MINUTES OF THE FORTY SECOND MEETING

OF

FORUM OF REGULATORS (FOR) HELD AT NEW DELHI

DATE : 27TH AUGUST, 2014

LIST OF PARTICIPANTS : At Annexure-I (enclosed).

The meeting was chaired by Shri Gireesh B. Pradhan, Chairperson, Central Electricity Regulatory Commission (CERC) and Forum of Regulators (FOR). He extended a warm welcome to all members of the Forum. The Chairperson welcomed Justice (Retd.) Shri Narendra Nath Tiwari, Chairperson, Jharkhand State Electricity Regulatory Commission (JSERC) who was attending the FOR meeting for the first time.

The FOR thereafter took up the following agenda items for consideration :-

Agenda Item No. 1 : Confirmation of the Minutes of the 41st Meeting of "FOR" held on 27th June, 2014 at Vigyan Bhawan, New Delhi.

The Forum noted and endorsed the minutes of the 41st Meeting of FOR held at Vigyan Bhawan, New Delhi on 27th June, 2014.

Agenda Item No. 2 : Discussion on the Draft Interim Report on "Review of Renewable Energy Certificate (REC) Mechanism".

Joint Chief (Regulatory Affairs), CERC explained the context of the study commissioned by the Forum of Regulators on Review of REC Mechanism. He informed that the consultant (M/s Deloitte Touche Tohmatsu India Private Limited) engaged for the purpose had submitted an interim report dealing with some critical issues needing urgent attention to revive the sentiment in the REC market. These included the factors such as: long term REC Pricing, issuance of RECs beyond RPO to distribution utility, multiplier option for Non-APPC based projects, validity of RECs & periodicity of REC trading sessions, alternate REC trading arrangement, RPO Compliance monitoring, Renewable Obligation on Generators etc..

Subsequently, the representative of the Consultant made a presentation **(Annexure-II)** on above issues and proposed various options for the consideration of the Forum.

Discussion

1. **Long Term REC Pricing**

The current REC framework is characterized by lack of certainty and long term visibility in REC pricing. This greatly increases the risk for the potential investors in projecting the project cash flows from RECs beyond the current control period (2012-2017).

1.1 Floor Price

In order to safeguard the interests of the RE generators and the obligated entities, the concept of floor price and forbearance price has been in place since inception of REC mechanism. The prevailing floor price is applicable upto FY 2017. In case of solar segment which is dominated by solar PV technologies, the preferential tariff/Feed in Tariff (FIT) has reduced substantially over the years consequent on rapid decline in the capital costs. As a result, the FIT of solar projects today is lower than the prevailing solar floor price (Rs. 9.3 per kWh). The solar REC floor price thus requires to be aligned with the current solar FIT. Based on the current methodology applied to solar PV technology, the new solar floor price works out to be Rs 3.50 /kWh. For addressing the need for compensation of high cost solar thermal technologies (costs of solar thermal being higher than solar PV projects), a separate option of technology multiplier has been proposed by the Consultant. No change in floor price of non-solar REC price has been recommended by the Consultant.

1.2 Forbearance Price

Forbearance price is the maximum price at which RECs can be sold in the market. This has been introduced to safeguard the interest of the obligated entities in a volatile REC market. Solar projects have witnessed significant changes in FIT over the years and therefore an adjustment in forbearance price is also called for. Based on the analysis of the maximum difference between the FIT for solar PV for FY 2015 and States' APPC for the same period, the new solar REC Forbearance price proposed is Rs 5.80 per kWh. It has also been proposed that the non-solar forbearance price does not need any change at this stage.

1.3 Vintage Multiplier for Solar Projects

The proposed reduction in Solar REC floor and forbearance prices could put the already registered solar PV projects to a disadvantage. Therefore, a vintage multiplier mechanism has been proposed to reasonably safeguard the existing solar generators registered under REC from future floor price adjustments. The methodology proposed for computing vintage multiplier for solar RECs is based on the difference of the minimum requirement (linked to the year of commissioning of the plant) and the current APPC. This approach ensures that the recovery of revenue for the REC project developer is closer to the minimum project viability requirement (corresponding to the FIT applicable for the year of commissioning). It has been proposed that the vintage multiplier be provided for a period of 12 years, which corresponds to the period of debt repayment, and be applicable from the year of commissioning of the solar project.

1.4 Technology Multiplier

The current framework of REC clubs various technologies and hence puts certain technologies to a disadvantage vis-à-vis others due to differential cost of generation. It becomes potentially difficult for a new and costly technology to compete with a more mature and cost effective technology under the current REC mechanism. In order to provide a level playing field for different technologies, a technology linked multiplier approach has been proposed by the consultant.

2. Multiplier for Non APPC based REC Projects

The REC projects selling electricity to the local distribution licensees are eligible for electricity component equivalent to APPC price determined by the respective SERCs. However, in practice, for REC projects selling 'electricity' to third party (through open access) or self consuming (CPP), the revenue realization works out to be much higher than the APPC as electricity sales are mostly effected at the applicable retail tariff for commercial or industrial tariffs. This results in higher revenue realization by non-APPC based REC projects as compared to the APPC based REC projects. The current trend in REC capacity registered shows that about 30% of the registered projects are through APPC route while the RE projects selling through Open Access and captive RE generators constitute respectively 25% and 45% of the registered REC capacity.

The aspect is proposed to be addressed by providing a differential multiplier based on the type of contracting framework entered into by the REC project. The net electricity component computed at 100% and 90% of energy charge and after deducting the applicable Open Access Charges has been considered for determining the multiplier for non-APPC based project and based on the analysis, the consultant has proposed a range of 0.6 to 0.7 multiplier for non-APPC based REC projects (Open Access and Captive Generators) for FY 15. It has also been suggested that the multiplier needs to be periodically reviewed i.e. every year or once in every 2 years.

3. Issuance of RECs to the Distribution Licensees for procurement of renewable energy beyond the RPO specified.

In order to develop the renewable market and incentivize the distribution utilities to contract renewable capacity beyond the RPO requirement, the

Consultant proposed that the RECs could be issued to the distribution utilities for RE power procured above their targets. This would be subject to the distribution utilities meeting certain proposed criteria as follows:

i. The issuance of RECs shall be based on the excess RE power beyond the targets (higher of national level or state level targets);
ii. It should be backed with the true-up order issued by the respective SERCs indicating the level of RE power procured by the distribution utility (at FIT/competitive bid tariff);
iii. Distribution utilities eligible for issuance of RECs need to be registered with REC Registry and the RECs would be issued by the REC Registry based on the certification provided by the SERC in this regard;
iv. Upon issuance of RECs, the distribution utility would ll have the option to redeem the RECs to meet RPO compliance for next year or sell the excess RECs through exchange.

4. Alternative Trading arrangement

The existing REC framework only allows transactions on the power exchange platform. Some of the possible options suggested by the Consultant to strengthen the REC market framework include: allowing exchange based trading by the Obligated Entities and OTC for others; allowing OTC transactions by all (RE generators, Obligated Entities and volunteers); allowing OTC transactions only between group companies and allowing OTC transactions only for voluntary REC purchasing.

5. Validity Period for RECs

Currently the validity of REC is 730 days. The REC market has remained sluggish even after the increase of validity period (earlier it was 365 days) and RECs still face the risk of extinction without getting traded. Around 60,000 RECs are likely to expire by December, 2014, if the same do not get traded on the exchange. In order to safeguard the interest of RE generators till the REC market revives, the following has been proposed. The Consultant has proposed that the validity of RECs which are likely to expire during next one year be increased by another year as an interim measure and the overall validity of RECs should be retained at 2 years as per the current framework.

6. Periodicity of REC Trading

In accordance with the procedures approved by the CERC, monthly auction of RECs is undertaken for discovery of price in the power exchanges. All valid and eligible offers for RECs received for dealing in power exchanges are considered for auction purpose to be carried out on the last Wednesday of every month. Non-solar and solar RECs are trading at their floor since September 2012 and June 2013 respectively due to low demand from the obligated entities. The consultant has proposed that the frequency of REC trading be increased from monthly to weekly to provide further flexibility to power exchanges and provide more trading opportunity to the constituents.

7. Renewable Generation Obligation (RGO)

Current enforcement of RPO is weak. Non-compliance of RPO by the distribution utilities has led to huge pile up of the RECs. An emerging view is to evaluate the alternate models of renewable portfolio standards which can also impose obligations on the conventional generators. The implementation of the RGO model requires evaluation of several options and their implications in terms of additional cost for the generator and for the ultimate buyers.

Decisions

After discussion, the following consensus was reached by the FOR :

1. Solar REC: Floor Price and Forbearance Price

- New solar REC floor and forbearance prices for 2014-15 be computed by CERC based on the methodology suggested by the consultant.
- The same may be revised annually based on the prevailing APPC and FIT.
- The need of continuation of floor price beyond 2017 could be reviewed before the end of the control period.

2. Non-Solar RECs: Floor Price and Forbearance Price

- The floor price and forbearance price determined for the current control period till FY 2017 be retained for non-solar technologies.

3. Vintage based multiplier

- For the existing solar PV projects vintage based multiplier is necessary in view of the proposed reduction in floor price for solar REC. The multiplier be introduced as suggested in the interim report and such multiplier be modulated to align with the future reduction in the floor

price and extended till 12 years from the year of commissioning of a project.

4. Multiplier option for Non-APPC projects

- The Forum noted the issues highlighted in the context and recommended a multiplier of 0.50 for non-APPC based REC projects (Open Access and Captive Generators) for FY 15.

5. Technology Multiplier (TM)

- Technology multiplier was not recommended by the FOR.

6. REC to Discoms

The Forum noted the pros and cons of the proposition of making discoms eligible for REC and agreed as under:

- RECs be issued to Discoms purchasing RE power at FIT/competitive bid tariff if such purchase exceeds higher of NAPCC/ Tariff Policy or State level targets (solar or non-solar as applicable) in a financial year. Further, such state level target in percentage terms should not be lower than that for the previous financial year.
- Certificate of compliance for purchase higher than RPO to be given by SERC.

7. Validity of RECs

- In respect of RECs which are likely to expire in next one year, validity to be increased on interim basis by another year. Overall validity of RECs should be retained at 2 years as per the current framework.

8. Alternate trading and Multiple Trading

The proposition of allowing traders for trading in RECs was discussed in the light of its implication. The prevailing view was that monitoring of OTC trade would pose a challenge thereby leading to questions of transparency. The issue of applicability of trading margins for OTC based REC trades also needs detailed deliberation. Based on analysis carried out for each of the options, the Forum was of the view that the options could be reviewed and revisited at a later stage once the REC market attained

maturity. Introduction of alternate trading arrangements could be reviewed at a later date. As regards multiple trading, the Forum noted the cost implication of such a proposition and decided not allow multiple trading at this stage.

9. Number of trading session

- The Forum agreed that REC trading should be allowed on weekly basis as this will provide additional opportunities to the RE generators for sale of RECs.

10. Periodicity of RPO Compliance

- RPO compliance should be reviewed on quarterly basis.

11. Renewable Generation Obligation (RGO)

- The Forum noted the issues involved in introduction of RGO and felt that this was desirable but its implication need to be analysed further.

Based on the above, necessary amendments be made in CERC regulations on REC and SERC regulations on RPO.

A vote of thanks was extended by Ms. Shubha Sarma, Secretary, CERC/FOR. She conveyed her sincere thanks to all the dignitaries present in the meeting at a very short notice. She also thanked the staff of "FOR" Secretariat for their arduous efforts at organizing the meeting.

The meeting ended with a vote of thanks to the Chair.

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/ ANNEXURE – I /

LIST OF PARTICIPANTS ATTENDED THE FORTY SECOND MEETING OF

FORUM OF REGULATORS (FOR)

HELD ON 27TH AUGUST, 2014 AT NEW DELHI

S. No.	NAME	ERC
01.	Shri Gireesh B. Pradhan Chairperson	CERC – in Chair.
02.	Dr. V. Bhaskar Chairperson	APSERC
03.	Shri Naba Kumar Das Chairperson	AERC
04.	Shri Digvijai Nath Chairperson	APSERC
05.	Shri Umesh Narayan Panjiar Chairperson	BERC
06.	Shri Narayan Singh Chairperson	CSERC
07.	Shri P.D. Sudhakar Chairperson	DERC
08.	Shri Pravinbhai Patel Chairperson	GERC
09.	Shri Subhash Chander Negi Chairperson	HPERC
10.	Shri Basharat Ahmed Dhar Chairperson	J&KSERC
11.	Justice (Retd.) Shri N.N. Tiwari Chairperson	JSERC
12.	Shri S.K. Chaturvedi Chairperson	JERC for Goa & All UTs except Delhi
13.	Shri M.R. Sreenivasa Murthy Chairperson	KERC
14.	Shri T.M. Manoharan Chairperson	KSERC
15.	Shri Rakesh Sahni Chairperson	MPERC

16.	Shri Anand Kumar Chairperson	MSERC
17.	Shri Satya Prakash Nanda Chairperson	OERC
18.	Shri Vishwanath Hiremath Chairperson	RERC
19.	Shri T.T. Dorji Chairperson	SSERC
20.	Shri S. Akshayakumar Chairperson	TNERC
21.	Shri Niharendu Chakraborty Chairperson	TERC
22.	Shri Desh Deepak Verma Chairperson	UPERC
23.	Shri M.S. Puri Member	HERC
24.	Shri Virinder Singh Member	PSERC
25.	Shri C.S. Sharma Member	UERC
26.	Shri Sujit Dasgupta Member	WBERC
27.	Ms. Shubha Sarma Secretary	CERC/FOR
28.	Shri Sushanta K. Chatterjee Joint Chief (RA)	CERC
SPECIAL INVITEES		
29.	Shri A.K. Singhal Member	CERC
30.	Shri A.S. Bakshi Member	CERC
31.	Shri Alok Srivastava Joint Secretary	MNRE
32.	Shri P.C. Maithani Director	MNRE
33.	Shri A.K. Saxena Chief (Engg.)	CERC
34.	Shri M.K. Anand Chief (Fin.)	CERC
35.	Shri T. Rout Chief (Legal)	CERC

Review of Renewable Energy Certificate (REC) Mechanism

The Forum of Regulators

August 2014

Agenda

Key Issues for discussion	
1	Long Term REC Pricing
2	Multiplier option for Non-APPC based projects
3	Issuance of RECs beyond RPO to distribution utility
4	Validity of RECs & Periodicity of REC trading sessions
5	Alternate REC trading arrangement
6	RPO Compliance monitoring
7	Renewable Obligation on Generators

Context

The Electricity Act 2003

- Section 86 (1) (e) - The State Commission shall discharge the following functions, namely: - …….. also specify, for purchase of electricity from renewable sources, a percentage of the total consumption of electricity in the area of a distribution licencee

National Electricity Policy 2005

- " % for purchase of power from non-conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest.

National Tariff Policy 2006

- Appropriate Commission shall fix a minimum % for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs

National Action Plan for Climate Change (NAPCC)

- Minimum Renewable Purchase Standard - 15% by 2020

- **CERC Regulation - Issuance of RECs, 2010**
- **Adoption of REC as an instrument for meeting RPO compliance**

Need for Review of REC mechanism

- Long term visibility in terms of price
- Option of bundling RECs
- Bilateral REC transaction
- Limited number of trading sessions & off-take of RECs
- Validity of RECs

Section 1

Long term REC pricing

Long Term REC pricing

Key Issues

- Lack of long-term price signals, contracts and other commitments greatly increases the risk to potential investors
- Lack of long-term tariff certainty under REC framework greatly increases the risk to potential investors for their energy sales beyond control period of REC price
- Review of the current underlying principles for determination of floor & forbearance prices
    - Solar REC price at a high level vis-à-vis current cost of generation
    - Relevance of floor price & should it be continued and if yes what should be the methodology
    - Relevance of forbearance price in long term
    - Legal Issue: Whether concept of multiplier will meet the requirement of Section 86(1)(e) of the Electricity Act, 2003.
- Lack of technologically differentiated framework to support new and diverse sources of energy

Long term REC pricing - Key Options

S No	Key Options	Details
1	Floor price determination	• Requirement for changing floor price for solar RECs • Continuation of floor price to reviewed after FY 2017
2	Forbearance Price	• Current framework to continue for REC forbearance price determination
3	Vintage multiplier for Solar RECs	• High multiplier to existing solar projects under REC framework vis-à-vis new or future solar projects • Applicability of Vintage Multiplier linked to debt repayment period.
4	Technology Multiplier	• Technology multiplier option for solar thermal technology can be provided (as new solar REC for the time being can be based on Solar PV technology only)

A. Floor Price determination

- Floor price determined to provide minimum assurance on sale of RECs to the RE project developers.
- Key issues related to floor price :
  - *Mapping of floor price set for non-solar REC and the minimum difference (FIT – APPC) indicates that the minimum difference (FIT – APPC) across all the states is always lower than non-solar floor price (for period FY 10 – FY 15)*

    Analysis
  - *New non-solar floor price under the current approach will result in setting very high value of ~ INR 5 per kWh*

    Analysis
  - *International experience also indicates that in most of the REC markets there is no concept of floor price*

    Analysis
- Following options emerge from the perspective of floor price:
  - Retain the current floor price as determined earlier for the current control period
  - Revise the floor price only for Solar REC during the current control period itself
  - Remove the floor price for a) Solar b) Non-solar c) Both

Pros & Cons of retaining floor price

Floor Price Determination: Key Conclusions

Solar RECs

- Introduce vintage based multiplier for solar projects and reduce the floor price of solar RECs
  - As per the approach **new solar REC floor price will be Rs 3.58 per kWh**

Analysis

New Solar Floor price (round-off) : Rs 3.50 per kWh

(Only Solar PV technology considered as no Solar Thermal project registered – solar thermal can be provided technology multiplier)

Non-Solar RECs

- In absence of OTC trade, the current floor price for non-solar segment may be retained for the current control period

- Clarity can be provided to RE generators that the continuance of floor price after the end of control period will be reviewed

B. Forbearance Price

Forbearance price acts as a maximum price at which the REC can be sold in the REC market. This was introduced to protect the interests of the obligated entities.

- Current forbearance price is applicable till FY 2017

- Solar projects have witnessed tremendous change the FIT over the years and in case vintage multiplier option is adopted for solar project and forbearance price for solar will be required to change

New Solar Forbearance Price : INR 5.80 per kWh

Analysis

Considering no solar thermal plant existing under REC framework, it is proposed that only Solar PV technology can be considered for changing the floor & forbearance price of solar projects till the current control period of FY 2017.

- **Non-solar forbearance price** determined for the current control period till FY 2017 **can be retained for non-solar technologies**

C. Vintage Multiplier (VM) for Solar RECs

Vintage Multiplier based on		
Option 1	*Based on FIT with changing APPC principle*	**Max. difference [FIT of base year – APPC of CY (State wise)] / Max. difference [FIT of CY – APPC of CY (State wise)]**
Option 2 A	*Min. requirement based on floor price with changing APPC principle*	**Max. difference [Min. req. of base year – APPC of CY (State wise)] / Max. difference [Min. req. Of CY – APPC of CY (state wise)]**
Option 2 B	*Min. requirement based on commissioning year with changing APPC principle*	**Max. difference [Min. req. of commissioning year – APPC of CY (State wise)] / Max. difference [Min. req. Of CY – APPC of CY (state wise)]**
Option 3	*Based on Floor Price*	**Floor price of base year / Floor price of current year**
Option 4	*Based on FIT Price*	**FIT of base year / FIT of current year**

Results

Vintage Multiplier – Conclusion

- Vintage multiplier can be a possible mechanism to protect RE generators from any form of REC price (floor and forbearance price) corrections in future years
- ***Option 2 B (Min Required based on commissioning year – APPC) can be adopted***
  - Approach ensures recovery for REC project developer is close to the amount assured as per CERC FIT & also accounts for any change in APPC

	2010	2011	2012	2013	2014	2015
VM 2010	1.00	1.17	1.40	2.22	2.73	3.23
VM 2011		1.00	1.20	1.90	2.34	2.77
VM 2012			1.00	1.59	1.96	2.32
VM 2013				1.00	1.24	1.47
VM 2014					1.00	1.19
VM 2015						1.00

- **Sunset Clause for Vintage Multiplier** :
  - Vintage multiplier should be provided only for debt repayment period (say 12 years) – can be linked with year of commissioning

D. Technology Multiplier (TM) for Solar thermal

- Upcoming technologies requiring support in initial phase of its development be given higher REC credit

Solar RECs

- Technology multiplier for solar thermal proposed
  - Reason : New solar REC price band proposed is based on Solar PV technology only as not a single project of solar thermal technology registered under REC – considering solar thermal at this stage may result in higher floor & forbearance for Solar REC
  - In case any solar thermal project comes in future, separate technology multiplier can be provided to enhance its competitiveness in solar REC trading
- Approach :

$$\text{Technology Multiplier} = \frac{\text{FIT of solar thermal}}{\text{FIT of solar PV}}$$

- A technology multiplier of 1.54 can be provided to solar thermal projects under this approach

Non-Solar RECs

- Technology multiplier not recommended for non-solar RECs
- Will result in increase in the supply of RECs
- Low cost technologies at disadvantage of getting low multiplier (hence lowers RECs for higher generation) – will discourage low cost technologies to participate in REC market

Analysis

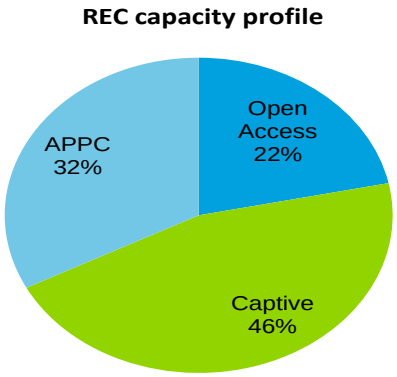
Section 2

Multiplier option for Non-APPC projects

Non-APPC (CGP/OA) Vs APPC projects under REC framework

Key Issue

- Dominance of CGP & OA consumers in REC market
- One of the key reasons attributed to the dominance of non-APPC based REC project (CGP or OA) in the REC market is related to the different levels of pricing for electricity component under different routes (APPC, CGP and OA)



Total Capacity : 3,810 MW

Possible Approach

- Provide lower multiplier to CGP/OA to make it par with APPC based REC projects

State Wise distribution of REC Capacity

$$\text{OA/CA Multiplier} = \frac{\text{APPC}}{\text{Electricity Component for CGP/OA*}}$$

* Electricity Component for CGP/OA = [100% or 90% Energy Charge of consumer category] – OA charges

Basic Assumptions

		Energy Charge (2014)*			Applicable OA charges		Case 1: Net Electricity Component {Energy charge- OA charge]		Case 2: Net Electricity Component @ [90% of Energy charge - OA charge]	
States	APPC (Rs per Unit)	Comml.	Industry	Av. (Comml. & Ind.)	Captive	Third party	Captive	Third party	Captive	Third party
Andhra Pradesh	3.28	9.13	5.73	7.43	1.37	1.32	4.36	4.41	3.79	3.84
Gujarat	2.94	4.60	4.45	4.53	1.30	1.70	3.15	2.75	2.71	2.31
Haryana	3.29	5.85	5.30	5.58	0.96	1.49	4.34	3.81	3.81	3.28
HP	2.17	4.75	4.75	4.75	1.43	1.56	3.33	3.20	2.85	2.72
Karnataka	3.07	7.45	5.45	6.45	1.73	2.04	3.72	3.41	3.18	2.87
Maharashtra	3.45	10.91	6.33	8.62	1.77	2.07	4.56	4.27	3.93	3.63
MP	2.53	5.20	4.60	4.90	0.81	1.60	3.79	3.00	3.33	2.54
Punjab	3.59	6.58	6.26	6.42	1.32	2.39	4.94	3.87	4.31	3.24
Rajasthan	3.13	6.60	5.25	5.93	1.44	1.50	3.81	3.75	3.29	3.23
Tamil Nadu	3.11	7.00	5.50	6.25	1.21	2.93	4.29	2.57	3.74	2.02
UP	3.53	6.10	5.90	6.00	1.14	1.14	4.76	4.76	4.17	4.17
Average**	**3.1**	**6.74**	**5.41**	**6.08**	**1.32**	**1.79**	**4.76**	**4.28**	**4.15**	**3.68**

*Source CEA report, ** simple average across states

Scenario 1: Energy Charges for Commercial Category

		Case 1		Case 2	
	EC (Rs/kWh)	Multiplier		Multiplier	
States	Commercial	Captive	Third party	Captive	Third party
Andhra Pradesh	9.13	0.42	0.42	0.48	0.48
Gujarat	4.60	0.89	1.01	1.04	1.20
Haryana	5.85	0.67	0.75	0.76	0.87
HP	4.75	0.65	0.68	0.76	0.80
Karnataka	7.45	0.54	0.57	0.62	0.66
Maharashtra	10.91	0.38	0.39	0.43	0.44
MP	5.20	0.58	0.70	0.65	0.82
Punjab	6.58	0.68	0.86	0.78	1.02
Rajasthan	6.60	0.61	0.61	0.70	0.71
Tamil Nadu	7.00	0.54	0.76	0.61	0.92
UP	6.10	0.71	0.71	0.81	0.81
Average	**6.74**	**0.61**	**0.68**	**0.69**	**0.79**

Case 1: Net Electricity Component @{Energy charge- OA charge]
Case2:Net Electricity Component @ [90% of Energy charge - OA charge]

Scenario 2 : Energy Charges for Industrial Category

		Case 1		Case 2	
	EC (Rs/kWh)	Multiplier		Multiplier	
States	Industrial	Captive	Third party	Captive	Third party
Andhra Pradesh	5.73	0.75	0.74	0.87	0.85
Gujarat	4.45	0.93	1.07	1.09	1.28
Haryana	5.30	0.76	0.86	0.86	1.00
HP	4.75	0.65	0.68	0.76	0.80
Karnataka	5.45	0.83	0.90	0.97	1.07
Maharashtra	6.33	0.76	0.81	0.88	0.95
MP	4.60	0.67	0.84	0.76	1.00
Punjab	6.26	0.73	0.93	0.83	1.11
Rajasthan	5.25	0.82	0.84	0.95	0.97
Tamil Nadu	5.50	0.72	1.21	0.83	1.54
UP	5.90	0.74	0.74	0.85	0.85
Average	5.53	0.77	0.89	0.89	1.06

Case 1: Net Electricity Component @{Energy charge- OA charge]
Case2:Net Electricity Component @ [90% of Energy charge - OA charge]

Scenario 3 : Average of Commercial & Industrial Consumers

		Case 1		Case 2	
	Average EC	Multiplier		Multiplier	
States	Coml. & Ind.	Captive	Third party	Captive	Third party
Andhra Pradesh	7.43	0.54	0.54	0.62	0.61
Gujarat	4.53	0.91	1.04	1.06	1.24
Haryana	5.58	0.71	0.81	0.81	0.93
HP	4.75	0.65	0.68	0.76	0.80
Karnataka	6.45	0.65	0.70	0.75	0.82
Maharashtra	8.62	0.50	0.53	0.58	0.61
MP	4.90	0.62	0.77	0.70	0.90
Punjab	6.42	0.70	0.89	0.81	1.06
Rajasthan	5.93	0.70	0.71	0.80	0.82
Tamil Nadu	6.25	0.62	0.94	0.70	1.15
UP	6.00	0.73	0.73	0.83	0.83
Average	**6.41**	**0.67**	**0.76**	**0.77**	**0.89**

Case 1: Net Electricity Component @{Energy charge- OA charge]
Case2:Net Electricity Component @ [90% of Energy charge - OA charge]

Conclusion

- Case 2 representing Net Electricity Component @ [90% of Energy charge - OA charge] can be considered for deciding on multiplier [OA consumer would prefer discount over applicable energy charge]
- Low multiplier (ranging from 0.50 to 0.64) for bagasse based co generation plants having co-located (No open access charge)

Captive Multiplier

- A **multiplier of 0.60 for non-APPC based REC projects** (Open Access and Captive Generators) is proposed for FY 15
- Multiplier calculated needs to be periodically reviewed i.e. every year or once in every 2 years.

Total recovery [Electricity Component + Multiplier X Non-solar Floor price (INR 1.5 per kWh)] is provided below

Electricity component for CGP/OA	Multiplier						
	Total Recovery	0.50	**0.60**	0.70	0.75	0.80	0.90
	2.50	3.25	3.40	3.55	3.63	3.70	3.85
	3.00	3.75	3.90	4.05	4.13	4.20	4.35
	3.50	4.25	4.40	4.55	4.63	4.70	4.85
	4.00	4.75	4.90	5.05	5.13	5.20	5.35
	4.50	5.25	5.40	5.55	5.63	5.70	5.85
	5.00	5.75	5.90	6.05	6.13	6.20	6.35
	5.50	6.25	6.40	6.55	6.63	6.70	6.85
	6.00	6.75	6.90	7.05	7.13	7.20	7.35
	7.00	7.75	7.90	8.05	8.13	8.20	8.35

Total Recovery (Rs/kWh)

MINUTES OF THE 39th MEETING OF FOR HELD AT CHANDIGARH: 17th - 19th January, 2014

(IV) The Forum was also informed about the consensus evolved in the Working Group on Renewables regarding eligibility of RE generator selling electricity component through open access route. The FOR Working Group on RE has recommended the following in this context :

"A renewable energy generator selling electricity through open access to third party user should be made eligible for issuance of RECs subject to condition that it should not be availing any concessional open access charges like: transmission and wheeling charges & losses, cross subsidy charges, banking facility. Such charges applicable to other normal open access transaction and also applicable to generators and distribution licensee, as may be determined by the Appropriate Commission should be made applicable a renewable energy generator selling electricity component through open access to become eligible for issuance of RECs.".

The Forum noted and endorsed above recommendation of the Working Group.

Section 3

Issuance of RECs beyond RPO to distribution utility

Proposed Option - Issuance of RECs to distribution utilities exceeding RPO targets

Key Issues

- Behavioral issue - utilities tend to prefer bundled power
- No incentive for utilities to purchase beyond RPO

Key Issues

Proposed Option

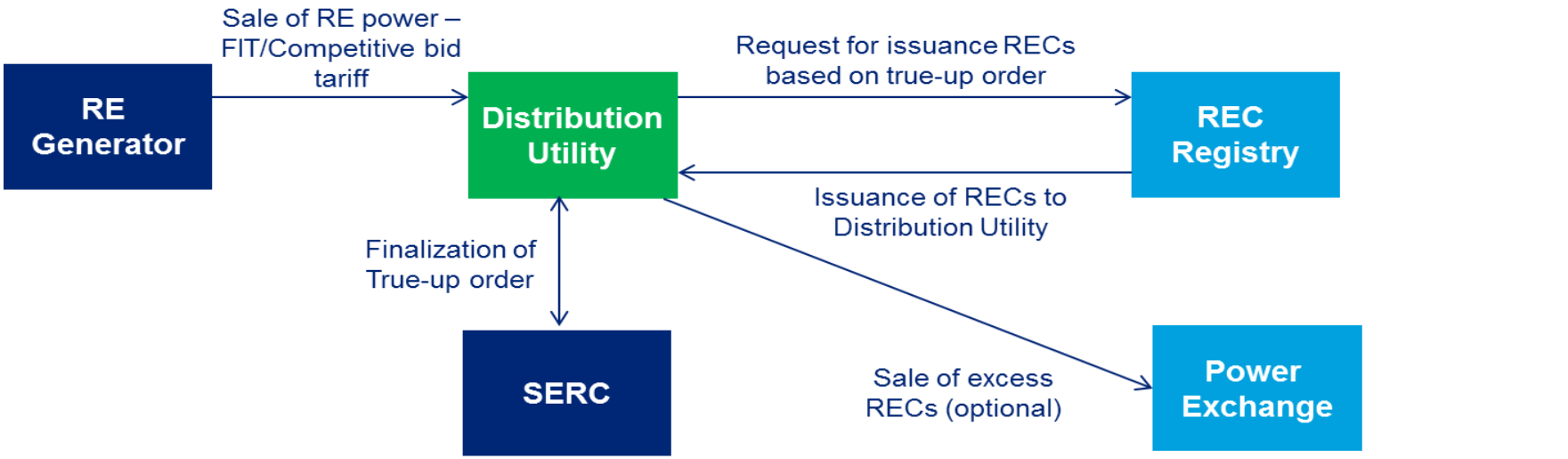
Pros & Cons

- **Eligibility for distribution utility**: Issuance of RECs for Discoms purchasing RE power at FIT/competitive bid tariff and exceeding higher of NAPCC/National Tariff Policy or State level targets (solar or non-solar as applicable) in a financial year. Further such *state level target in percentage terms should not be lower than that for the previous financial year to be eligible for issuance of RECs*
- Captive/OA consumers not eligible for issuance of RECs under this option

- **Issuance of RECs**: Issuance of RECs to be undertaken at Registry level. Certificate of compliance or purchase higher than RPO to be given by SERC

- **Sale of excess RECs**: Discoms will have the option to retain the RECs for RPO obligation for future years. However, in case they intend to sell these excess RECs such a sale of RECs to be allowed only through power exchanges.

Issuance of RECs to distribution utilities exceeding RPO targets



- **Redemption**: Redemption certificate to be provided by the Registry against the RECs subsequently redeemed by the distribution utility itself.

- **Applicability**: This option should be implemented on a prospective basis, as earlier years have been suitably accounted for in the Annual Revenue Requirements of the respective distribution utility

Example - Gujarat

Section 4

Validity of RECs, Periodicity of REC trading sessions

A. Validity of RECs

S No	RE Source	Number of RECs likely to expire, if not traded upto Dec 2014
1	Wind	46,174
2	Bio-fuel cogeneration	10,782
3	Biomass	3,110
	Total	60,066

S No	Option	Details
1	Increase validity period to 5 years	• Increase validity of RECs to 5 years. Will ensure that the projects RECs on & after 1.11.2011 will have validity at-least for the REC price control period currently determined. • Increasing the validity year will have uniform impact irrespective of year of issuance.
2	Increase validity period on interim basis only for those RECs facing expiry risk	• Aims to increase validity of only those RECs which are facing elimination risk owing to lean demand in the REC market • Validity of such RECs can be increased on interim basis by another one year. This can be applicable only for RECs issued in FY 2012 and FY 2013
3	Do not increase validity period	• Risk related to demand and supply has to be borne by the market participants including RE developers.

Conclusion

- **Validity of RECs, which are likely to expire in next one year, can be increased on interim basis by another one year.** This is with the expectation that the REC market will revive in long term.

- Overall validity of RECs should be retained at 2 years as per the current framework

B. Periodicity of REC trading sessions

Key Issues

- Whether to increase the number of trading sessions during a month – current regulation does not provide this option
  - All valid and eligible offers for RECs received for dealing on Power Exchange are considered for auction purpose to be carried out on the last Wednesday of every month
- Frequency of auctioning may be reviewed and changed from monthly to fortnightly or weekly basis in due course depending on volume of REC transactions/ number of participants on Power Exchange

Conclusion

- Power exchanges to be given option to increase the number of trading sessions

  – **Allow REC trading on weekly basis (this will provide additional flexibility to power exchanges to undertake REC trading based on the demand & supply)**

Section 5

Alternate REC trading arrangement

Proposed Option : Exchange based trading for obligated entities and OTCs for Others

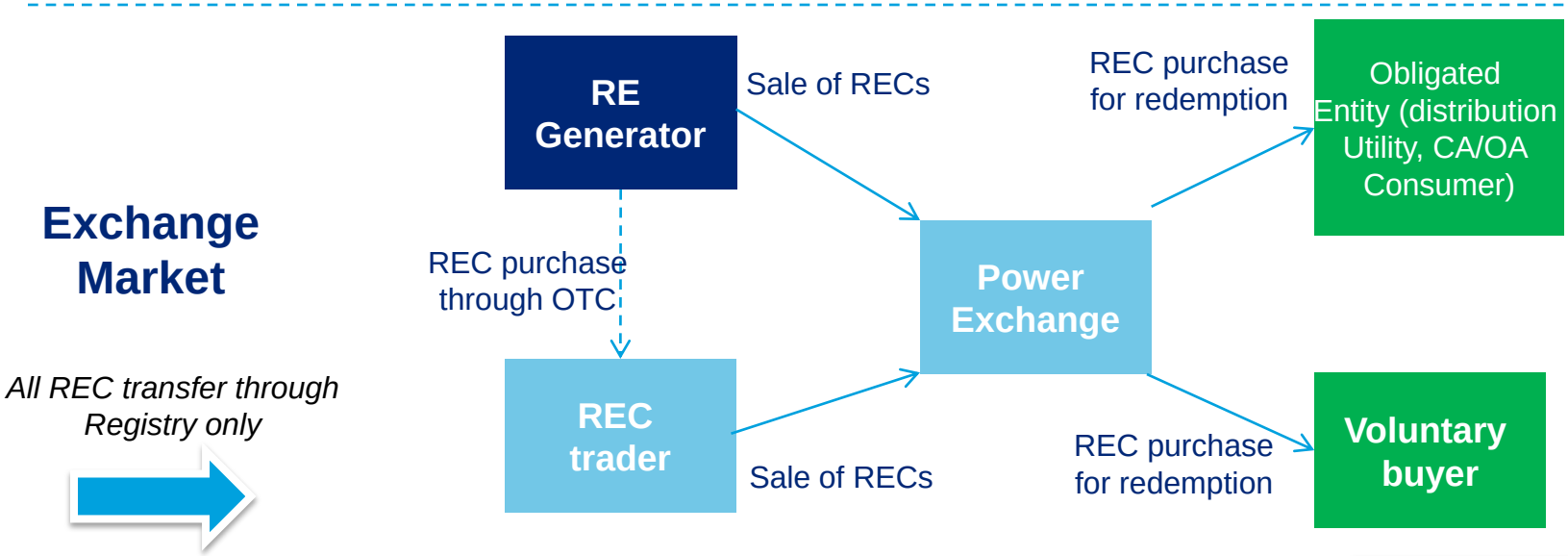
Key issues : Lack of long term contractual clarity, uncertainty in market off-take of RECs, financial closure not possible

Key Issues

Proposed Option

Pros & Cons

- OTC between RE generator and REC trader allowed
- Obligated entities & voluntary REC buyers can purchase RECs only through exchange
- Transfer of RECs arising due to OTC trade will be undertaken through REC registry only



Other Options

Multiple trading on RECs

Key Issue

- Current framework of REC mechanism has restriction on the number of transaction of REC. It allows only a single transaction and thereafter it expires
  - this restricts liquidity and volume in the market and wider participation from the entities

- Impact of multiple trading on cost of compliance
  - It is expected that if the same RECs are trading multiple times, the REC price cost is expected to increase.

Analysis

- Need for developing robust monitoring framework before allowing multiple trading

Conclusion

- Given the current monitoring framework and the proposed options for alternate REC trading arrangements, it is proposed that **multiple trading should not be allowed**
  - *Clarification : only 2 transaction to be allowed on RECs traded through REC traders (if REC traders are allowed)*

Conclusion

- As per the FOR RE sub-group meeting, ***alternate REC trading arrangement not to be allowed for the time being***. Can be considered at later stages.

- Key reasons :
  - Other participants (like REC traders) to be allowed only after the REC market demand is ensured
  - Introducing OTC will bring issues related to lack of transparency in price determination, inability to control margins for bilateral transaction.

Section 6

RPO Compliance Framework

Quarterly RPO Compliance

Key Issues

- Lack of uniform demand throughout the year, the demand generally increases towards the end of the year
  - Obligated entities not interested in purchasing RECs in initial months
- RPO compliance undertaken on financial year basis
  - This fits well for FIT based framework as RE generator gets based on monthly power procurement, however same practice not adopted for RECs
- A number of SERCs (as per RPO regulation) have mandated that State Agency shall submit quarterly status to the Commission in respect of compliance of Renewable Power Purchase Obligation (RPPO) by the obligated entity(s)
  - Lack of RPO enforcement impacting the demand for RECs

Possible Option

- Enforcement of RPO compliance on Quarterly basis
  - Option 1 : 100% of the RPO targets
  - Option 2 : at-least 75% of the RPO targets (for initial quarters) and 100% for the last quarter of the financial year [to account any seasonality issue for RE generation]

Section 7

Renewable Obligation on Generators

For discussion - Making generators as obligated entities

Pros & Cons

Model

- All Generators to be made Obligated entities for providing renewable power (as % of the conventional power generation)
  - To cover all the Central sector thermal, hydro and nuclear power plants
  - To cover all the State sector thermal and hydro power plants

- RPO obligations would no longer apply to states. The distribution utilities will purchase bundled power

- All the obligated generators to provide RE bundled with the conventional power
- Generators will have the following options for meeting the RGO
  - Develop renewable energy projects
  - Contract RE from the other private players
  - Purchase RECs from exchange

International Experience – Korea Model

Key Issues

	Aspect	Details
1	Impact of Distribution Utilities of resource rich states	• Option for Discoms in RE rich states to source renewables separately • Cost of bundled procurement may be high
2	Applicability of RGO to existing stations or those coming under Case 1 bids	• Generation is not a licensed activity – enforcement through change in existing contracts or change in law • Various types of CGS and SGS – Cost plus, Competitive tariff based, Merchant • Will the RE tariff be based on CERC norms or SERC norms or competitively determined
3	Pricing for RE projects owned by Obligated generators	• This will require moving towards Cost plus approach for any form of procurement through RE projects owned by Obligated generators • How to ensure true price discover in event of any competitive bidding (Obligated generator may also participate in such bidding)
4	Impact on Investment	• Obligated generators will encourage self generation of RE power • Small RE generators may lose out market to large Obligated generators
5	Procurement under Case 1 framework	• Bundling of conventional and renewable power under Case 1 • REC price and procurement risk
6	Transition to proposed RGO framework	• Existing contracts between RE Generators and Discoms (FiT) • Applicability on the existing Generators • Dependence on REC market to meet the RGO targets would be similar to Discoms complying with RPOs through REC market only

Thank You