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Ref No. WBERC/A-14/7/2/1359 *Dated, Kolkata, the 07th December, 2015*

From:
K. P. Bhar, I.A.S. (Retd.),
Secretary, WBERC.

To,
The Secretary
FORENS & ODISHA ELECTRICITY REGULATORY COMMISSION
Bidyut Niyamak Bhavan, Unit-VIII,
Bhubaneswar-751 012
Fax- 0674-2393306/2395781

Sub: Minutes of 4th Meeting of the Forum of Regulators for Electricity for Eastern & North Eastern States (FORENS) held from 18th - 21st November 2015 at Sundarbans (West Bengal).

Ref: 1. Your letter No. SECY/FORENS/2013/959 dated 10.08.2015.
2. Our letter No: WBERC/A-14/7/2/0633-0642 dated 13.08.2015.

Sir,

I am directed to forward herewith a draft Minutes of the 4th Meeting of the Forum of Regulators for Electricity for Eastern & North Eastern States (FORENS) held from 18th - 21st November, 2015 at Sundarbans (West Bengal) for your kind information and necessary action.

Yours faithfully,

(K. P. Bhar)
Secretary

Encls : As above

MINUTES OF THE FOURTH MEETING

OF

FORUM OF REGULATORS FOR EASTERN AND NORTH EASTERN STATES (FORENS)

Venue	:	**MV Paramhansa** **(VIVADA Inland Waterways)** **Sunderbans, West Bengal**
Date	:	**18.11.2015 to 21.11.2015**
List of Participants	:	**At Annexure – I (enclosed)**

Sri G. P. Mishra, Secretary of Orissa Electricity Regulatory Commission (OERC) and Secretary of FORENS welcomes the members present in the meeting at the naturally and culturally vibrant venue and hoped that they will combine academic exercise with aesthetic enjoyment. Sri Mishra addressed the august body functioning of the FORENS during the last four years and interaction and cooperation between the member States of FORENS which has strengthened the health of FORENS. Sri Mishra expressed that since inception of FORENS, it has met three times and adopted some significant resolutions and initiated action to protect interest of electricity consumers under its jurisdiction and to promote efficiency, economy and competition in the sector. Shri Mishra placed before the committee the following action points adopted at the 3rd meeting of FORENS at Rajgir:

1. It was decided that single member Commission shall contribute Rs. 50,000.00 per annum as subscription while other member Commission shall pay Rs. 1,00,000.00 per annum.

2. It was decided in earlier meeting that a committee comprising Sri S. P. Swain and Sri A. K. Das (Members, OERC), Sri S. C. Jha (Member, BERC) and Sri S. Dasgupta (Member, WBERC) shall examine the draft bye-laws and finalize the same so as to enable FORENS to be registered as a Society.

3. It was agreed that there is need for exploring additional consultant and seeking quotation in transparent manner for the completion for study to explore and identify

the common points of tariff practices regulatory measures followed by member Commissions.

4. It was agreed that minutes of FORENS meetings shall be forwarded to CERC. It was also resolved that the next meeting of the FORENS shall be hosted by Jharkhand ERC.

In view of the above decisions of the Committee, the actions taken are as follows:

1. Out of total 10 (ten) number member States having Commission comprising of more than one member, 8 (eight) number State Commissions have paid Rs. 1,00,000.00 each and 1 (one) member State has paid Rs. 50,000.00. Only Meghalaya Commission has not paid and opted for withdrawal from FORENS. The FORENS account has a balance of Rs. 18.39 lakh as on 18.11.2015 consisting of contributions from 10 (ten) member States.

2. Bye laws have been examined by the Committee as has been formed in a meeting of FORENS and approved by the FORENS. Application for registration of FORENS as a registered society is in process.

3. Exploratory work on analysis of the tariff member of member States to find the common points of tariff practices was entrusted to M/s WISE, Pune as per decision taken in the second meeting at Kaziranga.

4. Minutes of the meeting have been sent to CERC.

5. The house also admitted that as the 4th meeting at Jharkhand was cancelled due to inability of member Commission, Jharkhand to attend the same, the venue and date of the 4th meeting of FORENS were rescheduled for Sunderbans from 18th November to 21st November, 2015.

Sri R. N. Sen, Chairperson of WBERC, the host State Commission took the chair as per bye laws of FORENS and thanked the members to give him opportunity to host the meeting. Shri Sen also informed the members the programme designed during the stay for 3 days.

The FORENS thereafter took up agenda items for consideration.

Agenda item No. 1 : **Discussion on paper regarding RE Act Note and Solar Roof Top Issues prepared by M/s Meghraj Capital**.

At the beginning Shri R. N. Sen, Chairperson (WBERC) proposed that although discussions on two issues are scheduled to be held but due to shortage of time, it would be wise to take up the issue on Solar Roof Top only for discussion. Accordingly, a presentation on "Options Study and Recommendations for Implementation of Policy Guidelines for Grid-connected Rooftop Solar Scheme for Kolkata led by Department of Power, West Bengal Supported by UK AID was made by Sri T. K. Chakraborty, Adviser (Engineering), WBERC (Copy enclosed at Annexure – II).

Discussion:

During the presentation, on query from the members on different issues particularly on gross metering and net metering, Shri Sen, Chairperson, WBERC explained explicitly what is gross metering and net metering, the value and the cost of gross metering and net metering and impact of the same on the consumers, etc. Shri Sen informed the members that Act on Renewable Energy is yet to be finalized and it is the high time for us to send our recommendation on Roof Top Solar (RTS) before the Act is finalized. Shri S. P. Swain, Member (OERC) opined that Roof Top Solar (RTS) has to be distinguished conceptually as it is meant for self consumption and opined that the net metering is the solution. Shri Swain informed that the Orissa Government has formed a separate corporation called Green Energy Development Corporation (GEDC) for adopting methodology for RTS. They have already identified the areas in Bhubaneswar and Cuttack like, Institutions, Government Hospitals, Govt. Buildings and multi-storied buildings for RTS and they have started the tendering process. The GEDC has approached the OERC for net metering order and the same has been awarded by OERC. Sri Swain also pointed out the problem that who will own and operate the system. Whether the installation of RTS system is to be given to some person or agency and to be operated by them or the person who will consume the power will instal the system and operate himself. Since the RTS is for self consumption, net metering system would be the right approach. Shri S. C. Jha, Member (BERC) informed that in Bihar also they are going for net metering as the RTS is ultimately for self-consumption. The presentation by Sri Chakraborty entails a loss in tariff by the DISCOM in case of net metering, which according to house is to be compensated by the State

Government through Generation Based Incentive (GBI) as RTS is being newly introduced. A threadbare discussion was taken place on the subject and it was decided that M/s Meghraj Capital Advisors Private Limited may be entrusted with preparation of a detailed project report on the entire commercial aspects of RTS covering the interest of the consumers and submit the report to FORENS within one month from the date of issue of order. It was also decided that the said report will be sent to each member States for their comments on the same and suggestions, if any. The said comments / suggestions should be sent to WBERC within 15 days for compilation of the same and incorporation in the report. The incorporated observations of the member States will be further discussed and finalized in next meeting of FORENS (which was scheduled to be held on 29th January, 2016 at Ranchi) for onward submission to FOR / CEA / CERC for consideration.

Agenda item No. 2 : Confirmation of Minutes of the 3rd meeting of FORENS held during 13-14 November, 2014 at Rajgir, Bihar.

Discussions:

Sri G. P. Mishra, Secretary (OERC) and Secretary (FORENS) placed the minutes of the 3rd meeting for confirmation of the House. The Forum noted the contents of the minutes and the deliberations made by Sri Mishra during his welcome address at the first day of the meeting and endorsed the same. However, Sri Mishra informed the Forum that copy of an identity card (Voter Card / Adhar Card / Pan Card / Ration Card) of each of the members of the Forum is required for registration of the Forum. A letter in this respect had already been issued to all member Commissions. He once again requested the members of FORENS to send copy of identity card to him immediately, if not sent already.

Agenda item No. 3 : Discussions on "Grid Integration of Solar Power".

Sri A. K. Das, Member (OERC) made the presentation on Grid Integration of Solar Power prepared by Odisha Electricity Regulatory Commission (copy enclosed at Annexure III). The presentation mainly covered the technical issues and the commercial issues of grid integration of RTS.

Discussions:

The commercial issues of the subject grid integration have already been widely discussed by the members of the body in earlier presentation made by Sri T. K. Chakraborty, Adviser (Engineering), WBERC and a decision has already been taken that M/s Meghraj Capital Advisors Private Limited will be requested to prepare a detailed report on the commercial issue of RTS and submit the same to FORENS within one month from the date of issue of order. The members present mainly discussed the technical issue of grid integration of Solar Power. After a threadbare discussion on the issue it was generally felt that the technicalities on grid integration of RTS would have to be standardized at national level and therefore it should be taken up with Central Electricity Authority. It was decided that a Committee consisting of Shri A. K. Das, Member (OERC), Shri Amitava Biswas, Member (WBERC) and Shri Rajeev Amit, Member (BERC) will discuss with the DISCOMS of member States and, if required, other States too and study the connectivity issues which are required to be dealt with by CEA for the interest of consumers in the jurisdiction of member States of FORENS and submit a report on the same to FORENS within one month so that the same can be taken up with FOR for onward submission to CEA and Ministry of Power.

Agenda item No. 4 : **Discussion on "Exploring the possibility of fulfilment Of massive solar target set by Ministry of Power, Government of India for 2022 in the Eastern and North Eastern States through roof top or ground mounted Solar PV".**

The discussion on the subject matter actually did not specifically occur as the matter was covered in other deliberations made amongst the members present at the meeting while discussing on the presentation on review of Renewable Energy Act and other subjects.

Agenda item No. 5 : **Presentation on "Load Management" by WBERC**.

Due to shortage of time, the presentation on load management by WBERC did not take place. It was agreed that the same will be deliberated during the presentation on Distribution Reform Planning and subsequently the same was done.

Agenda item No. 6 : **Presentation on "Distribution Reforms Planning" and "Load Management".**

Sri R. N. Sen, Chairperson, WBERC made the presentation on Distribution Reforms Planning prepared by West Bengal Electricity Regulatory Commission (copy enclosed at Annexure IV).

Discussion:

Sri Sen emphasized the importance of the subject issue as it is going to effect the whole power sector and therefore all the stakeholders will have to come out with a solution. The Minister of Power has already had a meeting in South India on 9th November 2015. Sri Sen explained that the presentation covers certain issues, which are taken from the presentation of the meeting in South India made by the Minister of Power and he also made presentation of remaining issues, which were not covered by them. Sri Sen wanted the Members to discuss the issues in detail and to make recommendations which he will take up with FOR in its next meeting in Delhi and after that with CERC & Secretary (Power), Ministry of Power, Government of India. The members discussed the issues like high AT&C loss, DISCOM's financial health, stranded generation capacity, differential tariff, wide gap in peak and off-peak demand, etc. amongst themselves and it was decided that a copy of the presentation may be sent to Chairmen of all Member States with a request to send their comments / suggestions on the issues discussed, consolidating which the Chairperson, WBERC will make a report on this issues and take up with FOR / CERC/MOP in his next meeting at Delhi.

The agenda item no. 5 on Load Management was also discussed. Outcomes are as follows:

(i) Massive usage of LED lamps / tubes to cut down evening-peak demand.

(ii) Use of renewable energy, mainly solar, to tackle the day-peak demands.

(iii) Segregation of agricultural load to avoid occurring in the day/evening peak load condition

Agenda item no. 7 : **Discussions on presentation "Draft Renewable Energy Act – Review".**

Sri T. K. Chakraborty, Advisor (Engineering), WBERC made the presentation on Review of Draft Renewable Energy Act which is likely to be enacted by the Government of India (copy enclosed at Annexure V). M/s Meghraj Capital Advisors Private Limited on behalf of Government of India has done this Review and sent to all State Commissions through respective State Government inviting comments / suggestions on it. Sri R. N. Sen, Chairperson (WBERC) explained the objectives of this power point presentation and made it clear that during the discussion in the Parliament for enactment of Renewable Energy Act the views of the State Governments will be taken care of before finalization of the Act. Sri Sen further informed that in case, we do not respond to this draft Act, it will be treated as deemed consent of the State and the Government of India will act accordingly. The presentation revealed that the Renewable Energy Act is aimed to create an exhaustive framework for the development of renewable energy systems. The Act will provide the requisite backbone framework to promote renewable energy by developing a supportive ecosystem. The Act will also provide ample right to the Centre in the matter of promotion and development of renewable energy. Moreover, the Act will make a distinction between what a State Government "shall" do and what "might do".

Discussion:

A threadbare discussion took place when difficulties were observed in case of producing solar power and other renewable power and to cope up with the target RPO set by the Government of India for each State considering geographical constraints of the different States of India. It was, therefore, decided that the agency M/s Meghraj Capital Advisors Private Limited shall be entrusted to submit a report in a tabular form showing the issues and bottlenecks in the draft Renewable Energy Act and their primary suggestion on that which will be communicated to all State members of FORENS. The State members will send their comments / suggestions on the said report to West Bengal Electricity Regulatory Commission – as WBERC is leading in preparing the comments on draft RE Act – within 15 days for consolidation of the same. The State members will again discuss the consolidated form of report to finalize the same for taking up with the appropriate authority like FOR, CERC, etc. on behalf of FORENS. Before submission of suggestions of FORENS, the finalized suggestions has to be passed through the respective State Government also as the State Government is major partner in this issue. It was

also decided that after consolidation of the suggestions of all the State members, the same will be reviewed in the next meeting at Ranchi where the consolidated suggestions will be finalized.

Vote of Thanks:

Shri Digvijay Nath, Chairperson, Arunachal Pradesh Electricity Regulatory Commission offered vote of thanks on his behalf particularly and on behalf of FORENS generally to the West Bengal Electricity Regulatory Commission for organizing such a nice conference at such a nice venue like Sunderbans. He also offered thanks to all the members of FORENS for devoting valuable time and making the meeting a grand success. Sri S. P. Swain, Member (OERC) on behalf of Orissa Electricity Regulatory Commission and on behalf of all the members of FORENS also conveyed his heartfelt congratulations to Sri R. N. Sen, Chairperson (WBERC), Sri S Dasgupta, Member (WBERC) and Sri Amitava Biswas, Member (WBERC) for conducting such a nice conference and also for the good deliberations that have been taken place during the meeting and the concrete decisions taken thereon.

Sd/-
(R. N. Sen)
Chairperson, WBERC

ANNEXURE – I

LIST OF PARTICIPANTS

1. Sri R. N. Sen
   Chairperson
   West Bengal Electricity Regulatory Commission
   Salt Lake, Kolkata.

2. Sri Sujit Dasgupta
   Member
   West Bengal Electricity Regulatory Commission
   Salt Lake, Kolkata.

3. Sri Amitava Biswas
   Member
   West Bengal Electricity Regulatory Commission
   Salt Lake, Kolkata.

4. Shri Digvijay Nath
   Chairperson
   Arunachal Pradesh State Electricity Regulatory Commission
   Arunachal Pradesh.

5. Shri S. K. Negi
   Chairperson
   Bihar Electricity Regulatory Commission
   Patna, Bihar.

6. Shri Satish Chandra Jha
   Member
   Bihar Electricity Rgulatory Commission
   Patna, Bihar.

7. Shri Justice N. N. Tiwari
   Chairperson
   Jharkhand State Electricity Regulatory Commission
   Ranchi, Jharkhand.

8. Shri Sunil Verma
   Member
   Jharkhand State Electricity Regulatory Commission
   Ranchi, Jharkhand.

9. Shri Rajeev Amit
Member
Jharkhand State Electricity Regulatory Commission
Ranchi, Jharkhand.

10. Shri R. K. Kishore Singh
Chairperson
Joint Electricity Regulatory Commission of Manipur & Mizoram
Aizawl, Mizoram.

11. Shri Niharendu Chakraborty
Chairperson
Tripura State Electricity Regulatory Commission
Agartala, Tripura.

12. Shri S. P. Swain
Member
Orissa Electricity Regulatory Commission
Bhubaneswar
Orissa.

13. Shri A. K. Das
Member
Orissa Electricity Regulatory Commission
Bhubaneswar
Orissa.

14. Shri Dipak Chakravarty
Member
Assam Electricity Regulatory Commission
Assam.

15. Shri Guru Prasad Mishra
Secretary, FORENS
Orissa Electricity Regulatory Commission
Bhubaneswar
Orissa.

MEGHRAJ

Meghraj Capital Advisors Private Limited

Infrastructure Advisory I Mergers & Acquisitions I Syndication I Capital Markets

November 05, 2015

Options Study and Recommendations for Implementation of Policy Guidelines for Grid-connected Rooftop Solar Scheme for Kolkata

Led by Department of Power, West Bengal

Supported by UK aid

UKaid
from the British people

Context

Mandate

MCAPL mandated to draft policy framework for the state of West Bengal by DfID

Objective

Review existing draft policy for the state taking into consideration interest of all stakeholders

Outcome

Analysis of possible options and suggesting best option for RTS implementation

www.popularresistance.com

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Agenda

Why RTS?

Gross vs Net

Analysis under different scenarios

www.energynext.in

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Why Rooftop Solar (RTS)?

- **Environment- 1.26 million tonnes of CO2**
- **Positive impact on losses**
- **Local employment - 3300 FTE per 100 MW**
- **Requirement of the market - when competition is envisaged in supply business in future years**
  - Segregation of wires and supply business

Constraints

- Viability of project – retail tariff for net metering and GBI for gross metering
- Loss to Distribution utility– tariff revenue loss, payment for surplus power injection to the grid
- Burden on the government – electricity duty loss, GBI under the gross metering

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Agenda

Why RTS?

Gross vs Net

Analysis under different scenarios

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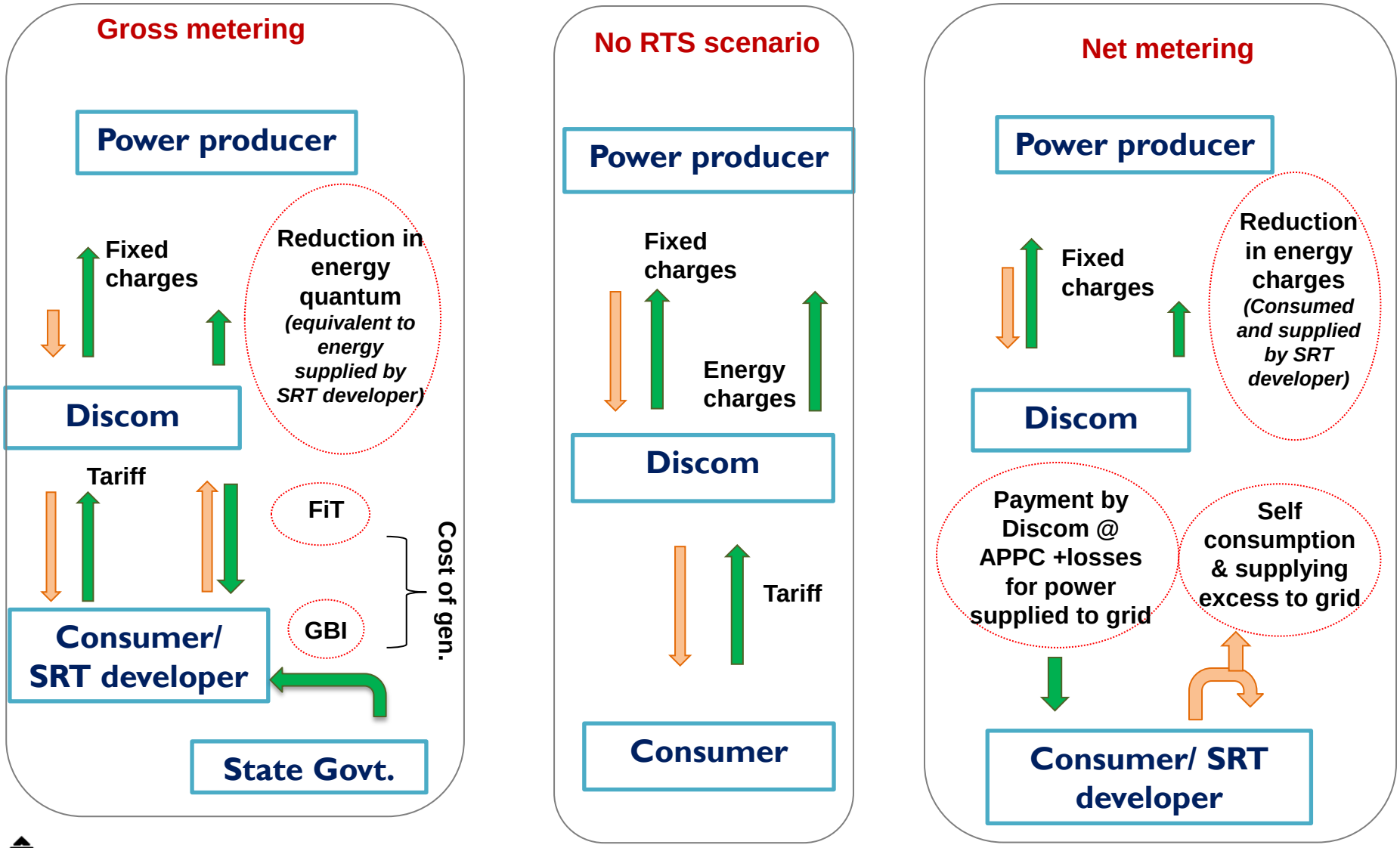
Power and cash flow for gross and net metering



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Cost and value for Gross and Net metering

	VALUE	COST	
GROSS METERING	1) Transmission losses and charges corresponding to avoided energy 2) Energy charges of avoided energy 3) Fulfilment of RPO obligation	1) Compensation @ FiT (APPC + losses by Discoms) 2) GBI component = LCoE - FiT	Difference of compensation by Discom & LCoE is borne by State govt. through GBI
NET METERING	1) Transmission losses and charges corresponding to avoided energy 2) Energy charges of avoided energy 3) Fulfilment of RPO obligation	1) Compensation @ APPC +losses against solar power injection in the grid 2) Loss of tariff revenue to Discoms 3)Loss of Electricity duty	There will be tariff increase unless the loss of revenue is subsidised

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Agenda

Why RTS?

Gross vs Net

Analysis under different scenarios

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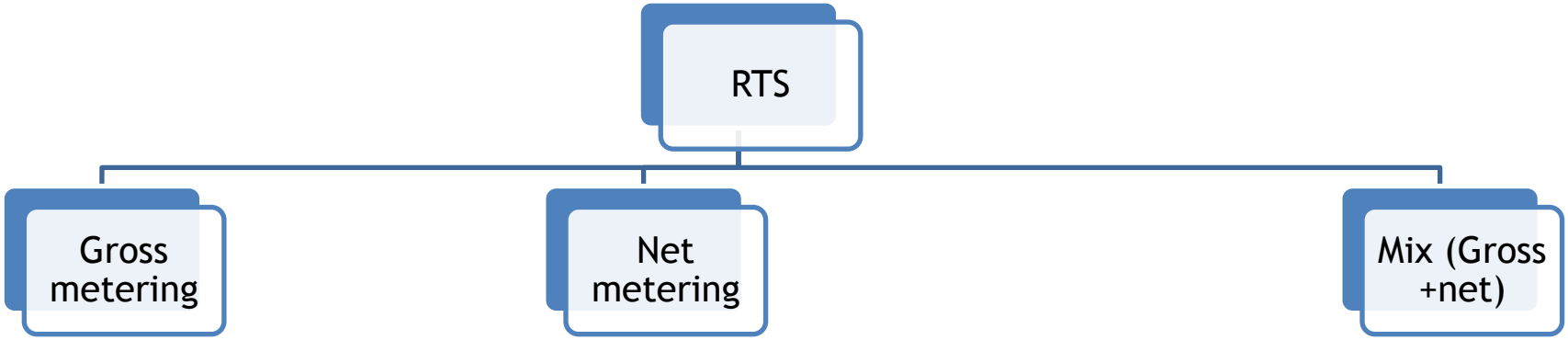
Approach for evaluation

Targets (MW) considered>>

Year	1	2	3	4	5
Target (MW)	15	20	20	20	25



A. LCoE
B. Payment equivalent to injection (@ APPC+ losses)
C. GBI= (A-B)

A. Cost components:
   - Tariff revenue loss
   - Payment @ APPC+ losses
   - Loss of revenue due to Electricity duty
B. Value component:
   - Avoided energy charges equivalent to RTS generation
C. Burden = (A-B)
D. Surcharge= Tariff- LCoE
E. Burden after 100% surcharge= (C-D)
F. Burden after 80% surcharge= (C-(80%*D))

OPTIONS

1. Subsidized categories under Net metering
2. Unsubsidized categories under Net metering
3. 1-50 kW systems through Net metering; >50 KW systems through Gross metering

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Option I:100% gross metering

Particular	Values
GBI (Rs cr.)	1472
NPV (Rs cr.)	417
Per unit increase in tariff (paisa/kWh)	0.648

*Rs 500.48

- GBI spread over 30 yrs; so long time commitment by govt. is required
- Consumer would have be dependent on release of funds by govt.
- Value proposition by Discoms is Nil (as value proposition is equivalent to cost i.e. APPC+ losses)
- All the categories are considered under gross metering scenario

*Assuming monthly bill of Rs 500; revised bill after considering tariff impact

Option II: 100% net metering

Particulars	Burden (Rs cr.)	NPV (Rs cr.)	Tariff impact (paisa per unit)	
Tariff revenue loss (A)	2506	602		
Payment to developer for injected energy (B)	191	50		
Loss of revenue due to Electricity duty (C)	470	98		
Energy charges saved through avoided energy (D)	2653	552		
Burden on Discom (A+B-D)	43	100		
Burden on Govt. (C)	470	98		
Total Burden (A+B+C-D)=E (i.e. w/o surcharge)	**514**	**198**	**0.273**	**Rs 500.20*
Surcharge (100%) (F)	692	87		
Burden after 100% surcharge (E-F)	**-179**	**111**	**0.060**	**Rs 500.04*
Surcharge (80%) (G)	554	69		
Burden after 80% surcharge (E-G)	**-40**	**129**	**0.103**	**Rs 500.08*
Additional reqd support in initial yrs.			115	

- In this scenario, tariff revenue loss is high owing to self consumption and consequent change in tariff slab of high tariff categories; which can be compensated through avoided energy charges owing to generation from RTS
- No burden is expected if surcharge of 80% is levied on prosumers
- No long term commitment of government support is required
- No dependency of consumers on release of funds
- All the categories are considered under net metering scenario assuming certain % allocation of RTS installation by each category

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**Assuming monthly bill of Rs 500; revised bill after considering tariff impact*

Option III: Subsidized category under Net metering

Particular	Burden	NPV	Impact on tariff (Paisa/unit)	
GBI (X)	505	142	0.222	
Tariff revenue loss (A)	1632	392		
Payment to developer for injected energy (B)	133	35		
Loss of revenue due to Electricity duty (C)	135	28		
Energy charges saved through avoided energy (D)	1857	386		
Burden on Discom (A+B-D)	-92	41		
Burden on Govt (C)	135	28		
Total Burden (A+B+C-D)=E (i.e. w/o surcharge)	42	69	0.0682	
Surcharge (100%) (F)	445	58		
Burden after 100% surcharge (E-F)	-402	11	-0.0704	
Surcharge (80%) (G)	356	46		
Burden after 80% surcharge (E-G)	-313	23	-0.0427	
Total Burden (E+X)=E (i.e. w/o surcharge)	**548**	**211**	**0.456**	**Rs 500.34*
Burden after 100% surcharge (X+ (E-F))	**103**	**154**	**0.086**	**Rs 500.06*
Burden after 80% surcharge (X+ (E-G)	**192**	**165**	**0.160**	**Rs 500.12*
Additional reqd support in initial yrs.			102	

- In this scenario, 30% target is met through Gross metering (by consumer categories- C, I, PIs and Metro); and remaining 70% is met through net metering by other category of consumers
- Compared to option II, this option offers reduction in tariff revenue loss and electricity duty loss to utility and state govt. respectively.
- However, the overall burden is marginally higher because of compensation to be made to C, I, PIs and Metro consumers in form of GBI by Dist. Utilities

State Government will compensate Dist Utility against GBI payment made by them to eligible prosumers

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**Assuming monthly bill of Rs 500; revised bill after considering tariff impact*

Option IV: Un-subsidized category under Net metering

Particular	Burden	NPV	Impact on tariff (Paisa/unit)	
GBI (X)	909	258	0.401	
Tariff revenue loss (A)	811	195		
Payment to developer for injected energy (B)	57	15		
Loss of revenue due to Electricity duty (C)	65	14		
Energy charges saved through avoided energy (D)	796	165		
Burden on Discom (A+B-D)	72	44		
Burden on Govt (C)	65	14		
Total Burden (A+B+C-D)=E (i.e. w/o surcharge)	138	58	0.078	
Surcharge (100%) (F)	221	27		
Burden after 100% surcharge (E-F)	-83	31	0.011	
Surcharge (80%) (G)	177	21		
Burden after 80% surcharge (E-G)	-39	37	0.024	
Total Burden (E+X)=E (i.e. w/o surcharge)	**1047**	**316**	**0.873**	**Rs 500.65*
Burden after 100% surcharge (X+ (E-F))	**825**	**290**	**0.688**	**Rs 500.51*
Burden after 80% surcharge (X+ (E-G)	**870**	**295**	**0.725**	**Rs 500.54*
Additional reqd support in initial yrs.			26	

- In this scenario, 30% target is met through Net metering (by consumer categories- C, I, PIs and Metro); and remaining 70% is met through Gross metering by other category of consumers
- Total burden of GBI would be higher; also, tariff revenue loss will be significant due to inclusion of high tariff loss categories under net metering
- Further, the value proposition to distribution utility through avoided energy charges reduces
- The mechanism of support to the Prosumers and the Dist. Utility will remain same as Option III

MEGHRAJ

**Assuming monthly bill of Rs 500; revised bill after considering tariff impact*

Option V: Installations of 1-50 kW through net metering; and above 50 kW through Gross metering

Particular	Burden	NPV	Impact on tariff (Paisa/unit)	
GBI (X)	705	200	0.311	
Tariff revenue loss (A)	1624	383		
Payment to developer for injected energy (B)	87	23		
Loss of revenue due to Electricity duty (C)	228	49		
Energy charges saved through avoided energy (D)	1207	251		
Burden on Discom (A+B-D)	503	155		
Burden on Govt (C)	228	49		
Total Burden (A+B+C-D)=E (i.e. w/o surcharge)	731	204	0.320	
Surcharge (100%) (F)	371	47		
Burden after 100% surcharge (E-F)	360	156	0.205	
Surcharge (80%) (G)	297	38		
Burden after 80% surcharge (E-G)	434	166	0.228	
Total Burden (E+X)=E (i.e. w/o surcharge)	**1436**	**404**	**1.197**	**Rs 500.89*
Burden after 100% surcharge (X+ (E-F))	**1064**	**357**	**0.887**	**Rs 500.66*
Burden after 80% surcharge (X+ (E-G)	**1139**	**366**	**0.949**	**Rs 500.70*
Additional reqd support in initial yrs.			34	

- In this scenario, installations of 1-50 kW is through net metering and above 50 kW through Gross metering
- Certain % is assumed for installations of different capacities across different categories
- High burden; since significant number of consumers are expected to go for installation above 50 kW due to rooftop availability and such installations will be compensated @LCoE/FiT

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**Assuming monthly bill of Rs 500; revised bill after considering tariff impact*

Comparative snapshot of burden under different options

Burden (Rs cr.)	Option I	Option II	Option III	Option IV	Option V
Burden on Discom (A)	-	43	-92	72	503
Burden on state govt. (B)	1472	470	640	974	933
Burden w/o surcharge (A+B)	1472	514	548	1047	1436
Burden w/w 100% surcharge (C)		-179	103	825	1064
Burden w/w 80% surcharge (D)		-40	192	870	1139

NPV (Rs cr.)	Option I	Option II	Option III	Option IV	Option V
Burden on Discom (A)	-	100	41	44	155
Burden on state govt. (B)	417	98	170	272	249
Burden w/o surcharge (A+B)	417	198	211	316	404
Burden w/w 100% surcharge (C)		111	154	290	357
Burden w/w 80% surcharge (D)		129	165	295	366

- Option II reflects lesser overall financial burden and with the element of surcharge the burden gets further reduced
- Option III has lower burden on Dist. Utility while the overall financial burden is similar to the Option II. The State Govt. needs to support to the utilities against the compensation that the utilities are supposed to pay to the prosumers (equivalent to LCoE)

Option I: 100% GM;
Option II: 100% NM;
Option III: 70% NM & 30% GM (C, I, PIs and Metro);
Option IV: 30% NM (C, I, PIs and Metro); & 70% GM for others;
Option V: 1-50 kW through NM; >50 kW through GM

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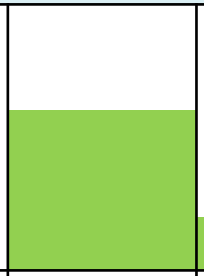
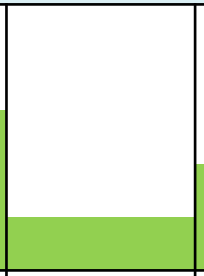
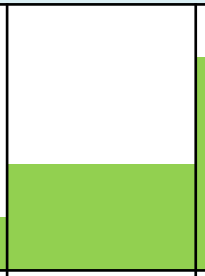
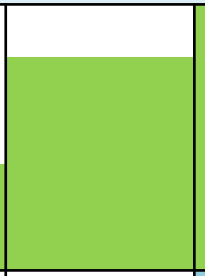
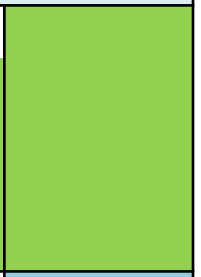
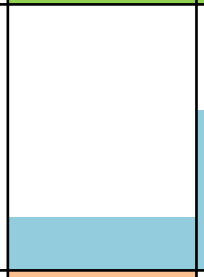
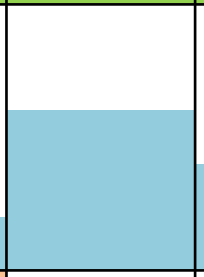
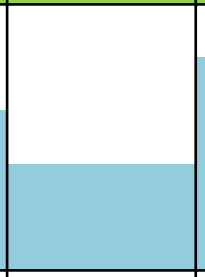
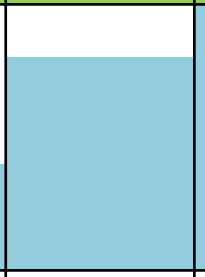
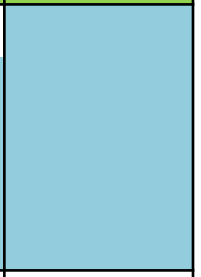
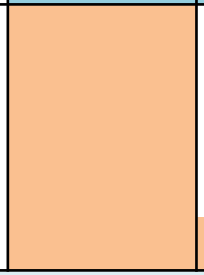
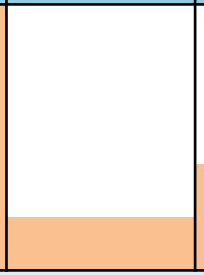
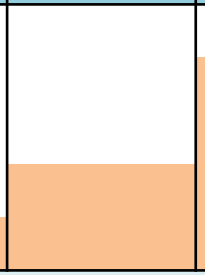
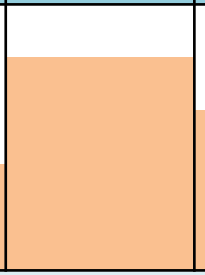
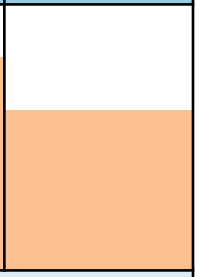
Comparative matrix of different options

Options	Option I	Option II	Option III	Option IV	Option V
Financial Parameters					
Burden on Prosumers					
Burden on Dist. utility					
Burden on state govt.					
Implementation parameters					
Prosumers- Dependency on release of funds	YES	NO	YES	YES	YES
Dist.utility- Provision of surcharge	NO	YES	YES	YES	YES
State Govt.-Long term commitment	YES	NO	YES	YES	YES

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THANK YOU

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Policy key features: For states based on net metering model

States based on Net metering model:

	Forum of Regulators (FOR)	Maharashtra (draft)	Gujarat	Rajasthan	Tamil Nadu
Project Capacity limit	Maximum 1MW; as per state code	Up to contract demand or connected load	50% of Consumer's sanction load	Up to 80% of sanctioned connected load/ contract demand	
Surplus energy settlement		10% of total generation in a year at APPC; rest lapse	APPC of the year of installation and 85% of APPC for REC based projects	FiT on monthly basis if net injected is more than 50 units, else carry forward to next billing period	Tariff in force applicable to the category
Financial Incentives		Subsidy, if offered by Central/State Govt.		Settlement at FiT as determined by SERC	GBI; Net energy supplied eligible for RPO
Penetration at DTR	15%	15%	NA	30%	30%
Third party sale/captive	Allowed		Allowed	Allowed	Allowed
Banking of energy	As per State Regulations	One year – max to 10% of the total generation	Allowed: 1 billing cycle		Upto 90% of electricity Consumption at the end of settlement year
Exemptions	Exempted from Banking, Wheeling &,CSS		CSS, ED, wheeling and Transmission charges and losses	Exempt from banking, wheeling & CSS	

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Policy key features: For states based on net & gross metering model

States based on Net and Gross metering model:

	Karnataka	Andhra Pradesh	Telangana	Uttar Pradesh
Project Capacity limit		Single phase – 3kWp & LT – 56kWp		100% of connected load/contract demand
Surplus energy settlement	Tariff determined by KERC	Net: Quarterly settlement at ACoS. Gross: Monthly at ACoS	Gross – 11 kV and below @ ACoS Net - APPC	Gross: 'Solar Injection Compensation' as per UPERC; Net: net export at Rs. 0.50/kWh.
Financial Incentives			Up to 30% CFA & 20% subsidy by State Govt. up to 3kW in domestic only	SNA shall support in availing subsidy
Penetration at DTR		LT: FY 15-16 – 50% FY 16-17 – 60%		15%
Third party sale/captive	Allowed	Allowed		Allowed
Banking of energy		100%	Not allowed. Monthly billing and settlement	
Exemptions		ED, OA, CSS, Contract Demand reduction; Distribution charges & losses	Exempt from banking, wheeling & CSS	Exempt from wheeling & CSS

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Policies and regulations in overseas market

	Germany	USA (California)	Italy
Programme	Renewable Energy Sources Act (2000 & amended in 2009); German Renewable Energy Act (EEG 2014)	California Solar Initiative - 2007	Italy National Renewable Energy Action Plan, 2009
Business model	Self-owned and third party owned		
Installed capacity	38.5 GW - Solar PV (2014)	2.4 GW (as on July 29, 2015)	18.325 GW (2014)
Fiscal incentive/ subsidy	FiT	Subsidized PV systems for low income HHs Performance based incentives to builders	Direct Capital Subsidy
Penetration Limit	Penetration limit not recommended adopted various technical solutions	100% minimum day time load	> 50% of minimum load
Tax exemptions	Turnover tax not included	Property tax exemption	Tax credits/Tax benefits
Settlement period	Annual	Credited to consumer's next bill @ retail rate	Excess injection allowed but only energy settlement not commercial

Hawaii Island permitted RTS capacity up to 120% of the minimum day time load of distribution network.
Germany no such cap established so far, & in many cases, exceed minimum day time load by multiple times.
Spain too has allowed 120% of the peak demand.

	Japan	China
Programme	FiT scheme - 2012	BIPV Program - 2009 & Golden Sun Program - 2009
Business model	Self-owned and third party owned	
Installed capacity	23.3 GW (2014)	33.1 GW - Solar PV (March, 2015)
Fiscal incentive/subsidy	Capital subsidy	BIPV Program (>= 50KW) - RMB15/W for SRT; RMB20/W for BIPV systems Golden Sun Program (>= 300KW) - 50% & 70% of total cost for on-grid & off-grid systems resp.
Tax exemptions	Residential exempted Non-residential tax at @ 5%	Makes available preferential loans with subsidized interest rates. Tax incentives can be central or local govt. & technology specific

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4TH FORENS MEETING AT SUNDARBAN

Grid Integration of Solar Power

By

Odisha Electricity Regulatory Commission

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Solar Power

- Limitless
- Clean
- Everywhere
- Free

Solar Power… Contd….

Sr. No.	State	Total MNRE Projects MW	State Policy MW	REC Scheme MW	CPSUs MW	Total Commissioned capacity till 18.05.2015(MW)
1	West Bengal	2.05	5.16	0	0	7.21
2	Odisha	12	5.42	4.5	10	31.92
3	Jharkhand	16	0	0	0	16
4	Tripura	0	0	5	0	5

Source MNRE

- Jawaharlal Nehru National Solar Mission envisages one lakh MW solar installed capacity by 2022.
  - 40,000 MW Rooftop Solar power shall be generated by 2022.
  - 25 solar parks each of capacity 500 MW or above with a target of 20,000 MW shall be established by within a span of 5 years by 2018-19.

Issues of Grid Integration of Solar Power

- Connectivity Issues
- Commercial Issues

Connectivity Issues

➢ CEA has framed CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulation, 2013.

❖ **Harmonics**

- The Inverter forms the heart of a Grid tied Solar PV system and is responsible for the quality of power injected into the Grid. It is a non-linear load.
- Due to inverter harmonic current is injected which can cause voltage drop. The harmonic create excess heating and malfunctions of the transmission and distribution system.
- CEA Regulation specifies IEEE 519 for inverter to suppress harmonic injection. (THD < 5%)

Connectivity issues… contd…

- **Flicker**
  - Random or repetitive variation in the root means square (RMS) voltage between 90% and 110% of nominal voltage can be generated by the solar system and produces flicker. Flicker is so named because of the rapid visible change of luminance.
  - Flicker should be less than the limit specified by IEC 61000 as per CEA Regulation.
- **DC Injection**
  - DC current within the low voltage AC network could cause significant disturbances within distribution and measurement transformers. The most significant being ‘half cycle saturation’ where a transformer which normally operates with a very small exciting current starts to draw 100 times the normal current.
  - CEA Regulation provides that the permissible DC injection is 0.5% of the full rated output at the interconnection point. (IEEE 1547 standard)

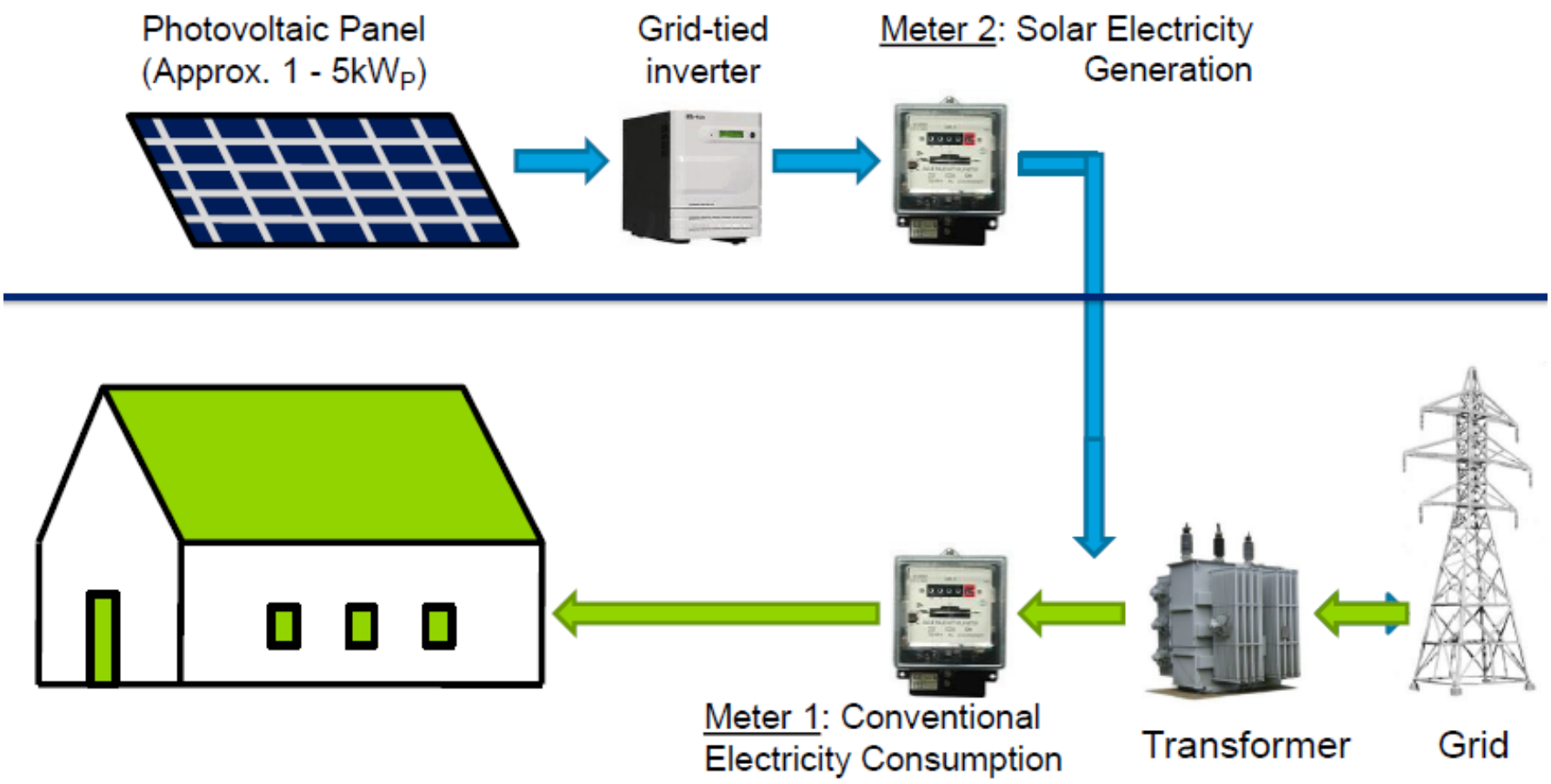
Connectivity issues… contd…

- **Anti Islanding Function**
  - Islanding refers to the condition in which a distributed solar system continues to supply to a load even though Grid power from the utility is no longer present. Islanding can be dangerous to utility workers who may not realise that a circuit is still power when working on repairs or maintenance. For that reason, the inverter in the PV system must detect Islanding and stop supply power if Grid is down. This feature is referred to as 'Anti Islanding'. Anti Islanding or unintentional Island.
- **Reactive Power Support**
  - Solar invertors are ideally operated in such a way that no reactive power is introduced in the Grid. They operate in unity power factor. Many countries are thinking up possibility of operating the inverters on the network on a non-unity power factor say 0.9. When a required by the operator for Grid support.

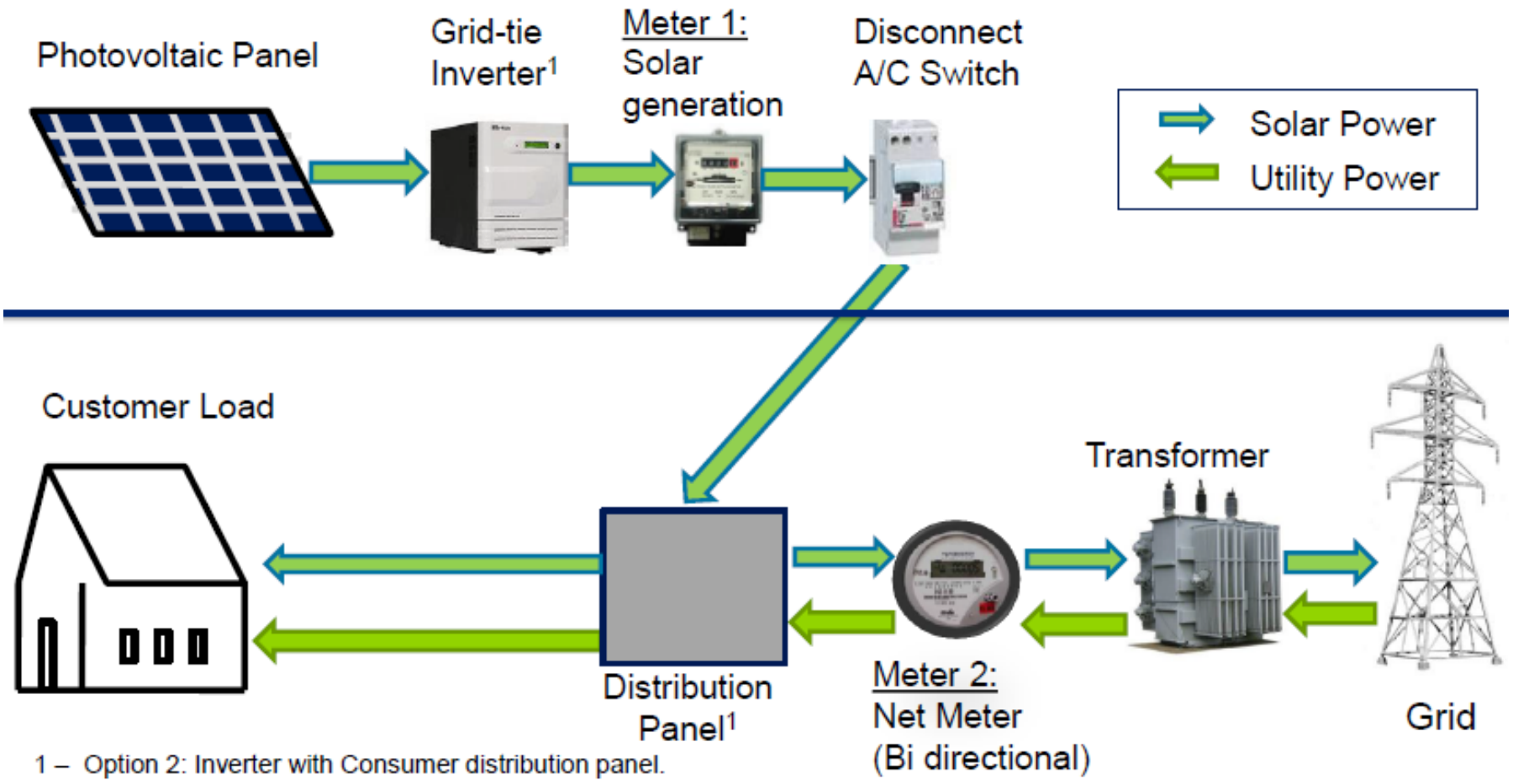
Rooftop Solar PV

- The Solar PV generators operate in modular form.
- The MW size solar generators are nothing but integration of numbers of modules. Therefore, the cost of power generated per unit remains the same for KW and MW level generator.
- The Rooftop solar generator utilises the idle roof. Therefore, constraint of land is not there. There is no transmission or distribution losses.
- The Rooftop solar generator can be integrated into the Grid by gross metering method or net metering method.
- In gross metering method Rooftop solar power is injected to the Grid and consumer draws from the utility. For power injected to the Grid the consumer is paid by the Utility.
- In net metering method Rooftop solar power is netted with consumption of the Roof top owner from the utility.

Gross Metered Rooftop solar



Net-Metered Rooftop solar



1 – Option 2: Inverter with Consumer distribution panel.

Rooftop Solar PV…contd…

- The Grid penetration level of solar power can be as follows:
  - The ratio of PV capacity to the peak load demand.
  - The ratio of PV capacity to the minimum day time load
  - The PV capacity as percentage of distribution transformer rated capacity.
  - As per International experience the following are the grid penetration level
    - California - 15% of the peak load
    - Germany – 49% of the instantaneous load
    - Greece – 77% of the instantaneous load
    - Italy – 50% of the instantaneous load
  - In India we have the following penetration level.
    - New Delhi- 15% of DT capacity
    - Tamil Nadu – 30% of the DT capacity
    - Odisha – 30% of DT capacity
    - Kerala – 80% the minimum day time load on DT

Together, let us light up our lives

Commercial Issues

- Independent Solar Generators injects power at a price discovered through bidding.
- The independent solar generators who comes through REC mechanism of CERC are paid for electrical component and solar component. For electrical component they are paid as per Average Power Purchase Cost (APPC). They can sell the solar attribute in terms of RECs in NLDC or Power Exchange.
- The Rooftop solar generators through net metering can get the solar generation cost netted with the tariff of the Utility.
- Rooftop solar generators can also get their generation netted with the imported units from the utility.

Together, let us light up our lives

Thank you

Distribution Reforms Planning

WBERC

ISSUES…..

- High AT&C loss (approx 40%) & substantial accumulated loss (Rs 3.5 lakh crores)
  - Discom's financial health causing concern for investment
  - Stranded generation capacity
  - Cascading effect on power market
- Differential Tariff causing flight of Prime Customers
- Absence of Professional Management
- Wide Gap In Peak & Off-peak Demand
- Trust Deficit & Communication Gap between Discom & Consumers

ISSUES ….

- Quality of power is very poor
- Unreliable & weak distribution network
- Wide voltage fluctuation & tripping of lines due to rain/wind is a regular phenomenon
- Break down of lines & equipment causes frequent outages
- Load-shedding 30-40% is quite normal
- Consumers are forced to make substantial investment to improve quality of supply
  - Inverter
  - Generator
  - Voltage stabilizer
  - UPS etc.

WAY FORWARD….

- **Separation of assets & accounts of wire and supply business**
- **Introduction of differential tariff for different voltage level with grade-wise losses**
- **Ensure common tariff for all category of consumers in the same voltage level**
- **Introduce Universal Service Charges (USC) to all consumers**
- **Govt. to subsidize need based agriculture & domestic sector from the collected fund/govt. assistance**

WAY FORWARD….

- **Central Govt. to support States in formulating DPR & specification along with state wire companies for aggressive reduction of AT&C loss below 10% through HVDS etc.**
- **Channelize all Central Govt. Fund to support strong Wire network**
- **Support with Additional Fund & Technology**
- **Target Technical (T&D) Loss below 8% & Quality Power with near zero failure**
- **Aggressive HVDS, pre-paid & remote metering implementation**
- **Target AT&C Loss below 10% from present 35%**

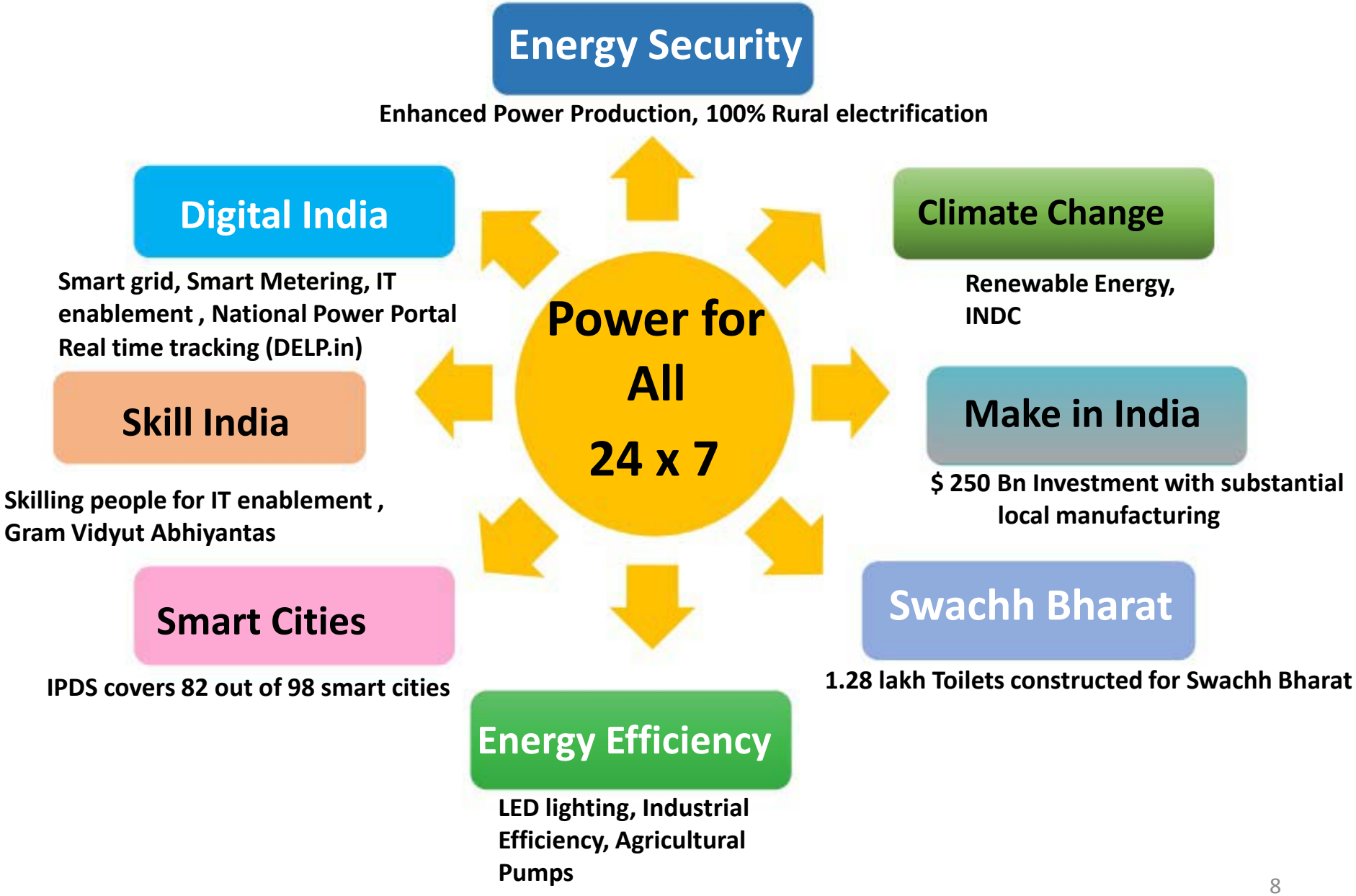
WAY FORWARD….

- **Relation between supplier & consumer should be strictly commercial**
- **All the suppliers will have equal opportunity & level playing field**
- **Differential tariff, if any, will be addressed by the respective State Government through cess, subsidy, USC etc.**
- **Common tariff will ensure barrier free entry of power through open access**
- **Ultimately consumer & all stakeholders will be benefited**
- **Government will be able to come out from carrying the responsibility & financial burden of distribution companies**

24x7 Power For All

Power Value Chain

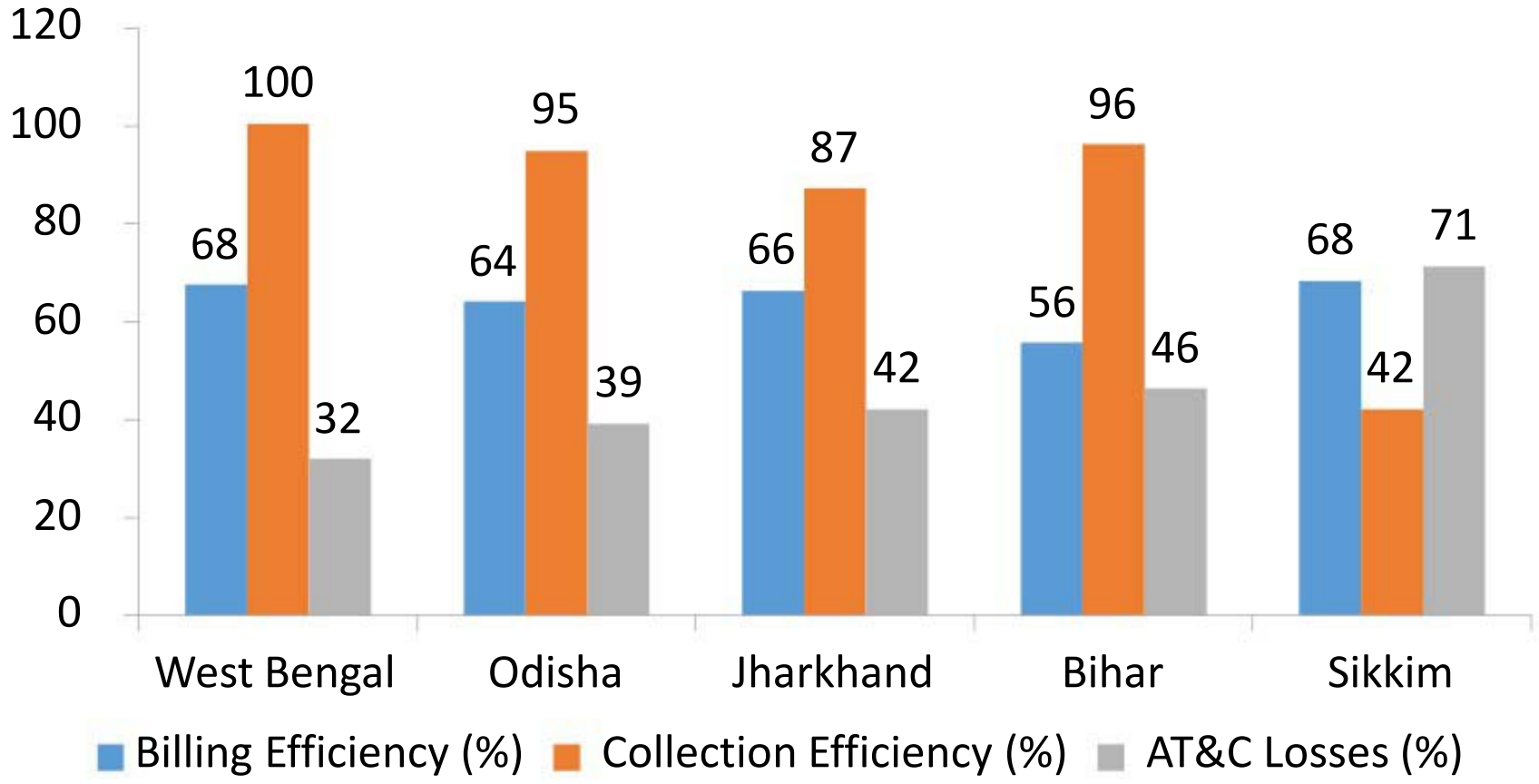
DISCOMs are the weakest link in providing 24X7 Power for All


Energy Security
Enhanced Power Production, 100% Rural electrification
Digital India
Smart grid, Smart Metering, IT enablement , National Power Portal Real time tracking (DELP.in)
Climate Change
Renewable Energy, INDC
Power for All 24 x 7
Skill India
Skilling people for IT enablement , Gram Vidyut Abhiyantas
Make in India
$ 250 Bn Investment with substantial local manufacturing
Smart Cities
IPDS covers 82 out of 98 smart cities
Swachh Bharat
1.28 lakh Toilets constructed for Swachh Bharat
Energy Efficiency
LED lighting, Industrial Efficiency, Agricultural Pumps

Guiding Principles - TRANSPARENCY

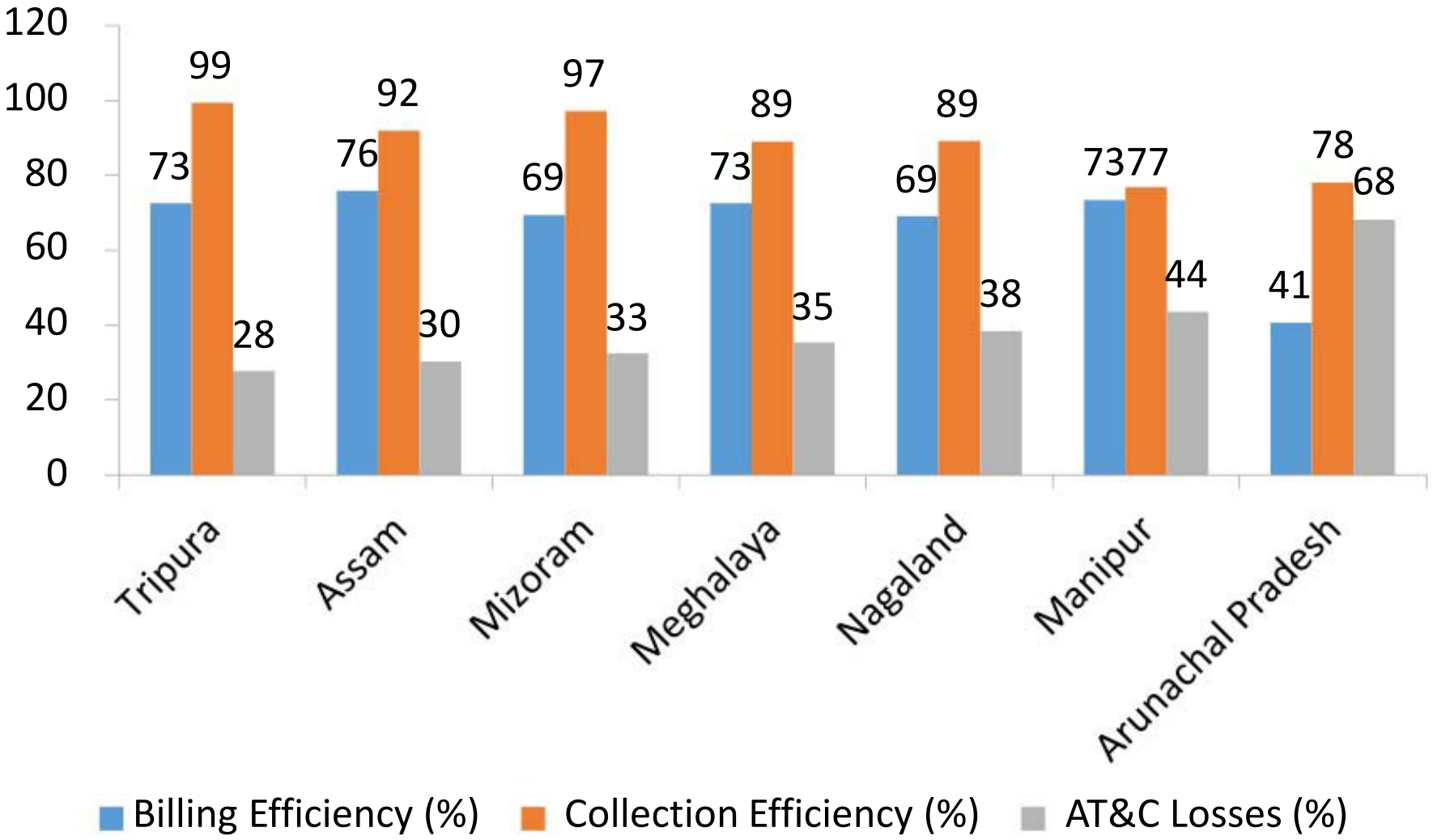
- **T**echnology Focus
- **R**oot Cause Analysis
- **A**ccountability
- **N**ational Effort - Team India
- **S**peed, Skill and Smart
- **P**rioritization
- **A**chievement Oriented
- **R**ejuvenate Economic Growth
- **E**fficiency & Economies of Scale
- **N**ational Sustainable Development
- **C**ustomer Focus
- **Y**es We Can

East India



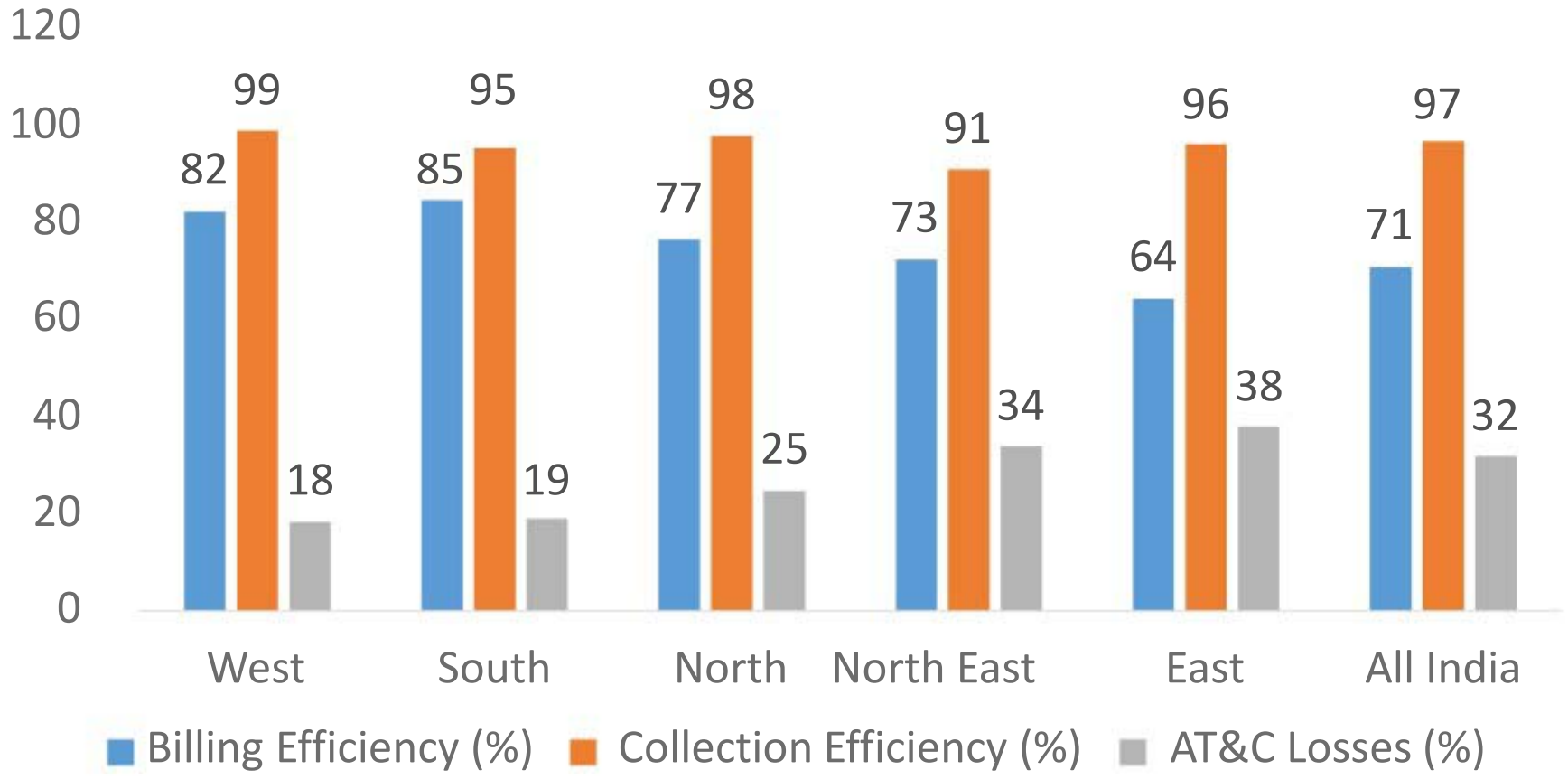
Audited Figures for 2013-14

North East India



Audited Figures for 2013-14

All India



Audited Figures for 2013-14

Potential Savings

State	Input Energy (18-19 MU)	AT&C Losses 2013-14	AT&C Loss Target by 2018-19	Potential Saving if loss reduces to Target (Rs. Crore)
Odisha	31654	39	15	3829
West Bengal	42770	32	15	3645
Bihar	18259	46	15	2861
Jharkhand	11608	42	15	1577
Assam	8804	30	15	671
Meghalaya	2035	35	15	207
Sikkim	548	71	15	154
Manipur	792	44	15	113
Mizoram	612	33	15	54
Nagaland	854	38	15	100
Tripura	1375	28	15	88

Avg. cost of power considered as Rs. 5.00/kWh

Improving billing efficiency through metering and Tracking of losses

Activity	Benefit
Compulsory feeder and Distribution Transformer Metering by states	Ability to track losses at the feeder and DT level for corrective action
Consumer Indexing & GIS mapping of losses	Identification of loss making areas for corrective action

Infra augmentation & Smart Metering

Activity	Benefit
Upgrade or change Transformers, Meters etc.	Reduce technical losses and minimize outages
Smart metering of all consumers consuming above 200 units/month	Smart meters will be tamper proof and allow remote reading thus helping reduce theft

Improving Collection efficiency through public participation

Activity	Benefit
Awareness campaign against theft to ensure " Honest do not pay for dishonest"	Enhance public participation to reduce power theft
Assure increased power supply in areas where AT&C losses are less	Encourage local participation to reduce losses

Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

Electrify all 18452 remaining un-electrified villages in the country		
Access of electricity to remaining 5 crore Households		
System Strengthening:		
	Power transformers	**14491 Nos.**
	Distribution transformers	**3,17,068 Nos.**
	Conductors	**869521 Km.**
	Energy Meters	**110,00,000 Nos.**
Metering the un-metered:		
	Feeder/Boundary/ DTs	**11,92,658 Nos.**
	Energy Meters	**99,93,893 Nos.**
Total Outlay approved for DDUGJY including RE Component is Rs. 75,893 crores		

Integrated Power Development Scheme (IPDS)

An integrated scheme for urban areas covering:

- Smart Metering and Tamper-proof meters at homes
- Infrastructure up-gradation in urban areas -
  - Comprehensive sub transmission & distribution system
  - Underground cabling & GIS Sub stations in densely populated areas
- IT implementation for better customer service
- Solar installations like rooftop solar panels also covered

Outlay of Rs. 65,424 crores

Grant under DDUGJY and IPDS

Total outlay of Rs 1.4 lakh crore

- Incentive based grant to States of Rs 9,178 crores linked to:
  - Timely completion of the scheme
  - Reduction in At &C looses as per the agreed trajectory

- Upfront release of admissible revenue subsidy by the State Government to DISCOM based on metered consumption

Distribution Planning in the State

SL	Action Plan	Present Status	Target	Remarks
1	Reduction of AT& C Loss	29.95%	10%	This is to be done by implementation of HVDS, Pre-paid & Smart Meters
2	Reduction of T&D Loss (Technical)	27.60%	8%	
3	Introduction of High Voltage Distribution System (HVDS) coupled with Aerial Bunched Cable(ABC) /Underground Cable (UG cable) Throughout West Bengal	Discrete Initiatives have been taken DISCOMs have been asked to submit DPR	By April 2018	

Distribution Planning in the State

SL	Action Plan	Present Status	Target
4	Aggressive installation of Pre-paid meter, Smart Meters	Presently installed in some areas at Kolkata, New Town and Salt Lake	To be spread throughout West Bengal
5	Segregation of Sector-wise Feeder viz. Urban, Semi-urban, Rural for better control of AT&C Loss	a) IPDS b) Deendayal Upadhyaya Scheme, c) Sech Bandhu Scheme are under process of implementation (Reports Due)	By April 2018
6	Implementing improved norms on Standards of Performance relating to consumer services	Relaxed regulations	Norms need to be recast in line with best standards

Distribution Planning in the State

SL	Action Plan	Present Status	Target
7	Aggressive installation of Smart Meters, Moulded cables with meters	Under pilot project of DISCOM at Siliguri	To be spread throughout West Bengal
8	Separation of Accounts (Wire and Supply business)	Not yet introduced by ERCs	
9	Separation of Assets (Wire and Supply business)	Not yet introduced by ERCs	

Distribution Planning in the State

SL	Action Plan	Present Status	Target
10	Implementation of Speedy Connection	30 days or more on case to case basis	Seven/Ten Days in most cases
11	Outreaching to consumers in order to educate them with :	Few discrete initiatives have been taken so far without any tangible result yet	Shall be completed through NGOs, Station Managers, Consumer Forum, Ombudsmen etc. in a wide spread manner by a time bound phase –wise plan by **Dec 2016**
	• Quality Power • Quality Equipments usage for receiving better service • Technical procedures of approach for getting services related to electricity • Bad effects of malpractice with electricity • Bad effects of non-payment/late payment • Relevant sections of regulations • Energy Conservation • Renewable Energy		

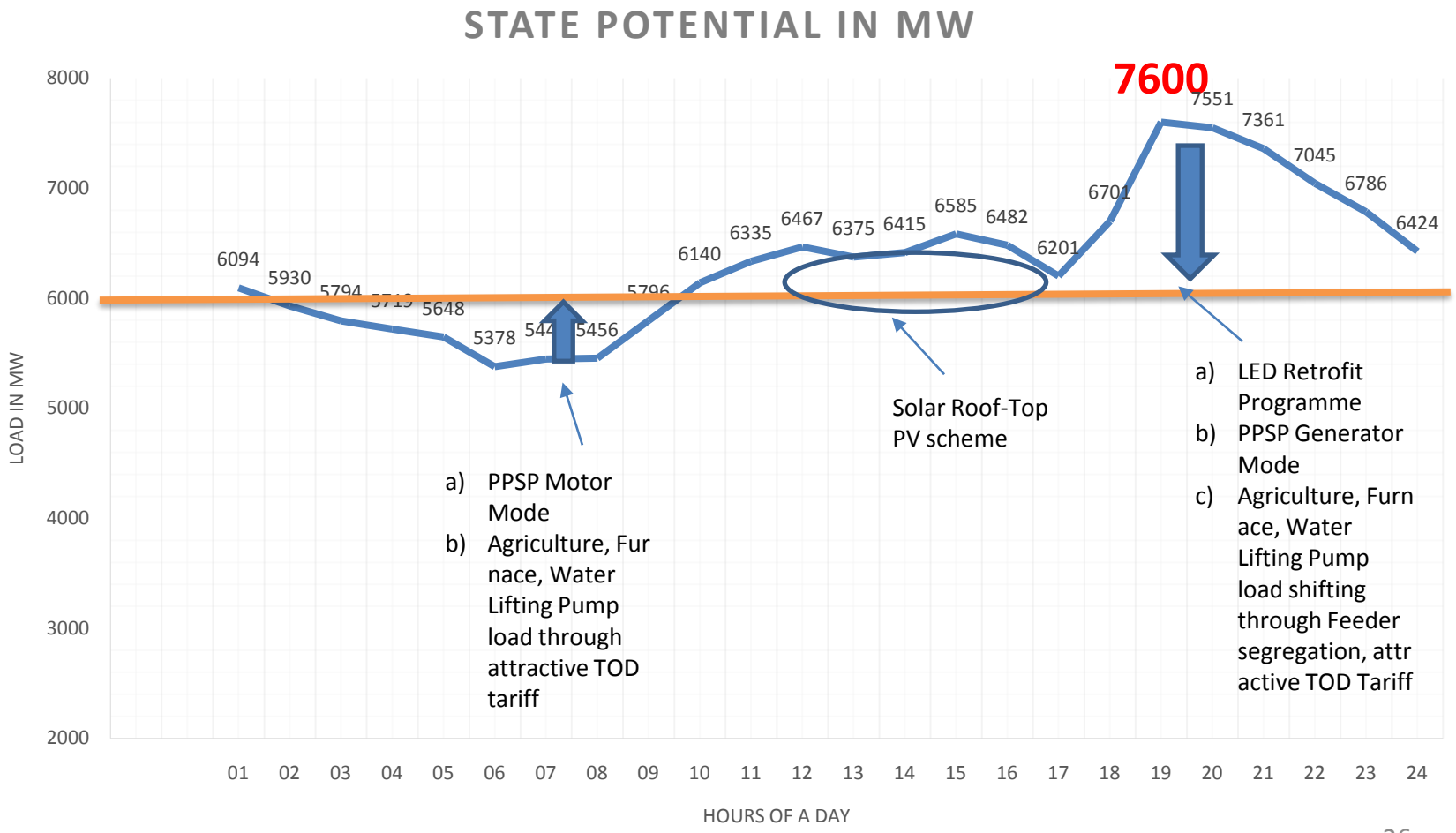
Distribution Planning in the State

SL	Action Plan	Present Status	Target	Remarks
12	**Time bound plan for conventional Power Demand Curve flattening by Carrying out programme on LED retrofitting for evening load chopping of** a)Domestic consumers (1.50 Crores) b)Public Building, Schools & c)Hospitals	**Plan Formulation is under process**	**By Dec 2016**	**GoWB may provide 2 LED Tube Lights & 1 LED Bulb to all domestic users on subsidized rate. This will reduce power bill as well as evening peak**
13	**Aggressive Roof Top Solar PV system installation for managing Day Load**	**Revised Regulation/ RE State Policy is under final shape**	**As per commitment given to GoI of 200 MW by 2022**	**Use these as opportunity for developing solar manufacturing unit & service sector to generate employment**

Distribution Planning in the State

SL	Action Plan	Present Status	Target
14	**Load shifting Programme through TOD mechanism** **Attractive Tariff on Off-peak, very high tariff on peak for** a)Agriculture b)Water Lifting Pumps (Govt. & Non-Govt.) c)Electric Furnace		
15	**PPSP Load Management** • Pump mode during off-peak hours • Generator Mode during peak hours	**Plan Formulation is under process**	**By Jan 2016**
16	**Implementation of franchisee in high AT&C loss areas for loss reduction & financial health improvement**	**Need detail study and discussion**	**May implement one pilot project by Dec 2016**

Typical Load Curve of West Bengal [March 2014]



SCENARIO: THEN AND AFTER

- **Existing supply company shall start losing premium customers to new supply companies if they fail to supply 24x7 quality power to them**

- **Premium customers get assured power supply at market driven price**
- **This shall lead to higher charges for low voltage users**

SCENARIO: THEN AND AFTER

- **Thus LT consumers shall land in paying more than all other consumers**
  - **Both Govt. and Distribution Company shall then focus in reduction of AT&C losses to 8-10% through technology up-gradation and consumer awareness**
  - **Govt. shall introduce USC / Cess / other charges for subsidizing the domestic/agricultural consumers**

- **Gradually all segments of consumers shall be benefitted through market mechanism**

Thank you

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Meghraj Capital Advisors Private Limited

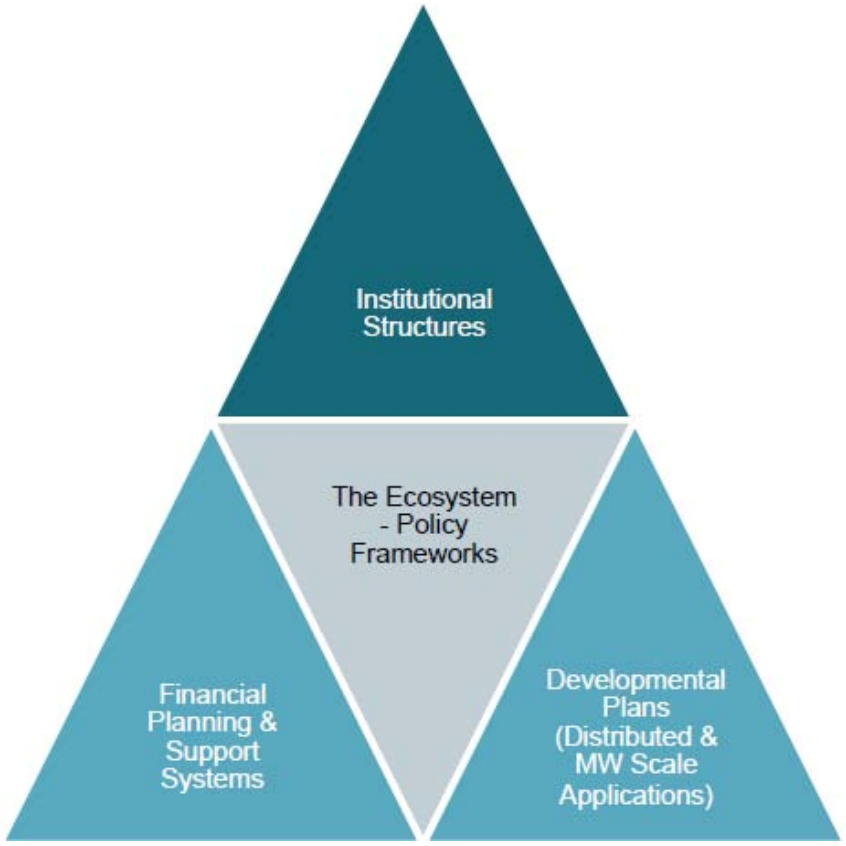
Infrastructure Advisory I Mergers & Acquisitions I Syndication I Capital Markets

Draft Renewable Energy Act - Review

Nov, 2015

West Bengal Electricity Regulatory Commission

Development of a supportive Ecosystem



- The RE Law aims to create an exhaustive framework for the development of renewable energy systems
- The Act will provide the requisite backbone framework to promote RE by developing a supportive ecosystem,
- The Act provides ample right to the centre in the matter of promotion and development of RE
- The Act makes a distinction between what a state government “shall” do and what might do

Institutional Arrangement

Provisions under the Act

- Central Government has overarching power
- National Renewable Energy Policy: umbrella policy for all RE initiatives across the country
- National Renewable Energy Committee: enable inter-ministerial coordination relating to the implementation of the Act
- National Renewable Energy Advisory Group: technology watch group, utilisation of funds and the Central government on effective implementation of RE Act
- Renewable Energy Corporation of India: act as a national level RE procurement entity and support development of 'Renewable Energy Investment Zones' across the country

Impact

- States to form policies and plan based on centres' guidelines
- The law makes it clear who will finance, who will plan and monitor and what support will come from where. The states have been made beneficiaries of their initiatives, which puts onus on them for meeting their targets,
- Ample emphasis has been given to plan, execute, monitor and review, and take measures during the course of policy implementation
- Creation of market has been emphasised with formation of RECI which is supposed to be the nodal agency for procurement of power and creating RE investment zones

Supportive Ecosystem

Provision under the Act

- Defining firm RE target for 5 years and a roadmap for 10 years
- The policy would enable a supportive system for growth of the sector:
  - Renewable energy resource assessment,
  - technical and safety standards,
  - monitoring and verification,
  - manufacturing and skill development and
  - data management.

Impact

- The basic framework required for development of RE has been attempted to put in place
- Backward and forward integration has been well conceived

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Economic and Financial Framework

Provisions in the Act

- Establishment of a National Renewable Energy Fund with support from National Clean Energy Fund
- Creation of State Green Fund – seed money to be provided by the NREF and the states may manage fund through additional sources such as, green energy cess, Electricity Duty, CSR fund, grants etc.
- Apart from all the activities mentioned in the proposed Policy the fund will also be utilised for low interest finance.

Issues

- What quantum of seed money to be provided to the states
- Transfer of money from NCEF to the proposed NREF has to be assured
- Additional levy or diversion of fund, such as, Electricity Duty, can turn out to be daunting task in some states.

Impetus to grid connected power

Provisions under the Act

- Delicensing of RE generation and supply of power
- creation of a national, uniform and mandatory renewable electricity purchase obligation trajectory for all obligated entities.
- Eligibility to meet the target of RPO includes Off-grid systems based on RE providing electricity or equivalent services e.g. solar pumps / lighting etc.
- 'Obligated entities' (mostly, large consumers and electricity distribution companies) are required by law to buy a certain portion of their energy needs from renewable sources.
- Financial support to distribution companies to meet RPO until grid parity is achieved

Impact

- When off-grid projects are included in RPO monitoring and authenticity of data becomes critical but cumbersome to handle.
- The performance of the Ministry on the timely disbursement of subsidy for the sector has had not been satisfactory and thus further increase in their financial burden does not appear so plausible
- Provision of installation of RE plants equivalent to 5% of the total thermal capacity by the conventional generator
- Bundling of power has been allowed to meet the RPO target
- The cost of meeting RPO is passed through
- Exemption on Open Access charges
- Deemed generation benefit to bring parity with conventional sector

Role of Regulators under the Draft RE Act

- Provide inputs to the proposed RE policy guidelines on regulatory framework
- Develop regulatory measures to promote application of RE through net and gross metering models and scale up use of smart meters
- Ensure compliance to such electricity purchase obligations by the obligated entities.
- Define the process of RPO compliance monitoring and mechanism
- Approval of the cost of RPO of obligated entities in the process of making it net at least cost to the consumers
- Assess the delicensing issue of RE generation and supply of power as prescribed in the Act

THANK YOU

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