, wheeling charges and losses on the energy fed into grid as measured at receiving Sub-Stations of GETCO, as applicable to normal open access consumer.

b. In case Renewable attribute is being claimed by the Consumer, set-off of wheeled energy at recipients end shall be carried out in the same 15-minute time block.

c. 50% of the cross subsidy surcharge and additional surcharge, as applicable to normal open access consumer, shall be applicable.

3.5.2 Wheeling of power for Captive Use

In case of injection at 66 KV and drawl at 11 KV voltage level, wheeling of electricity generated from the Hybrid Projects to desired location(s) within the State shall be allowed on payment of transmission charges and transmission losses as applicable to normal open access consumer and 50% of wheeling charges and 50% of distribution losses of the energy fed to the grid at the receiving end sub-station of GETCO, as applicable to normal Open Access Consumers.

3.5.3 Wheeling of power to more than one locations

Hybrid Project Developers, who desire to wheel electricity to more than one location for captive use/third-party sale, shall pay 5 paise per unit on energy fed in the grid as measured at receiving end sub-stations of GETCO, to the concerned DISCOM in whose area power is consumed in addition to above mentioned transmission charges and losses, as applicable.

In case, total injection of power from the Hybrid Project exceeds such allocated/sanctioned transmission capacity, such power shall be considered as inadvertent flow of power and shall not be considered for any commercial settlement.

3.6 Energy Accounting

1) Case 1: If the Consumer does not claim the renewable attribute of Solar/Wind energy for meeting its Solar and Non-Solar RPO, energy injection worked out at the receiving end sub-stations of GETCO shall be set-off against the consumption during the Consumer's billing cycle.

   i. For net import of power, the DISCOMs shall charge applicable tariff of respective category to the Consumer including fixed/ demand charge, energy charges, peak charge, other charges/ penalty etc. as applicable to other Consumers.

   ii. Surplus power, after giving set-off, shall be compensated by the concerned Distribution Licensees at the rate Rs. 1.75 per unit or the rate, if any, specified by the Commission for

Surplus Injection Compensation (SIC) from time to time. Fixed/ demand charge, peak charge, other charges/ penalty, etc. shall be as applicable to other Consumers.

iii. The entire generation shall be considered for fulfilling solar and non-solar RPO of DISCOMs.

2) Case 2 (a): If the Consumer claims the renewable attributes of solar/wind energy consumed for meeting its solar/non-solar RPO, then energy accounting shall be based on 15-minute time block-basis.

i. For net import of power, the DISCOMs shall charge applicable tariff of respective category to the Consumer including fixed/ demand charge, energy charges, peak charge, other charges / penalty, etc. as applicable to other Consumers.

ii. Surplus power, after giving set off, shall be compensated by the concerned Distribution Licensees at the rate Rs. 1.75 per unit or the rate, if any, specified by the Commission for Surplus Injection Compensation (SIC) from time to time. Fixed/ demand charge, peak charge, other charges / penalty, etc. shall be as applicable to other Consumers.

iii. The surplus energy purchased shall be considered for fulfilling solar and non-solar RPO of DISCOMs.

3) Case 2 (b): If registered under REC mechanism and supply power within the State, the Energy accounting shall be based on a 15-minute time block-basis.

i. For net import of power, the DISCOMs shall charge applicable tariff of respective category to the Consumer including fixed/ demand charge, energy charges, peak charge, other charges/ penalty, etc. as applicable to other Consumers.

ii. Surplus power, after giving set off, shall be compensated by the concerned Distribution Licensees at the rate Rs. 1.50 per unit or the rate, if any, specified by the Commission for Surplus Injection Compensation (SIC) from time to time. Fixed/ demand charge, peak charge, other charges/ penalty, etc. shall be as applicable to other Consumers.

4) For Type-A Projects (Existing Projects), the energy accounting for consumption of power for captive use / third party sale from existing wind/solar project shall be governed by existing Regulations / Orders / wheeling agreement. If these provisions are different, the above provisions shall be applicable only for wheeling of power from new/additional wind/solar capacity.

3.7 Projects under REC Mechanism

a. Hybrid Projects availing open access for captive use/ third-party sale under REC mechanism shall be governed as per CERC REC Regulations.

b. Such projects shall be allowed to wheel the electricity on payment of applicable transmission charges/losses, wheeling charges/losses and other charges as applicable to other normal Open Access Consumers.

c. Cross Subsidy Surcharge and Additional Surcharge shall be applicable as applicable to normal Open Access Consumers.

3.8 Restrictions

a. Second hand WTGs/ solar modules or other equipment shall not be eligible for installation under this Policy.

b. For captive and third party models, the power contracted from the hybrid project shall be 50% of the sanctioned load of consumer for each solar and wind respectively.

c. However, Consumers may set up Hybrid Project to extent of meeting RPO without limit of Contracted Demand/Sanctioned Load.

Above restrictions shall be distinct and different from the standalone Solar/Wind generating stations set up under Solar/Wind Orders or Policies.

3.9 CDM Benefits

In case of sharing of CDM benefit, the Commission proposes as under:

In case DISCOMs purchases power as per tariff framework approved in this Order, Clean Development Mechanism (CDM) benefits shall be shared on net proceeds, starting from 100% to power producer in the first year after commissioning, and thereafter reducing by 10% every year till the sharing becomes equal (50:50) between the power producer and the power procurer, in the sixth year. Thereafter, the sharing of CDM benefits shall remain equal till the time that benefit accrues.

Hybrid power projects availing CDM benefit shall share the net CDM proceeds annually as per above, by 31stMarch of every year with affidavit stating the annual energy generation (date of

commissioning as starting point of the first year), CER/VER generated, gross receipts, and net receipts.

At the end of every financial year i.e. on 31stMarch, the Hybrid Project Developers shall share the net CDM proceeds, as per above provisions, annually and submit an affidavit to DISCOMs, stating the annual energy generation (date of commissioning as starting point of the first year), CER generated, gross receipts, and net receipts.

3.10 Security Deposit

a. The Hybrid Power Project Developers setting up new projects (Type-B) shall be required to provide Bank Guarantee @ Rs. 3 lacs per MW to GETCO based on allotment of transmission capacity and in case the Developer fails to commission the Hybrid capacity within the time period mentioned hereunder, GETCO shall encash the Bank Guarantee.

b. The Developers shall commission new Hybrid capacity at least 10% of the allotted capacity within one month of charging of evacuation line, failing which, the Developers shall be liable to pay long term transmission charges for 10% of allotted capacity till such 10% of allotted capacity is commissioned.

Table 7 Security Deposit

Hybrid Capacity in MW	**Period for commissioning the entire evacuation line along with bays and metering system**
1 MW to 100 MW	1.5 years from date of allotment of transmission capacity
101 MW to 200 MW	2 years from date of allotment of transmission capacity
201 MW to 400 MW	2.5 years from date of allotment of transmission capacity
401 MW to 600 MW	3.5 years from date of allotment of transmission capacity

Provided that GETCO may issue extension on case to case basis to the Developers if they fail to commission the entire evacuation line along with bays and metering system within the stipulated time period due to unforeseen reasons.

GERC presents this discussion paper to initiate the regulatory process for determination of Wind Solar Hybrid power project tariff for the next control period starting from the final order on this discussion paper after considering comments received from stakeholders. GERC invites comments from potential stakeholders for determination of hybrid project tariff in new control period. Stakeholders may offer their views / objections / suggestions as per the

procedure prescribed in the GERC (Conduct of Business) Regulations, 2004 on or before 21.09.2020

Public hearing in this regard shall be held on 22.09.2020 at 11.30 a.m. in the Commission's office. Stakeholders either in person or through their authorized representative may remain present.

Sd/-
[Roopwant Singh, IAS]
Secretary
GERC

Place: Gandhinagar

Date: 28.08.2020