Agenda Note for National Review Meeting of State Principal Secretaries and State Nodal Agencies of Renewable Energy on 23rd and 24th January 2017-New Delhi

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Meeting Schedule

Day 1 – 23rd January 2017		
Inaugural Session	**9.30 a.m. – 10.15 a.m.**	Welcome address by Dr. A.K. Tripathi, Scientist 'G', MNRE Overview by Shri Santosh Vaidya, Joint Secretary, MNRE Key note address by Shri Rajeev Kapoor, Secretary, MNRE Vote of Thanks by Ms. Sutapa Majumdar, Economic Adviser, MNRE
Tea Break - 10.15 a.m. – 10.30 a.m.		
Technical Session I	**10.30 a.m. – 12.15 p.m.**	Review of Grid Connected Solar Schemes and Solar Parks Presentations by: i) Shri Dilip Nigam, Scientist 'G', MNRE – 10 minutes ii) MD, NTPC – 10 minutes iii) MD, SECI – 10 minutes State-wise discussion – 1 hour 15 minutes
Technical Session II	**12.15 p.m. – 1.15 p.m.**	Review Biomass, Bio-energy and Biogas Presentations by: i) Mrs. Seema, Director, MNRE– 10 minutes ii) Shri G.L. Meena, Scientist 'G', MNRE– 10 minutes State-wise discussion – 40 minutes
Lunch - 1.15 p.m. – 2.15 p.m.		
Technical Session III	**2.15 p.m. – 3.15 p.m.**	Review of Hydro Programmes Presentation by Shri B.K. Bhatt, Scientist 'G', MNRE – 10 minutes Discussion – 50 minutes
Technical Session IV	**3.15 p.m. – 4.00 p.m.**	Review of wind power Presentation by Shri J.K. Jethani,

		Scientist 'D', MNRE – 10 minutes Discussion – 35 minutes
Tea Break - 4.00 p.m. – 4.15 p.m.		
Technical Session V	**4.15 p.m. – 5.00 p.m.**	Review of R&D and HRD Programmes Presentation by : i) Dr. B.S. Negi, Scientist 'G', MNRE – 10 minutes ii) Dr. P.C. Pant, Scientist 'F', MNRE – 10 minutes Discussion – 25 minutes
Technical Session VI	**5.00 p.m. – 6.00 p.m.**	State-wise achievement of RPOs Presentation by Dr. P.C. Maithani, Scientist 'G', MNRE – 10 minutes Discussion – 50 minutes

Day 2 – 24th January 2017		
Technical Session VI	**9.30 a.m – 1.00 p.m**	Welcome address by Shri Santosh Vaidya, Joint Secretary, MNRE Review of Grid connected Rooftop and Off-Grid programmes Presentations by: i) Dr. G. Prasad, Scientist 'F', MNRE– 10 minutes ii) USAID – 10 minutes iii) World Bank – 10 minutes Discussion thereon. Address by Shri Rajeev Kapoor, Secretary, MNRE Inaugural address by Hon'ble Minister of Coal, Power, Mines and NRE. Awards presentation under off-grid programme Launching of mobile app for grid connected Rooftop systems Vote of Thanks by Dr. G. Prasad, Scientist 'F', MNRE
LUNCH		

Agenda Note for National Review Meeting of State Principal Secretaries and State Nodal Agencies of Renewable Energy on 23rd and 24th January 2017- New Delhi

Overview:

Government of India has undertaken the ambitious target of 175 GW installed capacity of Renewable Power by 2022 as part of its clean climate commitments. In this mission to address the challenges of sustainable growth and energy security, total 46.67 GW grid-connected renewable capacity has been achieved. During the period of April to October 2016, 53.91 BU were generated from renewable energy sources which is 7.30 % of the total generation against the 6.04 % of the generation reported during 2015-16. The major programmes being implemented by Ministry of New & Renewable Energy (MNRE) include:

- **National Solar Mission**
  - ✓ Grid-connected - Ground mounted solar schemes
  - ✓ Grid-connected- Solar rooftop schemes
  - ✓ Off-grid and decentralized Solar power schemes
- Grid Connected- Biomass power and cogeneration schemes
- Wind Power schemes – Onshore, Off shore and Small wind
- Small Hydro Power schemes
- National Biogas Programme
- HRD Programme
- R&D&D Programme

1. National Solar Mission (NSM):

National Solar Mission (NSM) was launched in January, 2010 with targets, inter alia, of 20,000 MW of grid connected solar power and 2,000 MW of off-grid solar applications by 2022. In 2015, the Government approved upscaled target of 1,00,000 MW Grid Connected Solar Power by 2022. Year-wise and cumulative targets for 1,00,000 MW are :-

No	Year	Yearly Solar Target (in MW)	Cumulative Solar Target (in MW)
1	2015-16	2,000	5,000
2	2016-17	12,000	17,000
3	2017-18	15,000	32,000
4	2018-19	16,000	48,000
5	2019-20	17,000	65,000
6	2020-21	17,500	82500
7	2021-22	17,500	1,00,000

Commissioning status of Grid connected Solar Projects during 2016-17

Against the target in 2016-17 of 12000 MW (10500 MW ground mounted and 1500 MW rooftop solar) for grid connected solar projects, only 2250 MW has been achieved so far. State wise details of commissioning during 2016-17 (upto December 2016) is as follows :-

Commissioning Status of Grid Connected Solar Power Projects as 31-12-2016				
Sr. No.	**State/UT**	**Cumulative capacity till 31-03-16 (MW)**	**Capacity commissioned in 2016-17 till 31-12-16 (MW)**	**Cumulative capacity till 31-12-16 MW)**
1	Andaman & Nicobar	5.10	0.30	5.40
2	Andhra Pradesh	572.97	406.68	979.65
3	Arunachal Pradesh	0.27	0.00	0.27
4	Assam	0.00	11.18	11.18
5	Bihar	5.10	90.81	95.91
6	Chandigarh	6.81	9.40	16.20
7	Chhattisgarh	93.58	41.61	135.19
8	D&N	0.00	0.60	0.60
9	Daman & Diu	4.00	0.00	4.00
10	Delhi	14.28	24.50	38.78
11	Goa	0.00	0.05	0.05
12	Gujarat	1119.17	39.32	1158.50
13	Haryana	15.39	37.88	53.27
14	Himachal Pradesh	0.20	0.13	0.33
15	J&K	1.00	0.00	1.00
16	Jharkhand	16.19	1.33	17.51
17	Karnataka	145.46	182.06	327.53
18	Kerala	13.05	2.81	15.86
19	Lakshadweep	0.75	0.00	0.75
20	Madhya Pradesh	776.37	63.98	840.35
21	Maharashtra	385.76	44.70	430.46
22	Manipur	0.00	0.01	0.01
23	Meghlya	0.00	0.01	0.01
24	Mizoram	0.10	0.00	0.10
25	Nagaland	0.00	0.50	0.50
26	Odisha	66.92	10.72	77.64
27	Puducherry	0.03	0.00	0.03
28	Punjab	405.06	140.37	545.43
29	Rajasthan	1269.93	47.71	1317.64
30	Sikkim	0.00	0.01	0.01
31	Tamil Nadu	1061.82	529.15	1590.97
32	Telangana	527.84	445.57	973.41
33	Tripura	5.00	0.02	5.02
34	Uttar Pradesh	143.50	95.76	239.26
35	Uttarakhand	41.15	3.95	45.10
36	West Bengal	7.77	15.30	23.07
37	Others /MoR/PSU	58.31	3.39	61.70
TOTAL		**6762.85**	**2249.81**	**9012.66**

1.1 Ground mounted solar schemes under NSM:

i) Scheme for Development of Solar Parks

The scheme for "Development of Solar Parks and Ultra Mega Solar Power Projects" has been started on 12-12-2014. It is proposed to set up at least 25 Solar Parks and Ultra Mega Solar Power Projects targeting over 20,000 MW of solar power installed capacity within a span of 5 years starting from 2014-15.

Salient Features

- This scheme envisages supporting the States in setting up solar parks at various locations in the country with a view to create required infrastructure for setting up of Solar Power Projects. The solar parks will provide suitable developed land with all clearances, transmission system, water access, road connectivity, communication network, etc. This scheme will facilitate and speed up installation of grid connected solar power projects for electricity generation on a large scale.
- All the States and Union Territories are eligible for getting benefit under the scheme.
- The capacity of the solar parks shall be 500 MW and above. However, smaller parks may be considered in Himalayan Region & other hilly States where contiguous land may be difficult to acquire in view of difficult terrain and in States where there is acute shortage of non-agricultural land.
- The solar parks will be developed in collaboration with the State Governments and their agencies. The choice of implementing agency for developing and maintaining the park is left to the State Government.

CFA Pattern

Under the scheme, the Ministry provides Central Financial Assistance (CFA) of Rs. 25 lakh per solar park for preparation of Detailed Project Report (DPR). Beside this, CFA of up to Rs. 20.00 lakh per MW or 30% of the project cost, including Grid-connectivity cost, whichever is lower, is also provided on achieving the milestones prescribed in the scheme.

Sanctioned Projects and their Status

Based on the proposals received, till date, 34 solar parks of aggregate capacity 20,000 MW has been approved to 21 States. These Solar Park are at different stages of development. The details of solar parks are given in the Table below:

Sl. No.	State	Name of Solar Park	Capacity (in MW)	Status
1.	Andhra Pradesh	Ananthapuramu Solar Park	1500	• DPR submitted. • Land Acquired: 6692.97 acres at NP Kunta site and 1738.4 acres at Galiveedu site. • Internal Infrastructure work is under progress • 250 MW already commissioned. • Transmission infrastructure under development.
2.	Andhra Pradesh	Kurnool Solar Park	1000	• DPR submitted. • Land Acquired:5207.81Acres, Acquisition of balance 603.58 acres of Govt. Land is under process. • Internal Infrastructure work is under progress. • Transmission infrastructure under

Sl. No.	State	Name of Solar Park	Capacity (in MW)	Status
				development.
3.	Andhra Pradesh	Kadapa Solar Park	1000	• DPR submitted. • Land Acquired: 5421.89 Acres • Internal Infrastructure work is under progress.
4.	Andhra Pradesh	Anathapuramu-II Solar Park	500	• DPR submitted. • Land Acquired:4173.37 Acres. • Internal Infrastructure work is under progress.
5.	Arunachal Pradesh	Solar Park at Lohit district,	100	• DPR submitted. • 500 acres of land earmarked by DC, Lohit District. However, formal allotment is still awaited. • Internal Infrastructure work is under progress
6.	Assam	Solar Park at Amguri in Sibsagar district, Assam	69	• DPR under preparation • 230 Acres out of 412.9 acres Land acquired • Internal Infrastructure work yet to start.
7.	Chhattisgarh	Solar Park in Chhattisgarh	500	• DPR for 100 MW submitted. Balance under preparation. • Acquisition & demarcation of land in process • Internal Infrastructure work yet to start.
8.	Gujarat	Radhnesada Solar Power Park, Banaskantha	700	• DPR submitted. • 3517.50 acres of land acquired. • Internal Infrastructure work is under progress. • Transmission infrastructure under development.
9.	Haryana	Solar Park in Haryana	500	• DPR under preparation • Land under identification. • Internal infrastructure work yet to start.
10.	Himachal Pradesh	Solar Park in Himachal Pradesh	1000	• DPR under preparation • Land identified but yet to be acquired. • Internal Infrastructure work yet to be started.
11.	Jammu & Kashmir	Solar Park in Jammu & Kashmir	100	• DPR under preparation • Land identified and under acquisition. • Internal Infrastructure work yet to be started.
12.	Karnataka	Pavagada Solar Park, Karnataka	2000	• DPR Submitted • 11,000 acresland acquired • Internal Infrastructure work is under progress. • Transmission infrastructure under development.

Sl. No.	State	Name of Solar Park	Capacity (in MW)	Status
13.	Kerala	Kasargod Solar Park, Kerala	200	• DPR submitted • Land acquired • Internal infrastructure work under process. • Transmission infrastructure under development. • Solar projects are also being installed.
14.	Madhya Pradesh	Rewa Solar Park, Madhya Pradesh	750	• DPR under preparation • Around 3400 acres acquired. • Internal Infrastructure is under progress. • Transmission infrastructure under development.
15.	Madhya Pradesh	Neemuch-Mandsaur Solar Park	500	• DPR under preparation • 1368 acres in Mandsaur acquired. • Internal infrastructure development at Mandsaur is under progress. • Transmission infrastructure under development. • Solar Projects construction activities are in progress.
16.	Madhya Pradesh	Agar-Shajapur Solar Park	500	• DPR under preparation • Land under acquisition • Internal Infrastructure work yet to be started
17.	Madhya Pradesh	Chhattarpur Solar Park	500	• DPR under preparation • Land under acquisition • Internal Infrastructure work yet to be started.
18.	Madhya Pradesh	Rajgarh-Morena Solar Park	500	• DPR under preparation • Land under acquisition • Internal Infrastructure work yet to be started.
19.	Maharashtra	Solar Park at Sakri, Dhule district	500	• DPR Submitted • Around 1500 acres of land acquired. • Internal Infrastructure development activities yet to be started.
20.	Maharashtra	Solar Park at Dondaicha, district Dhule, Maharashtra	500	• DPR under preparation • Around 1289 acres of land acquired. • Internal Infrastructure development activities yet to be started.
21.	Maharashtra	Patoda Solar Park, Maharashtra	500	• DPR submitted • Around 300 acres of land acquired. • Internal Infrastructure development activities yet to be started.
22.	Maghalaya	Solar Park at	20	• DPR under preparation

Sl. No.	State	Name of Solar Park	Capacity (in MW)	Status
		Suchen&Thamar, Maghalaya		• Land under acquisition. • Internal development activities yet to be started.
23.	Nagaland	60 MW Solar Park at Dimapur, Kohima and New Peren districts of Nagaland.	60	• DPR under preparation • Land under acquisition. • Internal Infrastructure development activities yet to be started.
24.	Odisha	Odisha Solar Park; Odisha	1000	• DPR under preparation • Land under identification
25.	Rajasthan	Bhadla Phase-II Solar Park; Jodhpur (Rajasthan)	680	• DPR submitted • Land acquired • Internal Infrastructure development activities under progress. • Transmission infrastructure under development. • Solar Projects construction activities are in progress. •
26.	Rajasthan	Bhadla III Solar Park, Jodhpur, Rajasthan	1000	• DPR Submitted • Land acquired • Internal development activities under progress. • Transmission infrastructure under development.
27.	Rajasthan	Bhadla IV Solar Park, Jodhpur, Rajasthan	500	• DPR Submitted • Land acquired • Internal development activities under progress. • Transmission infrastructure under development.
28.	Rajasthan	PhalodiPokaran Solar Park; Rajasthan	750	• DPR under preparation • Land identified and under acquisition. • Internal Infrastructure development activities yet to be started. • Transmission infrastructure under development.
29.	Rajasthan	Fatehgarh Phase 1B Solar Park, Jaisalmer, Rajasthan	421	• DPR under preparation • Land under identification. • Internal Infrastructure development activities yet to be started.
30.	Tamil Nadu	Solar Park in Tamil Nadu	500	• The Govt. of Tamil Nadu has been requested to submit alternate proposal of 500 MW solar park after identification of suitable land and implementing agency.

Sl. No.	State	Name of Solar Park	Capacity (in MW)	Status
31.	Telangana	Gattu Solar Park, Mahabubnagar, Telangana	500	• DPR under preparation • 1063 acres of land acquired. • Internal Infrastructure development activities yet to be started
32.	Uttar Pradesh	UP Solar Park	600	• DPR for 440 MW submitted. • 2300 acres of land acquired. • Internal Infrastructure development is under progress. • Transmission infrastructure under development. • Solar Projects construction activities are in progress.
33.	Uttarakhand	SIIDCUL Solar Park, Uttarakhand	50	• DPR submitted. • Land acquisition completed. • Internal Infrastructure development is under progress
34.	West Bengal	Solar park in West Bengal	500	• DPR for 210 MW submitted. • Land acquisition is under process.

Major Issues with the States/ UTs

- State / UT Governments are required to submit commitment to buy at least 20% solar power generated in the solar park.
- States like Assam, Chhattisgarh, Haryana, Himachal, J&K, MP (4 solar parks), Maharashtra (Mahagenco), Meghalaya, Nagaland, Odisha, Rajasthan (Phalodi-Pokaran solar park and FatehgarhPh 1B solar park), Tamil Nadu, Telangana, UP (revised DPR), West Bengal are required to submit the Detailed Project Reports (DPRs).
- Solar Power Parks Developers (SPPDs) are required to expedite acquisition of land.
- SPPDs to expedite issue of NIT for development of internal infrastructures including internal transmission systems.

ii) Defence Scheme for 300 MW

(A) Salient Features:

1) Provision of DCR

2) Two modes for implementation:

a) **Developer mode**: Supplies power at a tariff of Rs. 5.50/ unit for a period of 25 years

b) **EPC mode**: When project is built through EPC Contractor and investment is made by the Defence Establishment

3) Duration: 2014-19

4) Min size: 1 MW & Max size- 20 MW

(B) Provision of VGF :

Cat-I: Rs.2.5 Cr./MW for project capacity upto 5 MW;

Cat-II: Rs. 2 Cr./MW for capacity greater than 5 MW upto 25 MW; and

Cat-III: Rs. 1.5 Cr./MW for project capacity greater than 25 MW.

(C)Projects Sanctioned: 356 MW

(D) Targets & achievements (in MW)

SI.No	Organization	Year wise Commissioning schedule of projects			Total
		2016-17	2017-18	2018-19	
1	OFB, Kolkata	7			7
2	BEL	35	60	55	150
3	BDL	5	10	10	25
4	HAL		15		15
5	Ordnance Factory, Kanpur		5		5
6	MIDHANI		4		4
7	Department of Defence		150		150
	Total	47	244	65	356

Issues with States:

1) Signing of PPAs
2) Connectivity problem with STU/ Discom

iii) Viability Gap Funding for Grid-Connected Solar Projects

Under VGF Scheme, 750 MW, 2000 MW and 5000 MW of Grid connected Solar Power Projects have been taken up. Solar Energy Corporation of India (SECI) has been designated as an implementing agency for these schemes. Till date three VGF schemes have been announce by MNRE. Details of each scheme are given below:

Scheme for Setting up of 750 MW Grid-connected solar PV Projects under JNNSM Phase-II, Batch-I

- Power is purchased by SECI @ Rs. 5.45/kWh and sold @ Rs. 5.50/kWh.
- DCR (375 MW) & Open (375 MW).
- VGF support of Rs. 2.5 Crore per MW (30% of Project cost, whichever is lower)
- Total VGF Disbursement : Rs 644.69 crore
- Rs. 50 crore for Payment Security Mechanism (PSM) to SECI under the scheme.
- So far, 680 MW capacity in 7 States (Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, Karnataka, Tamil Nadu & Odisha) of Solar PV plants is commissioned.

Scheme for Setting up of over 2000 MW Grid connected solar PV Projects with VGF under NSM Phase-II, Batch-III

- Power is purchased by SECI @ Rs. 4.43/kWh and sold @ Rs. 4.50/kWh.
- Project Size is Minimum 10 MW and up to 50 MW (in multiples of 10 MW).
- 2 categories: DCR (250 MW) & Open (1750 MW).
- VGF support of Rs. 1.31 Crore per MW (DCR) & Rs. 1 Crore per MW (Open).
- Projects could be set up in the Solar Parks and also at other locations.
- State-specific tenders based on the demand from particular State.
- SECI has issued RfS for 2510 MW capacity in 7 States/UTs (Maharashtra, Uttar Pradesh, Andhra Pradesh, Chhattisgarh, Karnataka, Puducherry and Himachal Pradesh). LoIs are issued and PPAs are signed for 2295 MW. PSAs have been signed for only 1225 MW.

Scheme for Setting up of over 5000 MW Grid Connected Solar PV Projects with VGF under NSM Phase–II, batch-IV

- Launched in 2015-16, to be implemented in 4 years (1250 MW in each year)
- Power will be purchased by SECI @ Rs. 4.43/kWh and sold @ Rs. 4.50/kWh.

- Project Size is Minimum 10 MW upto 50 MW (in multiples of 10 MW).
- VGF support of Rs. 1.25 Crore per MW (DCR) & Rs. 1.00 Crore per MW (Open)
- Projects could be set up in the Solar Parks and also at other locations. The tenders will be state-specific based on the demand from particular state.
- For 2015-16 and 2016-17, RfS has been issued for 2900 MW capacity in 6 States (Gujarat, Odisha, Andhra Pradesh, Maharashtra, Karnataka and Rajasthan). LoIs have been issued for 1020 MW. PPAs have been signed for 970 MW.

Major issues in VGF schemes

- State Government should facilitate single window for all clearance (regarding land lease, pollution control board, availability of evacuation etc.) to complete the project within time limit.
- Delay in signing of PSA by Discoms with SECI, after acceptance of capacity offered by Ministry.
- State Government should facilitate for evacuation for solar power generated. State Government should notify all the substations in the State along-with available capacity at the time of bidding.
- State Government should reply/response, even with Nil requirement in the States against the capacity offered by the Ministry.
- State Government should support particularly with reference to law and order for the land acquisition.
- Under NSM, every State has been allocated the year-wise Solar Power Capacity to be installed to fulfil RPO. Every State has to adhere to comply the RPO.
- State Government should notify the availability of land and type of land for installation of projects.
- Delay in signing of commissioning certificates by the States.
- As per PSA with SECI, Discoms are mandated to open LC and Escrow account to cover any delay/default in payment by Discoms.
- Allotment of land for solar parks in the states and cooperation of SNA in development of solar parks with SECI.

iv) Scheme for setting up of 15,000 MW of Grid-connected Solar PV Power plants under the National Solar Mission

Government of India had approved the Implementation of Project for setting up of 15,000 MW of Grid-connected Solar PV Power plants under National Solar Mission through NTPC/ NVVN in three tranches as follows:

Tranche-I	**:**	3,000 MW: 2014-15 to 2016-17
Tranche-II	**:**	5,000 MW: 2015-16 to 2017-18
Tranche-III	**:**	7,000 MW: 2016-17 to 2018-19

Currently Tranche-I, is under implementation. In Tranche-I, which is Batch-II of Phase-II of National Solar Mission, 3000 MW capacity of solar PV power plants will be based on bundling of solar power (3000 MW) with unallocated thermal power (1500 MW) in the ratio of 2:1 (in MW terms), for which the required 1500 MW unallocated thermal power has been made available by the Ministry of Power.

Current Status of Tranche-I [3000 MW Bundling Scheme] (as on 31.12.2016):

Based on the requests received from various States for allocation of solar power under the 3000 MW State Specific Bundling Scheme under NSM Phase-II, Batch-II, the following State-wise allocations have been made:

Sl. No.	State/ UT	Capacity allotted in OPEN category (MW)	Capacity allotted in Domestic Content Requirement (DCR) category (MW)	In Solar Parks	Outside Solar Parks	Total Capacity allotted (MW)
1	Andhra Pradesh	1100	150	1250	0	1250
2	Karnataka	500	100	600	0	600
3	Rajasthan	550	100	420	230	650
4	Telangana	350	50	0	400	400
5	Uttar Pradesh	100	00	0	100	100
	TOTAL	**2600**	**400**	**2270**	**730**	**3000**

- Notice Inviting Tender Published for full Tranche-I of 3,000 MW.
- Reverse auction completed: 2750 MW.
- Power Sale Agreement Signed with State Discoms: 2750 MW
- Letter of Intent issued to successful bidders: 2750 MW
- PPAs signed with Solar power developers: 2700 MW.
- Lowest bid for solar power in the country @ Rs. 4.34/unit has been received for solar PV power plants to be set up at Bhadla solar Park in Rajasthan under this scheme

v) NTPC's EPC Projects of Grid-connected Solar PV Power plants

NTPC is also executing EPC projects for installing grid connected solar projects in various States. The consolidated status of NTPC schemes (EPC and Bundling), VGF scheme (750 MW, 2000 MW and 5000 MW) and State/ UT Schemes is compiled as at **Annexure VII.**

STATE-WISE STATUS OF SOLAR POWER PROJECTS UNDER Tranche-I (3000 MW) of 15000 MW (as on 31.12.216)

ANDHRA PRADESH

Sl No	Description of Park/ Project Location	Capacity (MW) / Category	NIT Date	Pre-Bid Meeting date	Last Date of Bid Submission	Techno Comml Bid Opening	Price Bid Opening / RA date	PSA Date	LOI Date	Commissioning Schedule	Status
			Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	
1	**Kurnool Ultra Mega Solar Park**/ Kurnool, AP	**500 MW** (10x50 MW) Open	29-04-2015	17-07-2015	08-09-2015	10-09-2015	03-11-2015	09-01-2016	09-01-2016	*21-04-2017*	PPA signed on 22.03.16 with 1) M/s Sun Edison Rs 4.63 per unit for (10x50 MW)
2		**350 MW** (1x350 MW) Open	21-05-2015	17-07-2015	15-09-2015	17-09-2015	14-12-2015	09-01-2016	09-01-2016	*20-04-2017*	PPA signed on 21.03.16 with 1) M/s SBG Clean Tech (Soft Bank Group) Rs 4.63 per unit for (1x 350 MW)
3		**150 MW** (3x50 MW) DCR	21-05-2015	17-07-2015	15-09-2015	17-09-2015	15-12-2015	09-01-2016	09-01-2016	*21-04-2017*	PPA signed on 21.03.16 with 1) M/s PrayatanaRs 5.13 per unit for (1 x50 MW) 2) M/s Azure Power India Pvt Ltd Rs 5.12 per unit for (2x50 MW)
4	**Kadapa Ultra Mega Solar Park**/ Kadapa, A P	**250MW**	~~23-03-2016~~	~~03-06-2016~~	~~18-07-2016~~	~~20-07-2016~~	x	x	X	x	Tender re-tendered due to changes in plot layouts in solar park. NIT issued on 27.10.2016. Pre-bid meeting to be held on 23.11.16. (25 parties participated). Tech bids opened on 18-12-2016. 12 bids opened. Evaluation in progress. Award by 31.01.2017
		(1x250MW) OPEN	**27-10-2016**	07-12-2016	09-12-2016	18-12-2016	Jan 2017	Jan 2017	Jan 2017		

- Allotted: 1250 MW → Notice Inviting Tender Published: 1250 MW → Reverse auction completed: 1000 MW.
- PSA signed with State Discoms: 1000 MW → LoI issued to successful bidders: 1000 MW → PPAs signed with developers: 1000 MW.

KARNATAKA

Sl No	Description of Park/ Project	Capacity (MW) / Category	NIT Date	Pre-Bid Meeting date	Last Date of Bid Submission	Techno Comml Bid	Price Bid Opening	PSA Date	LOI Date	Commissioning Schedule	Status

	Location					Opening	/ RA date				
			Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	
1	**Pavagada Solar Park**/ Tumkur, Karnataka	**500 MW** (10x50 MW) Open	28-08-2015	13-01-2016	23-02-2016	26-02-2016	12-04-2016	17-05-2016	19-05-2016	*20-07-2017*	**PPA signed w.e.f. 21.06.16 with** 1) M/s Yarrow Infrastructure Ltd Rs 4.78 per unit for 1x50 MW 2) M/s ParamPujya Solar Energy Rs 4.79 per unit for 2x50 MW 3) M/s FortumFinSurya Energy Rs 4.79 per unit for 2x50 MW 4) M/s ACME Solar Holding Pvt Ltd Rs 4.79 per unit for 2x50 MW 5) M/s TATA Power Ren Energy Rs 4.79 per unit for 2x50 MW 6) M/s Renew Solar Pvt Ltd Rs 4.80 per unit for 1x50 MW
2		**100 MW** (2x50 MW) DCR	16-06-2016	12-07-2016	22-08-2016	24-08-2016	21-09-2016	04-11-2016	04-11-2016	*Dec'17*	After signing of PSAs, LOIs issued to following successful bidders on 04.11.16: 1) Tata Power Renewable Energy Limited Rs 4.84 per unit for 1x50 MW and 2) ParamPujya Solar Energy Ptv. Ltd.-Rs 4.86 per unit for 1x50 MW. **PPAs for 50 MW signed.** **PPA for 50 MW yet to be signed**

- Allotted: 600 MW → Notice Inviting Tender Published: 600 MW. → Reverse auction completed: 600 MW.
- Power Sale Agreement Signed with State Discoms: 600 MW → LoI issued to successful bidders: 600 MW → PPAs signed with developers: 550 MW.

RAJASTHAN

Sl No	Description of Park/ Project Location	Capacity (MW) / Category	NIT Date	Pre-Bid Meeting date	Last Date of Bid Submission	Techno Comml Bid Opening	Price Bid Opening / RA date	PSA Date	LOI Date	Commissioning Schedule	Status
			Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	
1	**Bhadla Solar Park Ph-II**/	**420 MW** (6x70 MW)	21-05-2015	24-07-2015	21-09-2015	23-09-2015	18-01-2016	26-02-2016	29-02-2016	*25-05-2017*	PPA signed on 26.04.16 with 1) M/s FortumFinSurya Energy Rs 4.34 per unit for (1 x 70 MW)

	Bhadla, Rajasthan	Open									2) M/s Rising Sun Rs 4.35 per unit for (2 x 70 MW)
										28-05-2017	PPA signed on 29.04.16 with
											3) M/s Yarrow Rs 4.36 per unit for (1 x 70 MW)
										01-06-2017	PPA signed on 02.05.16 with
											4) M/s Solaire Direct Rs 4.35 per unit for (2 x 70 MW)
2	**Rajasthan** (Non Solar Park)	**100 MW** (10x10MW) DCR	03-07-2015	13-08-2015	21-12-2015	23-12-2015	14-03-2016	12-05-2016	13-05-2016	*12-07-2017*	PPAs signed w.e.f. 13.06.16 with 1) M/s JanardanRs 5.06 per unit for 2x10 MW 2) M/s Maharashtra Seamless Rs 5.07 per unit for 2x10 MW 3) M/s SuzlonRs 5.07 per unit for 6x10 MW on 02.08.2016.
3		**130 MW** (13x10 MW)	03-07-2015	13-08-2015	21-12-2015	24-12-2015	12-07-2016	28-07-2016	29-07-2016	*28-09-2017*	**PPAs signed w.e.f 29.08.16.:** 1) M/s Mahindra SustenRs 4.35 per unit for (6X10 MW) on 02.09.2016. 2) M/s ShapoorjiRs 4.35 per unit for (5X10 MW) on 06.09.2016. 3) M/s PrayatnaRs 4.36 per unit for (2X10 MW) on 16.09.2016

Allotted: 650 MW NIT/RA/PSA/LoI/PPA completed for full 650 MW

TELANGANA

Sl No	**Description of Park/ Project Location**	**Capacity (MW) / Category**	NIT Date	Pre-Bid Meeting date	Last Date of Bid Submission	Techno Comml Bid Opening	Price Bid Opening / RA date	PSA Date	LOI Date	*Commissioning Schedule*	**Status**
			Act/Ant	Act/Ant	Act/Ant	Act/Ant	Act/Ant	Act/Ant	Act/Ant	*Act/Ant*	
1	**Telangana**(Non Solar Park)	**350 MW** (35x10MW) Open	09-10-2015	08-12-2015	08-02-2016	10-02-2016	02-05-2016	18-06-2015	20-06-2016	*19-08-2017*	**PPAs signed w.e.f 20.07.2016 with** 1) M/s Acme Solar Holding Pvt Ltd Rs 4.67 per unit for 5x10 MW on 08.08.16 2) M/s Azure Power India Pvt

		Open									Ltd Rs 4.67 per unit for 10x10 MW on 10.08.16 3) M/s ParamPujya Solar Energy Rs 4.67 per unit for 5x10 MW on 23.08.16 4) M/s ReNew Wind Energy (TN2) Private Limited (Subsidiary of Re New Solar Pvt Ltd) Rs 4.66 per unit for 10x10 MW on 30.08.16 5) M/s Karvy Consultants Pvt. Ltd. Rs 4.67 per unit for 5x10 MW on 07.09.16
2		**50 MW** (5x10 MW) DCR	09-10-2015	08-12-2015	08-02-2016	11-02-2016	29-03-2016	18-06-2015	20-06-2016	*19-08-2017*	**PPAs signed on 04.08.16 w.e.f. 20.07.16 with.** 1) M/s Parampujya (Adani Group) Rs 5.19 per unit for 5 x 10 MW

Allotted: 400 MW NIT/RA/PSA/LoI/PPA completed for full 400 MW

UTTAR PRADESH

Sl No	Description of Park/ Project Location	Capacity (MW) / Category	NIT Date	Pre-Bid Meeting date	Last Date of Bid Submission	Techno Comml Bid Opening	Price Bid Opening / RA date	PSA Date	LOI Date	Commissioning Schedule	Status
			Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	Act/*Ant*	
1	**Uttar Pradesh** (Non Solar Park)	**100 MW** (10x10MW) Open	12-08-2015	28-09-2015	23-11-2015	26-11-2015	25-01-2016	15-03-2016	15-03-2016	*28-05-2017*	PPA signed w.e.f. 29.04.16 with 1) M/s Azure Power India Pvt Ltd Rs 4.78 per unit for (5X10 MW) 2) M/s PrayatanaRs 4.78 per unit for (5X10 MW)

Allotted: 100 MW
NIT/RA/PSA/LoI/PPA completed for full 100 MW

vi) **PILOT-CUM-DEMONSTRATION SCHEME FOR GRID CONNECTED SOLAR PV POWER PLANTS ON CANAL BANKS AND CANAL TOPS.**

With the objective of achieving gainful utilisation of the unutilised area on top of canals and also the vacant land along the banks of canals wherever available, the Government of India has approved the implementation of a "Pilot-cum-Demonstration Project for Development of Grid-connected Solar PV Power Plants on Canal-banks and Canal-tops" under National Solar Mission (NSM) announced by the Government of India.

Administrative Approval issued on 5th December, 2014

Target : 100 MW Grid Connected Solar PV Power Plants on Canal Banks and Canal Tops (50 MW on Canal Tops and 50 MW on Canal Banks)

Central Financial Assistance under the scheme:

- **Rs.3 crore/MW or 30% of the project cost, whichever is lower, for Canal Top SPV projects and Rs. 1.5 crore/MW or 30% of the project cost, whichever is lower, for Canal Bank SPV projects.**
- **CFA of upto Rs.225 crore for *100 MW (50 MW on Canal Tops and 50 MW on Canal Banks)* to be disbursed over a period of maximum 2 years post sanctioning of the plants as under:**
  - **upto 40% on sanctioning of the projects.**
  - **60% on successful commissioning of the projects.**
- **Service charge to SECI @1%: Rs.2.25 crore.**

Current Status (as on 31.12.2016):

Based on the requests received from various States for allocation of canal-top/ canal-bank solar power projects under the "Pilot-cum-demonstration project for development of grid connected solar PV power plants on canal banks and canal tops", In-Principle approval given for setting up full targeted capacity of 50 MW canal-top and 50 MW canal-bank solar PV power projects, as follows:

State-wise Allocation of 50 MW Canal-Top Solar PV projects

Sl. No.	**State**	**Implementing Agency in the State**	**Capacity for which in-principle approval has been given (MW)**
1	**Andhra Pradesh**	**New and Renewable Energy Development Corporation of Andhra Pradesh (NREDCAP)**	**1 MW canal-top**
2	Gujarat	SardarSarovar Narmada Nigam Limited (SSNNL)	10 MW canal-top
3	Karnataka	Krishna BhagyaJala Nigam Limited (KBJNL)	10 MW canal-top
4	Kerala	Kerala State Electricity Board Limited (KSEB)	2 MW canal-top
5	Punjab	Punjab Energy Development Agency (PEDA)	20 MW canal-top
6	Uttarakhand	UttarakhandJalVidyut Nigam Limited	1 MW canal-top
7	Uttar Pradesh	Uttar Pradesh Irrigation Department	6 MW canal-top

	Total		**50 MW canal-top**

State-wise Allocation of 50 MW Canal-Bank Solar PV Projects

Sl. No.	**State**	**Implementing Agency in the State**	**Capacity for which in-principle approval has been given (MW)**
1	**Andhra Pradesh**	**Andhra Pradesh Power Generation Corporation Limited (APGENCO)**	**5 MW canal-bank**
2	Gujarat	SardarSarovar Narmada Nigam Limited (SSNNL)	15 MW canal-bank
3	Kerala	Kerala State Electricity Board Limited (KSEB)	1 MW canal-bank
4	Uttarakhand	UttarakhandJalVidyut Nigam Limited	19 MW canal-bank
5	**West Bengal**	**West Bengal State Electricity Distribution Company Limited (WBSEDCL)**	**10 MW canal-bank**
	Total		**50 MW canal-bank**

- Commissioned : **In Bold**

CFA of Rs. 69.0 crore already released by MNRE, through Solar Energy Corporation of India (SECI) to the Project Implementing Agencies of the respective States. Further CFA of Rs. 159 crores (including service charges of SECI) to be released through SECI in 2016-17, 2017-18 and 2018-19.

State-wise Implementation Status

Category	Definition of Category	50 MW Canal-Top Solar PV Projects	**50 MW Canal-Bank Solar PV Projects**
A	Commissioned	**Andhra Pradesh (1 MW)** Total – 1 MW	Andhra Pradesh (5 MW) West Bengal (10 MW) **Total – 15 MW**
B	Commissioning expected in next 3 months (by March 2017)	Gujarat (10 MW) Kerala (2 MW) Punjab (5 MW) Uttarakhand (1MW) Uttar Pradesh (6 MW) **Total – 24 MW**	Gujarat (15 MW) Kerala (1 MW) Uttarakhand (19 MW) **Total – 35 MW**
C	Commissioning expected beyond March 2017	Karnataka (10 MW) Punjab (15 MW) **Total (25 MW)**	--

1.2 Rooftop Solar (RTS) schemes

In a Grid connected RTS plant, the DC power generated from SPV panels during the day time can be utilized for powering captive loads and for feeding excess power to the grid. If solar power is not sufficient due to cloud cover etc., the captive loads are served by drawing power from the grid. NISE has estimated potential of 43 GW for Grid Connected RTS in the country. 1 kWp Solar power can be generated from about 10 sqm area and this would cost about Rs. 75000. RTS systems from 1 kWp upto 500 kWp can be set up on the roofs under the Central programme.

RTS projects provide a clear opportunity as they do not require pooling of land or separate transmission facilities and have minimal technical losses, unlike ground mounted solar projects. Discoms also benefit in multiple ways –

i. RTS project enables them to meet their renewable purchase obligations (RPOs) which are targeted at 8% of electricity consumption, excluding consumption already supplied by hydropower.

ii. Electricity from RTS systems will help them manage daytime peak loads, which are projected to become more widespread as India's economy grows.

iii. Localized generation of power helps avoid the need to buy costly power

iv. RTS systems help utilities address critical issues such as high transmission and distribution losses

v. They make the consumer an active investor & a participant in energy sector.

Solar rooftop has led the development of the solar PV sector across the globe with its ability to replicate rapidly. Realizing, its immense potential, the Government of India has set a target of 40 GW of capacity addition to come through solar PV rooftop systems. Rooftop Solar capacity in the country has risen to 240 MW by March 2016 and to 506 MW by December 2016.

a. Leading States in RTS power are Tamil Nadu, Gujarat and Punjab

b. Among the State/ UT Nodal Agencies, Punjab (Single window system for RTS), Maharashtra (Dedicated Fund through Cess), Gujarat (Innovative Model based on Gross Metering), Chandigarh (City wide RTS), Uttarakhand (Feed In Tariff), Haryana & Chattisgarh (Compulsory RTS for new buildings), Kerala (RTS for BPL households) have undertaken major initiatives for RTS development.

c. DISCOMs, like BESCOM (Bengluru), TANGENDCO (Tamilnadu), MPMKVVCL (Madhya Pradesh), TPDDL (Tata – North Delhi), SPDCTL (Telangana – South) are very progressive in RTS sector.

d. **TWO models** of development of RTS project are popular

i. CAPEX (Ownership Model) - Investment is made by Dept (Rooftop owner) and Bids are invited on project cost

ii. RESCO (PPA Model) - Project investment is made by Developer and Bids are invited on tariff with long term PPA.

e. The **detailed status** of SNA / State wise sanctions and installation is as follows :-

Grid connected Rooftop Solar and Small Power Plants Programme: Target, sanction and Achievement

Sr. no.	States /UTs	Target Total (MWp) by Year 2022	Approval/Sanction (MWp)	Installation(Including Installation by SECI)(MWp)
1	Andhra Pradesh	2000	39.5	13.425
2	Bihar	1000		0.91
3	Chhattisgarh	700	11.2	23.406
4	Delhi	1100	92	35.934
5	Gujarat	3200	61.75	49.025
6	Haryana	1600	75	37.469
7	Himachal Pradesh	320	10	0.331
8	Jammu & Kashmir	450	7	1
9	Jharkhand	800	55	4.3
10	Karnataka	2300	10.935	38.188
11	Kerala	800	15	3.83
12	Madhya Pradesh	2200	115	5
13	Maharashtra	4700	100	51.215
14	Odisha	1000	4	1.581
15	Punjab	2000	25	44.543
16	Rajasthan	2300	31	19.076
17	Tamil Nadu	3500	312	83.617
18	Telangana	2000	74	18.852
19	Uttarakhand	350	51	8.097
20	Uttar Pradesh	4300	7	24.258

Sr. no.	States /UTs	Target Total (MWp) by Year 2022	Approval/Sanction (MWp)	Installation(Including Installation by SECI)(MWp)
21	West Bengal	2100	7	12.017
22	Arunachal Pradesh	50	0	0
23	Assam	250	14	1.179
24	Manipur	50	8.4	0.009
25	Meghalaya	50	0	0.011
26	Mizoram	50	0	0.1
27	Nagaland	50	0	0.504
28	Sikkim	50	0	0.01
29	Tripura	50	0	0.015
30	Chandigarh	100	30.5	11.161
31	Goa	150	2	0.052
32	Dadra and Nagar Haveli	300	0	0.595
33	Daman & Diu		0	0
34	Puducherry	100	0.02	0
35	Andaman & Nicobar Islands	30	1	0.3
36	Lakshadweep		1	0
A	Total	40000	1160.3	491
	Solar Energy Corporation of India*		899.6	84.4
B	Ministry of Railways		502.5	3.7
C	PSUs/Govt. Departments		482	11.37

Sr. no.	States /UTs	Target Total (MWp) by Year 2022	Approval/Sanction (MWp)	Installation(Including Installation by SECI)(MWp)
	Total		3044.4	506
*capacity installed by SECI is included in State-wise list above				
** installation capacity includes both subsidised and non-subsidised projects				

Grid connected Rooftop Solar and Small Power Plants Programme :Policy and Regulatory Status

Sr. no.	States /UTs	State subsidy/Incentives	Maximum % of sanctioned load	maximum allowed capacity	Minimum Capacity	allowed cumulative capacity at DT	Exemption of chief electrical inspector	Mandatory notification
1	Andhra Pradesh	Upto 1kW for domestic 20% For govt. 20 %	100%	1000kW	1kW	60%	Yes upto 10kW	No
2	Bihar	N/A	100%	1000kW	1kW	15%	No	No
3	Chhattisgarh	Rs. 24 per watt for 1kWp to 50 kWp Rs. 15 per watt for 50kWp to 100 kWp	NA	1000kW	50kW	N/A	No	yes

Sr. no.	States /UTs	State subsidy/Incentives	Maximum % of sanctioned load	maximum allowed capacity	Minimum Capacity	allowed cumulative capacity at DT	Exemption of chief electrical inspector	Mandatory notification
4	Delhi	GBI is given @Rs. 2 per unit for residential	NA	NA	1kW	20%	No	No
5	Gujarat	Rs. 10000 per kW limited to R. 20000 for 2kW for residential					No	No
6	Haryana	N/A	100±5%	1000kW	NA	15%	yes	yes
7	Himachal Pradesh	N/A	30% for single part tariff and 80% for double part tariff	1000KW	NA	30%	No	No
8	Jammu & Kashmir	N/A	50%	1000KW	1kW	20%	No	No
9	Jharkhand	20% for residential, Institutional and Social Sector 10 % for commercial and industrial sector	100%	1000kW	1kW	15%	No	No
10	Karnataka	N/A	100%	Sanctioned	1	N/A	No	No

Sr. no.	States /UTs	State subsidy/Incentives	Maximum % of sanctioned load	maximum allowed capacity	Minimum Capacity	allowed cumulative capacity at DT	Exemption of chief electrical inspector	Mandatory notification
				load limited to 1000kW				
11	Kerala	Rs. 7200 per kW limited to 100kW	N/A	1000kW	1KW	80%	No	No
12	Madhya Pradesh	N/A	N/A	10000kW		15%	No	No
13	Maharashtra	N/A	100%	1000kW	NA	40%	No	No
14	Odisha	N/A	100%	1000kW	NA	30%	No	No
15	Punjab	N/A	80%	1000kW	1kW	30%	No	No
16	Rajasthan	N/A	80%	1000kW	1kW	30%	yes	No
17	Tamil Nadu	Rs. 20,000 per kW for residential (limited to 1kW)	100%	Upto sanctioned load	1kW	30%	Yes upto 10kW	No
18	Telangana	N/A	100% for residential and 80% for industrial, commercial and Other consumers	1000kW	1kW	50%	No	No
19	Uttarakhand	20% State Subsidy	NA	500kW	1kW	NA	No	No
20	Uttar Pradesh	N/A	100%	1000kW	1kW	25%	Yes upto 10kW	Yes

Sr. no.	States /UTs	State subsidy/Incentives	Maximum % of sanctioned load	maximum allowed capacity	Minimum Capacity	allowed cumulative capacity at DT	Exemption of chief electrical inspector	Mandatory notification
21	West Bengal	N/A	90% of yearly consumption		5kW		No	No
22	Arunachal Pradesh	N/A	No	No	No	No	No	No
23	Assam	N/A	40%	1000kW	1kW	NA	No	No
24	Manipur	N/A	100%	1000kW	1kW	40%	No	No
25	Meghalaya	N/A	N/A	1000kWp	1kW	15%	No	No
26	Mizoram	N/A	100%	1000kW	1kW	40%	No	No
27	Nagaland	N/A	No	No	No	No	No	No
28	Sikkim	N/A					No	No
29	Tripura	N/A	100%	1000kW	NA	15%	No	No
30	Chandigarh	N/A	100%	NA	1kW	30%	No	yes
31	Goa	N/A	100%	NA	1kW	30%	No	No
32	Dadra and Nagar Haveli	N/A	100%	NA	1kW	30%	No	No
33	Daman & Diu	N/A	100%	NA	1kW	30%	No	No
34	Puducherry	N/A	100%	NA	1kW	30%	No	No
35	Andaman & Nicobar Islands	N/A	100%	NA	1kW	30%	No	No
36	Lakshadweep	N/A	100%	NA	1kW	30%	No	No

1.3 Off-grid and decentralized Solar power schemes:

1.1 Introduction

Under the Off-Grid / Decentralized Solar PV Programme, various off-grid/grid-connected and decentralized photo voltaic systems/ applications up to a maximum capacity of 500 kWp per site are supported to meet/supplement lighting, electricity/power. Solar photovoltaic power plants having unit capacity up to 500 kWp in mini-grid mode for rural electrification is supported under the programme.

The Scheme is implemented through multiple implementing agencies for rapid up-scaling in an inclusive mode. These agencies enable significant reduction in transaction cost and time, since individuals and small groups of clients are in a position to access the provisions of the scheme.

1.2 Salient Feature of the scheme

a) Financial assistance is being provided through 30% capital subsidy to end-users, and 90% for special category States for community projects/ Government departments for installation of solar PV systems.

b) Credit linked Capital subsidy scheme for Solar lighting and pumping for individuals is being implemented through NABARD and regional rural banks / commercial banks.

c) Implemented through program administrators ,State departments, Banks and others (PSU, universities etc.), across the country .

d) Minimal Technical Requirement/ Standards for off grid solar PV plants / systems and solar thermal systems were specified in the guidelines issued, to ensure quality product and systems to be deployed under the program/ mission.

1.3 Present Installed Capacity

Systems	Number as on		During last two year & Current Year
	31.03.2014	30.11.2016	
Solar Lanterns/ Study lamp	959862	1996841	1036979
Home Lights	1099505	1307828	208323
Street Lights	274679	413102	138423
Solar Power Plant (MWp)	85.13	154.25	69.12
Solar Pumps	11626	95539	83913

5.4 Subsidy Pattern under Off Grid Programme

Government provides 30% subsidy on the cost of the system ranging from Rs. 21/- per watt peak to 105/- per watt peak depending upon the capacity of the modules and configuration of the solar photovoltaic systems /plants in General Category States in the country.

For Solar Water Pumping system, the capital subsidy is ranges from Rs. 27,630 per Hp to Rs. 57,600 per Hp depending upon category and capacity.

Cost of Solar Off grid applications including Solar Home lights, Solar Street Lights and Solar Power Plants is mention below :

S.no	**Systems**		**Capacity**	**Systems cost (Rs. per Wp)**	**CFA (Rs. per Wp)**
1	Solar Lanterns, Solar Home Lights and Solar Street Lights (LED), Solar Dome		Up to 40Wp	400	120
2	Solar power packs/SPV power plants (with battery bank @7.2Vah/Wp)		Up to 300Wp	250	75
			> 300Wp to 10kWp	150	45
			>10kWp to 100kWp	130	39
3	SPV power plants (without battery)		Up to 500kWp	80	24
4	Solar Pumps	DC	Up to 2 HP	Rs 144000/HP	Rs. 43200/HP
			>2HP to 5HP	Rs 135000/HP	Rs. 40500/HP
		AC	Up to 2 HP	Rs 126000/HP	Rs. 37800/HP
			>2HP to 5HP	Rs 108000/HP	Rs. 32400/HP
			>5 HP to 10 HP*	Rs 108000/HP	Rs. 32400/HP
5	**Micro Grid**		Up to 10 kWp	Rs 350	Rs. 105
	Mini Grid		>10 to 500 kWp	Rs 300	Rs. 90

These costs mentioned above are based on the Ministry's benchmark cost. Actual cost may vary depending on quality, manufacturer and location.

CFA mentioned above is for General States and would be higher for Special category states for defined User

5.5 Implementation of Off Grid Programme

The Scheme is being implemented through Renewable Energy Service Providing Companies (RESCOs), Financial Institutions including microfinance institutions acting as Aggregators, Financial Integrators, System Integrators and Programme Administrators.

5 Status of Project Sanctioned to states during last two year

Solar Lighting Systems								
Sr No	**Year**	**State**	**Name of the project**	**No of Systems**	**Date of sanction**	**CFA sanction (in lakh)**	**CFA release (in lakh)**	**Status**
1	2014-15	Madhya Pradesh	Home Lights for SC beneficiaries in Ujjain & Alirajpur	4220	12.01.2014	112.67	33.00	No report from SNA
2		Madhya Pradesh	Street Lights for SC beneficiaries in Ujjain&Alirajpur	1000	12.01.2014	56.61	16.65	No report from SNA
3		Mizoram	Street lights for Villages in six districts	4000	09.03.2015	745.74	23.40 21.00 174.60	3200 completed
4		Punjab	Street Lights in SC populated villages	1808	09.03.2015	251.26	74.14	No progress
5	2015-16	Chattisgarh	SPV Street Lights (LED) through Solar Power plants at villages with scheduled cast population	48	19.10.15	183.60	54.00	18 installed
6		Haryana	Solar home systems in all districts	21000	27.05.16	2433.37	472.50	Completed
7		Himachal Pradesh	SPV Street Lighting Systems (LED) in twelve districts	10000	29.09.15	1468.80	432.00	Partially completed

8		Jammu & Kashmir	Home systems in Kupwara	30000	29.02.16	1334.88	388.80	No report from SNA
9		Jammu & Kashmir	Solar street lights in Kupwara district	1000	29.03.16	148.32	-	No progress
10		Karnataka	Street lights in Raichur district	402	03.03.16	19.87	5.77	No report from SNA
11		Manipur	Street lights in state	3000	29.01.16	489.45	142.56	No progress
12		Meghalaya	Street lights in state	1000	29.01.16	163.15	47.52	Tendering done, Under Progress
13		Meghalaya	Solar Power plants and 700 street lights in West Garo Hills	700	29.03.16	180.30	-	No report from SNA
14		Mizoram	SPV power plants with aggregate capacity of 25kWp and 25 no. of street lighting systems	25	23.11.15	42.81	12.47	No report from SNA
15		Nagaland	Solar street lighting systems(LED) in eleven districts	5880	23.10.15	959.29	279.41	No progress
16		Odisha	Solar power plants and street lights at Berhampore University	50	29.01.16	141.52	41.22	No progress
17		Punjab	5058no. of SPV Street Lighting Systems (LED) SPV power plants and 1000no. of 300Wp Solar power packs atvarious locations	5058 1000	16.11.15	459.53	137.86	No Report
18		Punjab	Solar street lights	10000	29.01.2016	494.40	144.00	No Report
19		Rajasthan	25000no. of 37 WP and 85000no. of 100WP Solar home lighting systems in the state of Rajasthan	25000 85000	23.11.15	7709.55	2245.50	Under Progress
20		Tamil Nadu	Solar home system to BPL families	60000	29.01.16	3739.97	10.99.99	Under progress

21		Tamil Nadu	Solar home system to BPL families	60000	22.01.16	3165.09	930.91	Under progress
22		Tamil Nadu	Solar home system to BPL families	60000	02.02.16	4308.43	1267.18	34698 systems installed
23		Uttarakhand	SPV Street lights(LED) in twelve districts	543	29.09.15	79.75	23.00	No progress
24		Uttar Pradesh	Street lights at Dr Ram Manohar lohiya villages	24315	29.02.16	1202.13	350.00	2200 system installed
25	2016-17		Solar home systems	4900 nos.	08.07.2016	70.56	-	
26			Solar hight mast	534 nos.	05.10.2016	90.11	-	
27			Solar home systems	5100 nos.	22.11.2016	73.44	-	
28		Bihar	Solar lanterns	10000 nos.	26.12.2016	48.00		
29		Chattisgarh	Solar high mast lights	400	16.05.2016	231.75	-	
30			Street lights	3044 nos.	16.05.2016	451.48	131.50	
31			Street lights	250 nos.	23.05.2016	0.37	-	
32			Street lights	10110 nos.	27.05.2016	1455.84	436.75	
33			Street lights	1500 nos.	21.06.2016	224.80	64.80	
34		Himachal Pradesh	Solar street lights	15000 no.	26.09.2016	2160	648	

35		Haryana	Solar home systems	21000 nos.	27.05.2016	2362.50	-	
36		J&K	Solar street lights	19013 nos.	30.06.2016	2737.87	821.36	
37			Solar home systems	25000 nos.	16.09.2016	1080	324	
38		Jharkhand	Solar street lights	650 nos.	23.06.2016	100.42	-	
39		Karnataka	Solar home lights Solar street lights	1497 nos. 20 nos.	06.09.2016	38	11.07	
40		Manipur	Solar home systems	7078 nos.	27.05.2016	692.87	-	
41		Odisha	Solar home systems Power plants Street lights Solar pumps Solar power plants	8281 nos. 21kWp 1537 nos. 144 nos.	16.05.2016	954.7	nil	
42		Punjab	Solar street lights	25000 nos.	01.07.2016	1200	-	
43		Sikkim	Solar home systems Solar street lights Solar power plants	1000 nos. 2000 nos. 50 kWp	30.06.2016	485.84	145.75	
44		Tamil Nadu	Solar home lights	10000 nos.	05.10.2016	480	-	

SPV Pumps

Sr No	Year	State	Name of the project sanctioned	No of Systems	Date of sanction	CFA sanction (in lakhs)	CFA release (in lakhs)	Status
1	2014-15	Arunachal Pradesh	Solar Pumps for drinking water through state	100	31.12.2014	47.52	14.00	Under progress
2		Jharkhand	Solar Pumps for Irrigation	1400	09.12.2014	1319.80	392.00	65 no installed
3		Jharkhand	Solar Pumps for drinking water through state	2000	31.12.2014	864.00	259.00	1103 installed
4		Karnataka	Solar Pumps for Irrigation through state	5225	30.09.2014	-	450.00	2769 installed
5		Madhya Pradesh	Solar Pumps for Irrigation through state	3000	30.09.2014	4540.45	540.00 808.65	2593 Solar Pumps installed
6		Madhya Pradesh	Solar Pumps for drinking water through state	750	31.12.2014	324.00	97.00	
7		Madhya Pradesh	Street Lights for SC beneficiaries in Ujjain & Alirajpur	1000	12.01.2014	56.61	16.65	No Report
8		Maharashtra	Solar Pumps for Irrigation	6140	09.12.2014	7915.11	2350.00	527 Solar Pumps installed
9		Maharashtra	Solar Pumps for Irrigation	1400	30.12.2014	1863.00	558.90	
10		Odisha	Solar Pumps for irrigation throughout state	2560	09.12.2014	3141.50	794.61 138.51	536 Pumps installed
11		Odisha	Solar Pumps for drinking water through state	2000	31.12.2014	864.00	259.00	2169 installed
12		Rajasthan	Solar Pumps for irrigation throughout state	2900	30.09.2014	18033.64	522.00	7400 installed
13		Rajasthan	Solar Pumps for irrigation throughout state	660	09.12.2014		279.00	

14		Rajasthan	Solar Pumps for Irrigation through state	600	30.12.2014		277.02	
15		Rajasthan	Solar Pumps for Irrigation through state	5742	24.02.2015		4305.15	
16		Rajasthan	Solar Pumps for drinking water through state	2000	31.12.2014		259.00	133 installed
17	2014-15	Tripura	Solar Pumps throughout state	100	27.02.2015	88.12	25.92	No Report from SNA
18	2015-16	Andhra Pradesh	Solar pumps in the state for irrigation	10000	29.02.16	16524.00	4860.00	1650 installed
19		Gujarat	SPV Power Pumps for Irrigation	3700	29.09.15	2061.61	612.36	2183 installed
20		Haryana	Solar pumps for irrigation purpose	3050	29.02.16	4589.54	1363.23	No progress
21		Maharashtra	Solar pumps	2460	29.01.16	3129.23	929.47	No progress
22		Nagaland	Solar pumps for irrigation	24	15.09.15	17.01	3.90	No progress
23		Rajasthan	SPV Power Pumps	7500	14.12.15	11657.92	3462.75	400 installed
24		Uttar Pradesh	SPV Power Pumps	6000	04.12.15	6340.12	1864.00	2585 installed
25	2016-17	Andra Pradesh	Solar pumps	1415 nos.	29.09.2016	1630.08	489	under implementation
26		Chhattisgarh	Solar pumps	10000 nos.	28.07.2016	15100.87	4500.56	under implementation
27			Solar pumps	3000 nos.	16.09.2016	1215	364.50	under implementation
28		Gujarat	Solar pumps	4000 nos.	30.08.2016	6400.80	1944	under implementation

29		Jharkhand	Solar pumps	660 nos.	15.09.2016	285.12	-	under implementation
30		KarnataKa	Solar pumps	3000 nos.	29.09.2016	4860	1458	under implementation
31		Orissa	Solar pumps	2000 nos.	02.09.2016	864	-	under implementation
32		Uttar Pradesh	Mobile solar pumps	6 nos.	25.10.2016	5.83	-	under implementation

SPV plants/Power packs								
Sr No	**Year**	**State**	**Name of the project**	**System capacity sactioned**	**Date of sanction**	**CFA sanction (in lakh)**	**CFA release (in lakh)**	**Status**
1	2014-15	Bihar	Power Packs (6000no.) For Irrigation through state	60000	25.11.2014 25.11.2015	2727.00		Project extended till 31 march 2017. Under execution
2		Jharkhand	Power Plants Between Deogarh and Basukinath temple	500	05.08.2014 05.08.2015	400.00		400 kW completed.
3		Manipur	Solar Power plants Govt. Institutions	183	13.02.2015 13.02.2016	321.58	94.58	No report from SNA.
4		Meghalaya	Solar power plants Govt. Institutions	221	06.02.2015 06.02.2016	304.92	90.00	No report from SNA
5		Meghalaya	Solar power plants Govt. Institutions	94	06.02.2015 06.02.2016	66.93	19.68	No report from SNA.
6		Mizoram	Solar Power plants Govt. Institutions	399	06.02.2015 06.02.2016	648.24	444.49	50% project compeleted

7		Nagaland	Solar Power Plants (855no.) Govt. Institutions	855	30.01.2015 30.01.2016	1188.70	349.60	200 kW installed.
8		Odisha	Solar power plants JagjibanramChatrawas	250	24.02.2015 24.02.2016	113.62	33.75	Completed
9		Tripura	Solar Power plants Health centres	195	02.03.2015 02.03.2016	294.37	86.58	Under Progress
10	2015-16	Arunachal Pradesh	SPV power plants at villages in Vijaynagar Circle, Changlang district,	150	19.10.15	197.76	57.00	No report from SNA
11		Arunachal Pradesh	Solar power plants at four locations	70	11.03.16	96.30	-	No report from SNA
12		Arunachal Pradesh	Solar power plants in boarder districts	529	28.03.16	806.40	-	No report from SNA
13		Arunachal Pradesh	Solar power plants at hospitals	150	28.03.16	226.44	-	No report from SNA
14		Assam	Solar power plants at seven locations	450	20.11.15	593.28	172.80	No report from SNA
15		Assam	Solar power plants at Guwahati	225	04.03.16	324.10	-	No report from SNA
16		Bihar	Thirty three no. of solar power plants	677	29.01.16	272.93	79.49	No report from SNA
17		Bihar	Solar power plants at eighty locations	2000	29.02.16	795.60	234.00	No report from SNA
18		Chattisgarh	97 no. of SPV Power Plants at police stations and base camps	485	16.09.15	224.79	152.77	476 kW installed. Completed
19		Chattisgarh	167 no. of SPV Power Plants at CHC/PHC	586	19.10.15	268.97	79.00	Completed. PCR awaited
20		Chattisgarh	Solar power plants at schools/health centers/ashrams	857	29.01.16	397.21	115.69	400 kW completed.

21		Chattisgarh	Solar power plants at educational institutions	270	09.02.16	125.14	36.45	No report from SNA
22		Chattisgarh	Solar power plants at various locations	400	29.02.16	160.68	46.80	Completed
23		Chattisgarh	Solar power plants at schools	926	04.03.16	429.20	125.00	No progress
24		Chattisgarh	Solar power plants at individual households	500	30.03.16	231.75	-	206 kW installed. PCR of 150 kW submitted
25		Himachal Pradesh	SPV Power plants at various locations	350	28.08.15	413.50	120.00	Completed
26		Himachal Pradesh	SPV Power plants with aggregate capacity of 60kWp	60	19.10.15	64.89	18.90	50 kW completed
27		Himachal Pradesh	SPV Power plants at six locations	390	31.12.15	208.80	60.84	Tendering done. Under progress
28		Himachal Pradesh	Solar power plants at various locations	341	10.03.16	272.18	80.00	Under progress
29		Karnataka	2kWp capacity SPV Power plant each at 250 no. of police stations	500	16.11.15	231.75	60.00	No report from SNA
30		Maharashtra	Solar power plant at Kudal academy	14	09.03.16	5.62	-	Completed
31		Manipur	Installation of 5kWp SPV power plant each at 13nos. of treasury offices in the state of Manipur	65	17.09.15	99.08	28.86	No report from SNA
32		Manipur	100kWp SPV power plant at NIT, Manipur	100	07.12.15	131.84	38.40	No report from SNA
33		Mizoram	Solar power plants at eight locations	345	04.03.16	454.84	-	No report from SNA

34		Odisha	SPV power plants at Police stations and other Govt. Institutions	431	22.09.15	199.99	58.00	Completed
35		Odisha	24no. of 10kWp SPV power plants at welfare hostels	240	29.09.15	111.24	32.00	No report from SNA
36		Punjab	Solar power plants/packs with at variouslocations	1717	09.05.16	788.33	231.86	No report from SNA
37		Punjab	Solar power plants at welfare homes	90	28.03.16	40.78	-	No report from SNA
38		Sikkim	Solar power plants at CSCs	64	04.03.16	96.61	28.41	No report from SNA
39		Tripura	Solar power plants at PHC, CHC and Sub-divisional hospitals	220	15.01.16	334.76	97.25	No report from SNA
40		Telangana	Solar power plants at household/Govt. buildings	8000	16.03.16	3672.00	1000.00	No report from SNA
41		Uttarakhand	Solar power plants	296	02.02.16	349.84	101.89	No report from SNA
42		Uttarakhand	Solar power plants at nine locations	309	09.02.16	352.26	99.00	No report from SNA
43		Uttarakhand	Solar power plants at thirteen locations	233	04.03.16	286.81	83.53	No report from SNA
44		Uttarakhand	Solar power plants at eighteen locations	402	30.03.15	484.01	-	No report from SNA
45		Uttar Pradesh	Solar power plants at block offices in Agra district	60	04.03.16	27.81	8.10	No report from SNA
46		Uttar Pradesh	Solar power plants at thirteen locations	264	29.03.16	324.07	-	No report from SNA

47		Andra Pradesh	SPV power plants	102 nos. x 1.6kWp	17.05.2016	70.91	20.65	under implementation
48		Arunanchal Pradesh	Solar power plants	400 kWp	28.10.2016	512	-	under implementation
49		Assam	Solar power plants Solar street lights	440kWp 400 nos.	02.06.2016	645.21	189.76	under implementation
50			Solar power plants Solar street lights	410kWp 2400 nos.	29.09.2016	918.96	275.68	under implementation
51			Solar power plants	320kWp	29.09.2016	409.60	122.88	under implementation
52		Bihar	Solar power plants	250kWp	05.10.2016	57.50		under implementation
53	2016 17	Chattisgarh	Spv power plants	403	23.05.2016	185.24		under implementation
54			Solar power packs	500kWp	23.06.2016	231.75	67.50	under implementation
55			Solar power plants	600kWp	30.06.2016	270	81	under implementation
56			Solar power plants	123kWp	29.07.2016	55.35	16.60	under implementation
57			Solar power packs	500kWp	28.07.2016	225	67.50	under implementation
58		Himachal Pradesh	Solar power plants	500kWp	30.06.2016	685.35	205.60	under implementation
59			Solar power plants	60kWp	22.11.2016	72.00	-	under implementation
60			Solar power packs	1kWp x 100 nos.	29.09.2016	149.40	44.82	under implementation

61		Haryana	Solar power plants	2100 kWp	09.09.2016	2898	845	under implementation
62		Jharkhand	Mini-Grid	219kWp	15.06.2016	203.1	-	under implementation
63		KarnataKa	Solar power plants	100kWp	26.12.2016	39.00		under implementation
64		Kerala	Solar power packs	10000 nos.	29.06.2016	4600.35	1350	under implementation
65		Maharashtra	Solar power plants	234 x 2.4kWp	05.10.2016	252.72	-	under implementation
66		Manipur	Soalr power plants	125kWp	24.06.2016	164.80		under implementation
67			Solar power plants Solar street lights	25kWp 700 nos.	17.10.2016	174.88	52.46	under implementation
68		Meghalaya	SPV power plant Solar street lights	50kWp 700 nos.	02.06.2016	443.80	129.26	under implementation
69			SPV power plant Solar street lights	50kWp 1000 nos.	02.06.2016	492.75	143.52	under implementation
70		Mizoram	SPV power plants	95kWp	30.06.2016	118.75	35.62	under implementation
47			SPV power packs	1000 nos.	25.07.2016	247	74.10	under implementation
48		Nagaland	SPV power plants	1305kWp	08.06.2016	1900.31	579.42	under implementation
49			SPV power plants	100kWp	27.07.2016	128	38.40	under implementation
50			SPV power plants	115kWp	29.07.2016	150.20	45	under implementation

51		Odisha	SpV Power Plant	190kWp	08.06.2016	85.50	-	under implementation
52		Punjab	SPV Power Plants	1717.5	09.05.16	790.58	-	under implementation
53		Rajasthan	Solar power packs	100 nos. x 1kWp	02.12.2016	45.00	-	under implementation
54		Tamil Nadu	Solar power packs/power plants	3MW	10.10.2016	1350	-	under implementation
55		Telangana	SPVpower plants	2MW	16.05.2016	1377	-	under implementation
56		Tripura	Solar power plants	50kWp	08.07.2016	103.50	-	under implementation
57		Uttarakhand	SPV power plants	475kWp	15.06.2016	395.55	118.66	under implementation
58			SPV power plants	264kWp	22.07.2016	324.07	94.39	under implementation
59			SPV power plants	402.5kWp	25.07.2016	484.01	142.35	under implementation
60			SPV power plants	80kWp	30.09.2016	57.60	17.28	under implementation
61		Uttar Pradesh	Mini-grid	600kWp	16.09.2016	540	-	under implementation

6 Issues with the States

a. Timely submission of completion of Projects
b. Timely finalization and invitation of tender
c. Timely Submission of Utilization Certificates
d. Avoiding controversial clauses in tenders which favours only few parties.
e. Commitent of State share at the time of submission of proposal
f. Online data maintenance of beneficiary with Adhaar details
g. Timely submission of monthly progress report.
h. Cross checking of validity of test report submitted by the supplier with concerned test lab.
i. Standard bid document to be followed by the States

2. Biomass power and cogeneration schemes:

Biomass has always been an important energy source for the country considering the benefits it offers. It is renewable, widely available, carbon-neutral and has the potential to provide productive employment in the rural areas.

i) Potential

- The current availability of biomass in India is estimated at about 500 million metric tons per year.
- Studies sponsored by the Ministry have estimated surplus biomass availability at about 120 to 150 million metric tons per annum covering agricultural and forestry residues
- This corresponds to a potential of about 18,000 MW power
- This is apart from the 7,000 MW additional power that could be generated through bagasse cogeneration in the country's 550 sugar mills.

ii) States with significant share of the installed capacity

- Biomass power: AP, Chhattisgarh, Maharashtra, MP, Gujarat and Tamil Nadu
- Cogeneration**:** AP, Tamil Nadu, Karnataka, Maharashtra and Uttar Pradesh

iii) Scheme and Promotional Policies in Biomass and Cogeneration Sector

The Ministry is currently implementing the following two programmes during the 12th five year plan:

- "Promotion of Grid-Interactive Biomass Power and Bagasse Cogeneration in Sugar Mills"
- Non-bagasse cogeneration under the "Programme on Energy from Urban, Industrial and Agricultural Wastes / Residues"

iv) Technology

The Thermo-chemical processes for conversion of biomass to useful products involve combustion, gasification or pyrolysis. The most commonly used route is combustion. The

advantage is that the technology used is similar to that of a thermal plant based on coal, except for the boiler.

The cycle used is the conventional ranking cycle with biomass being burnt in high pressure boiler to generate steam and operating a turbine with generated steam.The net power cycle efficiencies that can be achieved are about 23-25%.The exhaust of the steam turbine can either be fully condensed to produce power, or used partly or fully for another useful heating activity. The latter mode is called cogeneration.

v) Achievements so far:

Total Potential: 18000 MW

Total Potential achieved: Installed Capacity 7900 MW (Cumulative till December 2016 with exportable surplus of 4882 MW)

Biomass and Bagasse Cogeneration

Period	Target		Achievement	
	Physical achievement (MW)	Financial Assistance (Rs. in crore)	Physical achievement (MW)	Financial Assistance (Rs. in crore)
FY 2015-16	400	29	400	29
2016-17	400	20	101	10.30

Non-bagasse Cogeneration

Period	Target		Achievement	
	Physical achievement (MW)	Financial Assistance (Rs. in crore)	Physical achievement (MW)	Financial Assistance (Rs. in crore)
FY 2015-16	60	10	60	10
2016-17	60	10	20.75	2.86

vi) Current Challenges

Some major barriers faced in faster realization of available biomass power potential include:

- Inadequacy to raise finances from FIs.
- Lack of reliable information on biomass availability
- Management of biomass supply chain
- Inadequate feed-in-tariff in some of the states
- Grid availability for power evacuation
- Lack of single window clearance for project approvals in many states

  High cost of capital

Financial Incentives of the programme on Biomass Power and Bagasse Cogeneration

Brief description on the scheme components, eligibility criteria and capital financial assistance of the above mentioned schemes are given below. The projects are also eligible for fiscal incentives such as 80% accelerated depreciation, concessional import duty, excise duty, tax holiday for 10 years, etc.

Technology	Eligibility Criteria	CFA (Rs./MW)

Biomass Power		Rs. 20 lakh/MW subject to maximum of Rs. 1.5 crores per project (Rs. 25 lakh/MW for special category states)
Bagasse Co-generation by Private Sector Sugar Mills		Rs. 15 lakh/MW subject to maximum of Rs. 1.5 crores per project (Rs. 18 lakh/MW for special category states)
Bagasse Co-generation in co-operative / public sector sugar mills	40 bar & above steam pressure 60 bar & above steam pressure 80 bar & above steam pressure	40 Lakh/MW 50 Lakh/MW 60 Lakh/MW Subject to maximum of Rs. 6 crores per project
Bagasse Co-generation in sugar mills on BOOT or BOLT basis	60 bar & above steam pressure 80 bar & above steam pressure Minimum export of Power – 5 MW	**40** lakh/MW 50 Lakh/MW Subject to a maximum of Rs 6.00 Crores.
Bagasse Co-generation employing boiler modification	40 bar & above steam pressure 60 bar & above steam pressure 80 bar & above steam pressure Minimum export of Power – 3 MW	20 Lakh/MW 25 Lakh/MW 30 Lakh/MW

Surplus power – Power generated in a sugar mill minus captive power usage, (i.e.) the net grid export

Summary of Financial Incentives of the programme on Non-Bagasse Cogeneration

Technology	Eligibility Criteria	CFA (Rs./MW)
Non-bagasse biomass cogeneration	No minimum / maximum limit on capacity	Rs. 20 lakh/MW subject to maximum of Rs. 1.0 crores per project (Rs. 24 lakh/MW for special category states)

Issues with the States:

The main reasons for slow progress can be attributed to (a) Industry lacks reliable and sustainable biomass supply chain at reasonable price due to Lack of efficient market mechanism of biomass collection, processing, transportation and safe storage (b) Inadequacy to raise finances from FIs both for the establishment of project and working capital

requirement (c) SERCs need to pay tariff at par with CERC for encouragement to biomass sector with viable tariff (d) Delayed payments by discoms (f) PPA not being signed by the state electricity regulators (g) Lack of single window clearance for project approvals in many states (h) Land availability and lack of skilled human resources still lacking to run the power plant at optimal rated capacity.

3. Wind Power Programme:

During the year 2015-16 Ministry have achieved wind power capacity addition of 3423.05 MW, which is ever highest wind power capacity addition in the country during a single year. The present wind power installed capacity in the country is around 28.7 GW which is approximately 61% of the total renewable installed power generation capacity. Now, in terms of wind power installed capacity India is globally placed at 4th position after China, USA and Germany. Government has set an ambitious target of reaching 175 GW renewable installed capacity by 2022 of which 60 GW to come from wind energy.

The State-Wise Cumulative Wind Power Capacity as on 31.12.2016 is given below:

State	**Wind Power Capacity in MW**
Andhra Pradesh	2092.50
Gujarat	4441.57
Karnataka	3119.40
Kerala	43.50
Madhya Pradesh	2288.59
Maharashtra	4666.03
Rajasthan	4216.72
Tamil Nadu	7694.33
Telangana	98.70
Others	4.30
Total	**28665.64**

i) New Policy Initiatives

Ministry has taken various new policy initiative for accelerated deployment of wind power in the country. Brief details of these policy initiative is given below:

a. Amended Tariff Policy

The Amended Tariff Policy notified on 28 January 2016 provides for notification of long-term Renewable Purchase Obligations (RPO) trajectory by Ministry of Power. The MoP has issued RPO trajectory up to 2019 notifying uniform RPO across the country as under:

Year	**Solar**	**Non-Solar**	**Total**
2016-17	2.75%	8.75%	11.50%
2017-18	4.75%	9.50%	14.25%
2018-19	6.75%	10.25%	17.00%

Wind power potential is concentrated in 7-8 windy states and to facilitate the interstate transmission of wind power suitable provisions have been made in the Tariff Policy, waiving the interstate transmission charges and losses for interstate sale of wind and solar power. MoP has already issued order in this regard.

b. Repowering Policy

The Ministry in August 2016 released Policy for Repowering of Wind Power Projects with an objective to promote optimum utilisation of wind energy resources by creating facilitative framework for repowering.

Higher wind capacities and power generation is now possible from wind potential sites occupied by old, de-rated and small capacity wind turbines by using more efficient new technology wind turbines of much higher capacities.

Under this policy initially old projects which have installed wind turbine generators of capacity 1 MW and below would be eligible for repowering. Indian Renewable Energy Development Agency will provide an additional interest rate rebate of 0.25% for repowering projects apart from all fiscal and financial benefits available to the new wind projects.

The state governments will support repowering by augmenting transmission infrastructure, facilitating acquiring additional footprint required for higher capacity turbines, purchase of additional wind power at prevailing rate and relaxing micrositing criteria.

The project developers will also be exempted from any penalties on non-production of electricity during the repowering period.

c. Draft Wind-Solar Hybrid Policy

Solar and wind power being infirm in nature impose certain challenges on grid security and stability. Studies have revealed that solar and winds are almost complementary to each other and hybdridation of two technologies would help in minimising the variability apart from optimally utilising the infrastructure, including land and transmission system.

Accordingly with the objective to provide a framework for promotion of large grid connected wind-solar PV system for optimal and efficient utilisation of transmission infrastructure and land, reducing the variability in renewable power generation and thus achieving better grid stability Ministry issued draft wind-Solar Hybrid Policy.

The goal of the policy is to reach wind-solar hybrid capacity of 10 GW by 2022 and it policy aims to encourage new technologies, methods and way-outs involving combined operation of wind and solar PV plants. The Policy is under process of approval.

d. Wind Bidding Scheme

To enable Discoms of the non-windy States to fulfil their non-solar RPO obligation, through purchase of wind power at a tariff determined by transparent bidding process, a Scheme has been sanctioned. Under the Scheme, 1000 MW wind power projects are envisaged to be set-up in windy States.

The Scheme will be implemented by SECI. Wind Power developers (WPD) will be selected through open and transparent competitive bidding to provide wind power at tariff discovered through e-reverse auction. Trading Company selected by SECI will sign PPA with WPD at bidded tariff and back-to-back Power Sale Agreement (PSA) with Buying Entities at a pooled price of the total bids selected. The duration of PPA and PSA will be 25 years from Commercial Operation Date (COD) of the project.

e. New Guidelines for Development of Onshore Wind Power Projects

To ensure healthy and orderly growth of wind power sector in the country, Ministry issued Guidelines for wind power projects in July 1995, which were revised in June 1996.

Clarifications and modification in the guidelines is were issued by the Ministry from time to time. However, with advancement in the wind turbine technology and requirement to comply various standards and regulations issued by CEA and other regulatory bodies and to

address issues related to micrositing, decommissioning, health and safety, it is felt to issue comprehensive guidelines for development of wind power projects in the country.

Accordingly, Ministry issued new Guidelines incorporating requirement of site feasibility, type and quality certified wind turbines, micrositing criteria, compliance of grid regulations, real time monitoring, online registry and performance reporting, health and safety provisions, decommissioning plan, etc.

ii) Issues for Discussion with States

(a) Signing PPA with Wind Projects.

In some of the States the wind power projects commissioned/ready to be commissioned are waiting for signing of PPA with Discoms. The problem is more sever in the State of Maharashtra where over 550 MW projects are waiting for PPA, some of these projects were commissioned in 2014.

The States are requested to take a stock of wind power projects already commissioned / ready to be commissioned and waiting for PPA to be signed. The issue of signing PPA should be resolved in a time bound mannerthrough necessary clarification/modification in the policy, if required..

(b) Timely payment to Wind Power Generators.

It has been reported by the wind industry that some State Discomsare not making timely payment to the wind power generators. The delay is more than six months and in some cases it is more than one year. This creates serious problems for developers to maintain their cash-flow as they also have to pay-back towards loan liability in time. This also hampers the confidence of banks/financial institutions in funding the wind power projects.

States are requested to evolve a mechanism for timely payment to wind power generators and to ensure that in no case the delay is more than 2 months.

(c) Backing-down of wind power.

Wind Power Generators have reported that under Grid code the wind power has been given MUST RUN status. However, the same is not being honoured by the Discoms and this situation frequently observed during peak windy season causing heavy financial loss to Wind Power Generators.

States are requested to suitable measures for honouring MUST RUN status to R.E. generators.

(d) Forecasting and Scheduling of Wind Power.

Government has scaled-up the targets of wind power to reach 60 GW by 2022. Wind power is infirm in nature and its large scale deployment creates challenges of grid stability and security. These can be address through proper scheduling and forecasting.

The CERC have already notified mechanism for scheduling and forecasting in case of inter-state transmission of solar and wind power. FOR has issued model regulation for intrastate scheduling and forecasting mechanism. States including Andhra Pradesh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan and Tamil Nadu have already issued draft F&S regulations and the State of Karnataka has issued final regulations.

The National Institute of Wind Energy (NIWE), Chennai has undertaken forecasting and scheduling exercise in the State of Tamil Nadu wherein industry association is financing the work taken up by NIWE to provide forecast for the whole state. The pooling station level forecasting being carried out by NIWE has an average accuracy below 10%. Rajasthan and Gujarat have also started this exercise.

For proper forecasting and scheduling it is necessary to put in place metering and communication infrastructure at all pooling stations for real time generation of data. PGCIL is working on establishment of Renewable Energy Management Centres (REMCs) initially in the renewable resource rich states.Tenders for Southern Region including States of Tamil Nadu, Karnataka and Andhra Pradesh have been issued.

The States are requested to start forecasting and scheduling of Wind Power at an early date to enable better balancing and absorption of wind energy, and to create the communication infrastructure required for the purpose.

(e) Bidding of Future Projects:

Wind power potential is concentrated in 7-8 windy states and the wind power is required to be transmitted to non-windy states in order to fulfil their non-solar RPO requirement.

To facilitate the interstate transmission of wind power, the Central Government through recent amendment in the Tariff Policy has made a provision for waiving of interstate transmission charges and losses for interstate sale of wind and solar power. An order to give effect to said provision has already been issued by the MoP.

In order to facilitate the interstate sale of wind power through suitable price discovery mechanism Ministry has sanctioned a scheme for purchase of wind power through bidding process for interstate sale to non-windy state to fulfil their RPO requirement. SECI has floated bids and the bid closing date is 9th January 2017.

The non-windy States are requested to work out their requirement of wind power to enable early signing of Power Supply Agreement (PSA) between Discoms and PTC (Trader selected under the Scheme).

(f) Timely Completion of Projects:

Many of good potential sites have been blocked/squatted in some windy States by individuals/organizations for extended periods in the name of wind resource assessment or project development. During the last interaction meet with States held in MNRE on 2 September 2015, it was deliberated that state will assess all blocked good wind potential sites. The States may either give a last opportunity to them for developing the project(s) or get the site evicted for fresh allocations. It was also suggested that future allocation of land should be in transparent process with a time line say 2-3 years which should be strictly adhered to. Ministry has issued guidelines, which provides for development of projects and start of commissioning activities within 4 years of allotment/permission of land use given by Government.

States are requested to assess such sites blocked in the state and issue notice for last opportunity to develop the project within a time frame.In case on non-compliance of time lines, the site should be evicted for fresh allocations. Further, future allocation of land should be in transparent process with strictly adherence to the given time line.

(g) Evacuation & Transmission Infrastructure

The wind power projects already registered with the States have apprehension about the timely availability of evacuation and transmission infrastructure. This would be one of reasons that these developers are deferring the execution of projects.

The states need to put pro-active efforts to make available the evacuation and transmission facilities to developers in time. Further, the States are requested to identify the wind potential areas and estimate likely generation capacity to help advance planning of transmission system. The proposals for creating transmission infrastructure for renewable power projects may be posed for funding under Green Energy Corridors project.

(h) Rationalization Transmission & Wheeling Charges.

States except MP & Maharashtra the intra-state transmission & wheeling charges for renewable are same as for conventional power. In such a case, these charges are effectively 3-4 times per unit for renewable power as compared to conventional power due to low CUF of renewable power.

Under Tariff –Policy inter-state transmission charges and losses are already waived. Rationalising the intra-state transmission & wheeling charges on kWh basis will facilitate both intra-state as well as inter-state sale of renewable power.

(i) Repowering of old/small capacity wind turbines.

Wind power development in India commenced in early 1990s, during this initial period wind turbines of 225 kW to 500 kW unit size were installed at hub heights starting from 26 meter. In contrast, today the most popular wind turbine unit sizes in India ranges from 1 MW to 2 MW. The hub height of wind turbines has increased to about 80m to 100 m today. The standard commercially available wind turbine size has now moved up to 3000 kW.

The old wind turbines in the less than 500 kW range are still in operation in large numbers in many of the states such as Tamil Nadu, Gujarat, Madhya Pradesh and Maharashtra. Studies reveal that about 20% of the total wind installations in India has less than 500 kW rating totalling to around 3500 MW. It would also be worthwhile to note that most of these turbines have been installed at Class I wind sites with high wind power potential.

Most of these wind turbines have attained an age of 15-20 years and are underperforming. In order to optimally utilise the available wind resource at these wind rich sites, there is need for taking up the repowering activities on a priority basis.

States are requested to assess repowering potential in the stateand support repowering by Strengthening of transmission system from pooling station onwardsand facilitating additional footprint required for higher capacity wind turbines.

4. Small Hydro Power programme:

The promotion of Small Hydro Power (SHP) continues to be one of the thrust areas for generating grid quality power from renewables. In keeping with the overall objectives of the Ministry to promote deployment of renewable power generation projects to augment contribution of renewable in total electricity mix, the objective of small hydro programme is to increase the current growth rate and take the total installed capacity of SHP projects to reach above 5,000 MW by 31st March 2022.

i) Present Status :

So far, 1076 small hydropower projects aggregating to 4333 MW have been set up in various parts of the country and 231 projects of about 785 MW are in various stages of implementation.

ii) CFA Details :

DSI & Preparation of DPR

States / Capacity	**Upto 1 MW**	**Above 1 MW**
All States	Rs. 6.00 lakh	Rs. 10.00 lakh

New SHP projects in State sector:

Areas	**Above 100 KW & upto 1000 KW**	**Above 1 MW & upto 25 MW**
N. E. States, J & K, H.P. & Uttarakhand (Special Category States)	Rs. 75,000 per KW.	Rs. 7.5 Crores / MW limited to Rs.20 crore per project.
Other States	Rs. 35,000 per KW.	Rs. 3.5 Crores / MW limited to Rs.20 crore per project.

New SHP projects in private / co-operative:

Category	**Above 0.1 MW – 25 MW**
N E Region, J & K, H.P. & Uttarakhand (Special Category States)	Rs. 1.5 crore/ MW limited to Rs. 5.00 crore per project
Other States	Rs. 1.0 crore/ MW limited to Rs. 5.00 crore per project

iii) **Renovation & Modernization of old SHP projects in public sector :**

Areas	**Upto 1000 KW**	**Above 1 MW & upto 25 MW**
All States & Uts	Rs. 10,000 per KW	Rs. 1.00 crore/ MW limited to Rs.10.00 crores per project

iv) Watermills and Micro Hydel Projects:

S. No.	**Category of Watermill**	**Amount of CFA**
i.	Mechanical output only	Rs. 50,000/- per Watermill
ii.	Electrical output (up to 5 kW) or Both mechanical and electrical output (up to 5 kW)	Rs. 1,50,000/- per Watermill
iii.	Micro Hydel (for all States)	Rs.1,25,000/- per kW

v) <u>Achievement made during 2014-15, 2015-16 and 2016-17 (upto 31/12/2016)</u>

The 12th Plan target for small / mini hydro is 1200 MW, out of which 938.34 MW has been achieved till 31.12.2016. Financial allocation for the small hydro programme for the 12th Plan is of Rs. 825 crore. The target of 5,000 MW of installed capacity from small hydro projects is proposed to be achieved by 31.3.2022. Target for 2017-18 is 150 MW. Status of State-wise projects and issues are given below:

POTENTIAL, INSTALLED & UNDER IMPLEMENTATION (as on 31.08.2016)								
Sl. No.	State	Potential		Projects Installed		Projects under Implementation		
		Nos.	Total Capacity (MW)	Nos.	Capacity (MW)	Nos.	Capacity (MW)	Issues
1	Andhra Pradesh &Telengana	387	978.4	71	232.98	14	40.94	APTRIPCO, A consultant approached MNRE for release of payment.
2	Arunachal Pradesh	677	1341.38	152	104.605	13	10.45	May expedite their commitment for achieving 500 MW by 2022. A hydro electric project of Devi energies pvt. Ltd. At Phudung (Siding Kho) River in West Kameng District with capacity – 24 MW(3X8 MW). Scheme Components – Barrage, Spill way, under sluice, head regulator etc. project layout – Rs.255 Cr including power evacuation. The work under this project are not carried out with proper norms like proper survey for feeder channel, use of stone chips of mountain (fragile stone) instead of using proper chrusher stone chips in the construction Barrage channels etc.
3	Assam	119	238.69	6	34.11	3	12	May expedite their commitment for achieving 750 MW by 2022.
4	Bihar	93	223.05	29	70.7	13	26.9	Submission of UC for releases, completion of MNRE supported projects otherwise Ministry may cancel the project at present stage of BHPC may be asked for refund. Implementation of North Koel Project on (Bihar and Jharkhand)
5	Chattisgarh	200	1107.15	10	76	4	91.25	DPR preparation pl expedited – some more projects may be taken as State has potential.
6	Goa	6	6.5	1	0.05	0	0	May please release and take up implementation.
7	Gujarat	292	201.97	6	16.6	9	57	Expedite completion of MNRE sanctioned project submission of UC.
8	Haryana	33	110.05	9	73.5	0	0	There is no significant activity of SHP in the state. The State to prepare a master plan for systematic exploitation of Untapped SHP potential
9	Himachal Pradesh	531	2397.91	179	793.81	22	38.5	Expedite their commitment to achieve 750 MW by 2022.

10	J&K	245	1430.67	39	156.53	33	36.8	J & k reconstruction plan - JKEDA to submit PFR for new project (10 numbers) - JKEDA to expedite preparation of DPR. - KREDA to submit correct cost of preparation of DPR. - LERI- KREDA to adhere to the schedule for completion of SHP projects. - JKEDA may expedite their commitment to achieve 500 MW by 2022. - LREDA to review their site selection and expedite completion.
11	Jharkhand	103	208.95	6	4.05	8	34.85	May please send proposal for DPRs on prescribed applied format along with PFR.
12	Karnataka	834	4141.12	165	1217.73	14	73.75	May expedite their commitment to achieve 250 MW by 2022.
13	Kerala	245	704.1	31	205.02	12	72.75	- Expedite completion of SHP projects with in sanctioned project duration. - Completion f DPRs including detailed survey and investigation. - All the state are requested to compiling and furnishing the following information:- Name of the project. Capacity of the project(kW), cost of the project, Project duration as per DPR , actual time , actual amount spent on the project, levellized tariff, SERC tariff, cost per MW, Rate agreed with DISCOM in PPA. For all MNRE supported SHP projects
14	Madhya Pradesh	299	820.44	11	86.16	3	4.9	identified SHP potential is 820.41 MW. Exploited is 90 MW. State may make efforts to exploit remaining SHP potential.
15	Maharashtra	274	794.33	64	346.175	5	30.35	Expedite to achieve 200 MW SHP by 2022.
16	Manipur	114	109.13	8	5.45	3	2.75	1. The State to identify viable projects and submit for MNRE support. 2. The State to announce the policy for private sector participation in the SHP sector. 3. State to expedite allotment of sites to
17	Meghalaya	97	230.05	4	31.03	3	24.2	The State needs to involve private sector for faster development of SHP projects in the state.
18	Mizoram	72	168.9	18	36.47	1	0.5	1. The State needs to involve private sector for faster development of SHP projects in the state. 2. The State to prepare a master plan for systematic exploitation of hydro potential
19	Nagaland	99	196.98	12	30.67	2	2.2	The State needs to involve private sector for faster development of SHP projects in the state

20	Orissa	222	295.47	10	64.625	4	3.6	GEDCOL completion of DPRs (2 projects) Efforts to remaining potential. Expedite to achieve 100 MW by 2022.
21	Punjab	259	441.38	54	170.9	4	4.75	- PSEB may seek extension for Mukerian SHP project informing the completionand expedite to complete. - Submit UC for funds release. - PEDA expedites to complete 100 MW by 2022.
22	Rajasthan	66	57.17	10	23.85	0	0	May take suitable action to exploit balance potential. **Parliament matter**– Rajasthan govt. has been requested repeatedly to inform status and any future plan of Hydro Production Centre on Mahi and regarding water supply inbhikbhaiSagwada Canal.
23	Sikkim	88	266.64	17	52.11	1	1.5	UC
24	Tamil Nadu	197	659.51	21	123.05	0	0	1. State to identify viable projects and submit for MNRE support. 2. State needs to involve private sector for faster development of SHP projects in the
25	Tripura	13	46.86	3	16.01	0	0	1. The State to prepare a master plan for systematic exploitation of hydro potential. 2. The State to identify micro hydro / water mill potential sites and take up some projects with community participation. 3. The State needs to involve private sector for faster development of SHP projects in
26	Uttar Pradesh	251	460.75	9	25.1	1	1.5	Seek extension of Khara SHP project. - Expedite completion within extended duration.
27	Uttarakhand	448	1707.87	101	209.32	44	139.54	UC – UJVNL Expedite to achieve 500 MW by 2022.
28	West Bengal	203	396.11	24	98.5	17	84.25	Project proposals are to be submitted with documents of land transfer/ possession and other statuary clearances.
29	A&N Islands	7	7.91	1	5.25	0	0	2.66 MW unexploited SHP potential may be implemented.
Total		**6474**	**19749.44**	**1076**	**4333**	**231**	**785.23**	

All States are requested to compile and furnish the following information -

S No.	Name of the project.	Capacity of the project(kW	cost of the project	Project duration as per DPR	actual time in implementation	actual amount spent on the project	levellized tariff	SERC tariff	cost per MW	Rate agreed with DISCOM in PPA

5. National Biogas programme:

The Ministry of New and Renewable Energy (MNRE) is promoting setting up of biogas plants under the Central Sector Scheme, National Biogas and Manure Management Programme (NBMMP).

The National Biogas and Manure Management Programme (NBMMP) aims at for setting up family type biogas plants for meeting cooking energy and lighting needs of mainly rural and semi-urban households of the country. The scheme provides numerous benefits to the users along with mitigating the causes of the climate change. There is an initial estimated potential of about 12 million family type biogas plants in the country based on the cattle dung waste substrate. Against which, a cumulative total of about 49.09 lakh (4.90 million) family type biogas plant have been installed in the country upto 2015-16. This shows that about 40.8% of the potential has been covered / harnessed.

Family Type Biogas Plant are good assets and households avenues to meet clean cooking fuel requirements mainly for rural and semi-urban households and also provides organic bio-manure simultaneously as by-product. The salient features of the National Biogas and Manure Management Programme (NBMMP), are as given below-

- To provide clean gaseous fuel mainly for cooking, lighting and organic manure to rural and semi-urban households.
- To mitigate drudgery of rural women, reduce pressure on forests and accentuate social benefits.
- To improve sanitation in villages by linking sanitary toilets with cattle dung based biogas plants.
- To provide bio-digested slurry as a source of upgraded organic enriched bio-manure to reduce use of chemical fertilizers.
- To meet "lifeline energy" needs for cooking as envisaged in "Integrated Energy Policy" of the Planning Commission, now National Institution for Transforming India (NITI) Aayog.
- To help in mitigation and combating climate change by preventing emission of Green House Gases (GHGs) such as Carbon Dioxide and Methane into the atmosphere.

i) Rates of Central Financial Assistance (CFA) under the Scheme of NBMMP

Rates of Central Financial Assistance (CFA) for different approved component of National Biogas and Manure Management Programme (NBMMP) w.e.f. 08.05.2014 are given in the **Table-I:-**

Sl. No.	**Particulars of Central Financial Assistance (CFA) & States / Regions and Categories**	**Family Type Biogas Plants under NBMMP (1 to 6 cubic metre capacity per day)**	
A.	**Central Subsidy Rates Applicable (In Rs.)**	**1 Cubic Metre**	**2- 6 Cubic Metre**
1.	NER States, Sikkim (except plain areas of Assam) and including SC and ST Categories of NE Region States.	15,000	17,000
2.	Plain areas of Assam	10,000	11,000
3.	Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Niligiri of Tamil Nadu, SadarKurseong&Kalimpong Sub-Divisions of Darjeeling, Sunderbans (W.B.) and Andaman &	7,000	11,000

	Nicobar Islands.		
4.	Scheduled castes / Scheduled Tribes of all other States except NE Region States including Sikkim	7,000	11,000
5.	All Others	5,500	9,000
B.	**Turn-Key Job Fee including warranty for five years and quality control (in Rs. per plant).**	Rs.1500/- per plant for fixed dome Deenbandhu type and floating gasholder KVIC type brick masonry models. Turn Key Job Fee also provided for biogas plants with prefabricated material	
C.	**Additional CFA for toilet linked Biogas Plants (in Rs. per plant).**	1,200/-	
D.	**Administrative Charges – for physical target range of biogas plants (in Rs.)**		
1.	100-3,000	**1,00,000^**	
2.	3,001-7,000	**10,50,000^^**	
3.	Above 7,001	**24,50,000 ***	
E.	**Training support per course (in Rs.)**		
1.	Users Course	3,000	
2.	Staff Course	10,000	
3.	Construction-cum Maintenance / Refresher Course	45,000	
4.	Turn-key Workers & Management Course for TKWs / RETs / SHGs/ Officials of SND / SNA / Banks / FIs & Companies / Entrepreneurs.	75,000	
F.	**Biogas Development & Training Centres.**	As per the pattern of CFA and staff strength / positions conveyed vide Ministry's sanction letter No. 19-3/2011-BE (Pt.) dated 16th November, 2011 and dated 2nd March, 2012 and annual outlay allocated year-wise.	
G.	**Support for Communication & Publicity as per the target range of Biogas Plants (In Rs.)**		
1.	**Up to 1,000**	2,00,000	
2.	**1,001-10,000**	4,00,000	
3.	**More than 10,000**	6,00,000	
H.	**Support for Repair of Non-functional Plants with the restriction of utilization of upto 5% of the annual outlay of the programme, earmarked for the year for the concerned of SND/SNA/UT.**	50% of the applicable central subsidy rate subject to sharing of 50% of the cost of repair by the respective beneficiary.	
Household size Family Type Biogas Plants under NBMMP			
^ Extra Rs.400 per plant in excess of 100 biogas plants.			
^Extra Rs.350 per plant in excess of 3000 biogas plants.			
* Extra Rs.300 per plant in excess of 7,000 biogas plants **subject to maximum of Rs.60.00 lakh (Rupees Sixty Lakh).**			

Under the scheme of National Biogas and Manure Management Programme (NBMMP) annual physical targets for setting up of family size biogas plants are allocated to the designated State Nodal Agencies /Departments, Khadi and Village Industries Commission (KVIC) and Biogas Development and Training Centres (BDTCs). The targets and achievements under the NBMMP during the previous2 years and current year are given below in the **Table-2**.

Sl.	Name of State	2014-15	2015-16	2016-17

No.		Target (Nos. of biogas plants)	Achievement	Target	Achievement	Target	Achievement (upto 30.11.2016)
1.	**Andhra Pradesh**	10440	10555	10200	10343	10200	3857
2.	**Arunachal Pradesh**	50	3	50	0	100	0
3.	**Assam**	7500	7500	7600	7600	9000	5140
4.	**Bihar**	0	1	0	3	0	0
5.	**Chhattisgarh**	4000	2736	4150	2213	3050	365
6.	**Goa**	100	12	100	78	100	17
7.	**Gujarat**	4000	1349	3800	1595	2500	566
8.	**Haryana**	1700	1008	1650	790	1000	169
9.	**Himachal Pradesh**	250	154	230	114	150	49
10.	**Jammu & Kashmir**	100	28	100	84	100***	0
11.	**Jharkhand**	100	54	100	142	200	21
12.	**Karnataka**	15500	9198	16000	7049	10000	2202
13.	**Kerala**	4000	2971	4000	2642	2850	741
14.	**Madhya Pradesh**	10400	7673	10700	6796	8000	1589
15.	**Maharashtra**	14400	14825	14660	14577	14500	6392
16.	**Meghalaya**	250	0	250	0	200	0
17.	**Mizoram**	500	260	500	280	500	67
19.	**Nagaland**	300	250	300	0	300	0
20.	**Odisha**	5100	4145	5100	2930	4000	574
21.	**Punjab**	10250	7856	10650	4281	5000	1065
22.	**Rajasthan**	1100	1013	1050	568	1000	272
23.	**Sikkim**	200	139	200	170	250	0
24.	**Tamilnadu**	500	579	450	308	300	42
25.	**Telangana**	9900	9900	9900	9099	12300	4357
26.	**Tripura**	400	40	350	165	400	40
27.	**Uttar Pradesh**	1800	1417	1750	1239	1100	462
28.	**Uttarakhand**	900	937	960	1454	1400	753
29.	**West Bengal**	0	279	0	185	0	0
30.	**Puducherry**	-	-	50	0	0	0
31.	**KVIC, Mumbai**	6260	*	6200	*	8000#	906
32.	**BDTC, IIT Guwahati**	-	-	-	-	500	0
33.	**BDTC, IIT Delhi**	-	-	-	-	500	0
34.	**BDTC, UAS, Bangalore**	-	-	-	-	1000	0
35.	**BDTC, PAU, Ludhiana**	-	-	-	-	1500	59
TOTAL :		**110000**	**84882**	**111000**	**74705****	**100000**	**29705****

[* KVIC achievements are included in the States' achievements.]
[** Figs. are provisional and to be firmed up with the audited figures.]
[# For KVIC, Mumbai, national target 8000 {6500 (5700 Gen.+800 NEZ) and 1500 SCP target}]
[***Subject to settlement of outstanding amount of previous years released to the State Govt. of J&K]

ii) Challenges in Implementation of the NBMMP and steps taken to deal with -

As revealed from the Table-2 above, during the year 2014-15 and 2015-16, the achievements under the NBMMP were 77.2 % and 67.3% respectively of the annual targets

allocated to the States. The major reasons for shortfall in physical targets during previous two years have been -

- Back-to-back drought conditions of 2014-15 and 2015-16, due to which the out of pocket spending power of potential beneficiaries/ farmers required for upfront contributions for installation of biogas plants was restrained.
- The increase in costs of construction of biogas plant mainly due to increase in prices of cement, sand, bricks and steel and balance of equipment which are the major contributors in total cost of a biogas plant, have resulted in lower installations of household biogas plant.

iii) Targets and progress during current year 2016-17 and Issues

The annual target of setting up 1.00 lakh biogas plants under NBMMP for the year 2016-17 had been allocated to the States vide MNRE sanction No. 5-1/2016-BG (NBMMP) dated 17.05.2016. The State-wise progress received upto 30.11.2016 as given in last column of Table-2 above, indicates that overall only about 30% of the targets have been achieved. The slow progress is an important issue to be considered for addressing by all the State Nodal Agencies. The NBMM programme was reviewed in the meeting held on 03.10.2016, chaired by Secretary, MNRE. Various actions were recommended in the meeting to expedite the progress. As a result the progress of October, 2016 was satisfactory. However, the progress of November, 2016 has again dropped considerably which needs to be analyzed and the shortfall to be made good in the following months. The progress of NBMMP for the month of December, 2016 is awaited from most of the programme implementing SNAs/SNDs and KVIC.

States are requested to review the progress and devise the strategy at implementation level, otherwise, there should be no reason for shortfall in achieving the targets.

The SNAS/ SNDs as well as KVIC and BDTCs may also send the details , if there is any change , required for additional or reduction in annual targets of the current year.

For faster implementation the action recommended during the last review meeting held on 03.10.2016 was that the programme should be implemented by targeting 25 % of the current year's targets to be achieved through prefabricated biogas plants from among the MNRE approved design biogas plants. SNAs should have decided on this aspect and go for tendering process.

iv) Addressing the challenges / issues in implementation of the programme –

- Continuous and regular monitoring of progressis required at district and SNA Head Office level. MNRE has written letters to District Collectors in this regard and SNAs to follow up .
- Actions are to be fast paced on the minutes of the National review meeting held on 3rd October, 2016, under the Chairmanship of Secretary, MNRE,
- Letters have been written to other concerned Ministries such as MoEF, MoCA, MoPNG, MoAFW, Dept. of ADH and Dept. of AC&FW for incorporating and integrating the scheme in their related schemes and issuance of directions to the line Departments of States under them.
- Review of the programme at States' level.
- Monitoring the work of Biogas Development and Training Centres (BDTCs) and holding review meeting of BDTCs under the National Biogas programme.
- Publicity campaigning through print and paper and radio programmesand on Doordarshan is to be given very high priority.

v) Proposed actions taken to avoid shortfall of achievements during the current year (2016-17)

In addition to the steps as given above, the following additional measures may be taken up during this year -

- Construction of Biogas plants with the integration of labour component of MGNREGA under the National Biogas and Manure Management Programme (NBMMP) wherever possible to meet the labour work component of the biogas plants.
- Selection of Villages as " Biogas Villages"on 100 % basis and also to have coverage in SAGY Villages.
- Based on the feedback reports and reviewmeeting of progress of all States for current year upto 03.10.2016 under the Chairmanship of Secretary MNRE, additional instructions have been issued to all the States programme implementing Agencies, Departments and KVIC and BDTCs to review the progress of implementation at District levels and State level to achieve at least the 55% targets upto the end of third quarter i.e. upto 31.12.2016. States are yet to report the achievements against this task set for the 31.12.2016.
- Letters to the District Collectors are being also written to monitor closely their district targets and achieve the same for the current year.

vi) Physical Targets for the next year, 2017-18 and Indicative yearly targets upto 2021-22

As also discussed during the last review meeting of the NBMMP held under the chairpersonship of Secretary MNRE, in the Agenda there was a point that all the States were to give the State's indicative figures of physical targets for small biogas plants for the period from 2017-18 to 2021-22 which is awaited from the SNAs/ SNDs, this may be provided to the Ministry for formulation of new scheme on National Biogas Programme for small biogas plants. In this regard States may consider their targets under the wider range of Small Biogas Plants in 1 cubic metre to 25 cubic metre capacity instead of the present range of 1 to 6 cubic matre capacity biogas plant in Family Type.

vii) Independent Evalaution of the NBMMP implemented during the period 2012-13 TO 2016-17 , 12th Five Year Plan Period.

MNRE has entrusted an independent evaluation study for the Scheme of the National Biogas and Manure Management Programme (NBMMP) to a consultancy organization for having independent evaluation of the programme implemented during the 12th Five Year Plan period (**2012-13 to 2016-17) in** 10 selected States, viz, **Assam,Sikkim, Odisha, Rajasthan, Gujarat, Maharashtra, Telangana, Kerala, Chhattishgarh and Punjab**. Letters in this regard have already been written to the concerned SNAs and SNDs including KVIC and BDTCs to take the note and extend the support to the selected consultancy organization, M/s. Spectrum Planning (India) Limited, A-50, Asoka Enclave-II, Sector 37, Faridabad ,Harayana in carrying out the study in a systematic and smooth manner. The study will be starting any time during the month of January, 2017.

6. State-wise status of Renewable Purchase Obligations (RPOs) :

I. Compliance status of RPO by states and issues involved therein.

- Development of renewable energy largely hinges on the regulatory framework that has been created under the Electricity Act 2003 and imitating policies. Pursuant to the section 86 (1) (e) of the Electricity Act, the State Electricity Regulatory Commissions (SERCs) have issued RPO regulations. Further, RPO compliance does not put extra burden on the Distribution Companies (discoms) as the cost incurred on purchase of renewable power is allowed to be included in the retail tariff.

- An analysis of the State-wise renewable energy consumption for the year 2015-16 suggests that the States of Meghalaya, Karnataka, Nagaland, Himachal Pradesh, Andhra Pradesh, Tamil Nadu, Maharashtra, Rajasthan, Gujarat, Haryana, Madhya Pradesh, Chhattisgarh, Punjab and the Union Territory (UT) of Andaman and Nicobar achieved above 60 percent RPO compliance. The remaining States and UTs could only achieve less than 60 percent RPO compliance. The state wise RPO Compliance for 2015-16 is given at **Annexure-I.**

- Considering the actual RPO level specified by the SERCs for the year 2016-17, it is estimated that 25 States/UTs require over 2030 MW solar power capacity to fulfil the solar RPO. Further considering the RPO level as per RPO trajectory specified by MoP, it is estimated that 30 States/UTs require over 8270 MW solar power capacity to fulfil the solar RPO during 2016-17. Details of Solar power deficit States given at **Annexure-II & III** respectively.

- Similarly, considering the actual RPO level specified by the SERCs for the year 2016-17, it is estimated that 22 States/UTs require over 9080 MW non-solar power capacity to fulfil the non-solar RPO. Further considering the RPO level as per RPO trajectory specified by MoP, it is estimated that 22 States/UTs require around 15000 MW non-solar power capacity to fulfil the non-solar RPO during 2016-17. Details of Non-Solar power deficit States given at **Annexure-IV & V** respectively.

- On 28 January 2016, revised Tariff Policy has been notified vide resolution No. 23/2/2005-R&R (Vol-IX) and **published** in the Gazette of India. Promotion of renewable generation sources has now been added as an objective of the Tariff Policy. The Policy has provisions such as : a) 8 % solar RPO by the year 2022; b) Renewable Generation Obligation on new coal/lignite based thermal plants; c) fully depreciated power plants whose PPAs have expired can now bundle renewable power with power from plants; and d) renewable energy has been exempted from inter-state transmission charges. Main provisions in the revised Tariff Policy pertaining to renewable energy are enclosed at **Annexure-VI.**

- In pursuant to the revised tariff policy, the Ministry of Power on 22 July 2016 has notified the long term growth trajectory of RPO for solar and non-solar energy for next 3 years from 2016-17, 2017-18 and 2018-19 as under:-

Year	**2016-17**	**2017-18**	**2018-19**
Non-solar	8.75%	9.50%	10.25%
Solar	2.75%	4.75%	6.75%

Total	**11.50%**	**14.25%**	**17.00%**

- So far only three states namely Andhra Pradesh, Madhya Pradesh and Rajasthan have issued draft regulations for aligning RPO trajectory as per the notifications from the Ministry of Power. These are as follows:-

1. Andhra Pradesh

Year	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Non-Solar	9.50%	10.25%	11.00%	11.75%	12.50%
Solar	4.75%	6.75%	8.75%	10.75%	12.75%
Total	**14.25%**	**17.00%**	**19.75%**	**22.50%**	**25.25%**

2. Madhya Pradesh

Year	**2017-18**	**2018-19**
Non-Solar	9.50%	10.25%
Solar	4.75%	6.75%
Total	**14.25%**	**17.00%**

3. Rajasthan

Year	**2017-18**	**2018-19**
Wind	8.20%	8.75%
Biomass	1.30%	1.50%
Solar	4.75%	6.75%
Total	**14.25%**	**17.00%**

Request to States

i. Ensure RPO Compliance by increasing the share of renewable energy;

ii. States have an option to comply RPO either through purchase of Renewable power or through purchase of REC. Due to non-RPO compliance, REC inventory is increasing; and

iii. States shall align RPO level as suggested in the revised Tariff Policy and long term RPO trajectory as declared by the Ministry of Power on 22 July 2016.

II. Huge inventory of unsold Renewable Energy Certificates (RECs):

There has been huge backlog piling up due to non-purchase of REC by states to comply the RPO compliance gap. The total REC inventory till 31 December 2016 was 18.58 Million (14.35 Million Non-Solar and 4.23 Million Solar RECs).

Request to States

States are requested to ensure RPO compliance including through purchase of RECs.

7. Human Resource Development Programmes:

i) The broad objective of Human Resources Development Programme of the Ministry is to institutionalise the renewable energy education and training framework in the country to meet the upcoming requirement of qualified and

trained manpower at different levels in foreseeable future. To achieve this broad objective, the programme contains various components as follows:

- Upgradation of lab and library facilities in selected higher educational institutions and erstwhile IREP training Centres located at Delhi, Lucknow, Bengaluru and Anand.
- Institution of Renewable Energy Chairs in selected higher educational institutions to act as focal point for the Ministry
- Providing fellowships at post-doctoral/ PhD level and for M.Tech/MSc courses in Renewable Energy
- Development of model course curricula, course modules for ITI/technicians, Diploma, under-graduate and post graduate level
- Identification of various job-roles in RE sector and preparing National Occupational Standards (NOSs)/Qualification Packs(QPs) corresponding to these job roles as per National Skill Qualification Framework (NSQF) in collaboration with Sector Skill Council for Green Jobs (SCGJ) and Power Sector Skill Council (PSSC).
- Supporting organisation of short-term training programmes as per developed NOSs/QPs to educational/training institutes
- Support for innovation through CIIE IIM Ahmedabad
- Support to SNAs and DISCOMs by way of providing services of consultants for identification, development of projects, their execution, monitoring and evaluation etc.

ii) Support for organising short-term training programmes is done as per Common norms issued by Ministry of Skill Development which include

- Course fee @ 38/hour/trainee
- Boarding lodging @ Rs.200-300/per trainee per day
- Assessment fee

iii) Suryamitra Skill Development programme is being implemented at present to train 50000 persons by March 2020 as per state-wise targets and progress given below. As may be seen from the Table. Similar programme may also be supported

for meeting manpower in other sectors also, if demands received from States, based on requirement.

Progress of Surya Mitra training in different states					
State/UTs	**Targets of Suryamitras to be trained by March 2020**	**Number of Surya Mitra training programmes required**	**Number of training programmes required per annum**	**Number of training institutes enrolled for providing training in 2016-17**	**Achievement by 30.09.2016**
Delhi	500	17	3	1	75
Haryana	1000	33	7	1	133
Himachal Pradesh	500	17	3	0	0
Jammu & Kashmir	700	23	5	2	30
Punjab	2000	67	13	0	30
Rajasthan	2500	83	17	4	178
Uttar Pradesh	5000	167	33	9	314
Uttrakhand	500	17	3	4	131
Chandigarh	100	3	1	0	0
Goa	400	13	3	1	62
Gujarat	2000	67	13	7	660
Chhattisgarh	2000	67	13	6	381
Madhya Pradesh	4000	133	27	13	281
Maharashtra	4000	133	27	29	810
D. & N. Haveli	10	0	0	0	0
Daman & Diu	10	0	0	0	0
Andhra Pradesh	4000	133	27	21	600
Karnataka	2500	83	17	6	360
Kerala	2000	67	13	4	88
Tamil Nadu	2500	83	17	13	300
Puducherry	50	2	0	3	90
Bihar	2500	83	17	3	120
Jharkhand	2000	67	13	1	0
Orissa	2500	83	17	9	330
West Bengal	2500	83	17	2	30
Sikkim	200	7	1	0	0
Assam	2500	83	17	5	90
Manipur	500	17	3	1	30
Meghalaya	250	8	2	0	0
Nagaland	200	7	1	1	30
Tripura	250	8	2	1	39
Arunachal Pradesh	200	7	1	1	30
Mizoram	200	7	1	0	0
Andaman & Nicobar	100	3	1	0	0

Lakshadweep	100	3	1	1	0
Telengana				7	270
All India	50270	1676	335	156	5492

iv) Following specific issues are for consideration of States:

- Each SNA has been sanctioned one consultant @Rs. Six lakh per annum (Rs 50000/month). Some of States have bben sanctioned more number of consultants also depending on specific demands from their side. Provision of providing upto five consultants per State is envisaged in the Administrative Approval. Some of the States have already engaged these consultants, but most of the States have not reported status of utilisation of this provision.

- SNAs may give specific suggestions for strengthening them so that a programme can be evolved for that. AREAS forum may be used for raising such suggestion.

- SNAs may analyse specific training needs for the type of projects being promoted in their states, and can come up with specific proposal for organising such trainings for financial support (based on common-norms).

- SNAs may identify ITIs in their States to undertake such training programme and may work for their capacity building in this area. A provision of Rs 5 lakh per ITI is available to incorporate additional training equipment in each ITI, as basic instrumentation is already available there.

- SNAs may take help of institutions already supported under lab and library upgradation component, in capacity building of their own officials. Support can be provided for this under short-term training programme component of the HRD programme.

v) Research, Development and Demonstration (RD&D) Programme

Research & Development Programme of the Ministry aim at resource assessment, technology development, demonstration and commercialization. The Ministry supports Research, Design, Development and Demonstration (RDD&D) to develop new and renewable energy technologies, processes, materials, components, sub-systems, products & services, standards and resource assessment so as to indigenously manufacture renewable energy devices and systems. The underlying purpose of RDD&D efforts is to make industry competitive and renewable energy generation supply self-sustainable/profitable and thereby contribute to increase share in total energy mix in the country. The RD&D efforts are continued with emphasis on cost reduction and efficiency improvement.

vi) Policy and Guidelines

The MNRE has been supporting Research and Development (R&D) to various R&D/academic institutions, NGOs, industries, etc. in the field of solar, wind, biogas, biofuel, Hydrogen, Fuel Cells, geothermal, etc. for technology development and demonstration leading to commercialization. A comprehensive policy and guidelines for research, development and demonstration (RD&D) for new and renewable energy sector is in place. It

has a provision for financial assistance of up to 50% of the project cost for the projects that involve partnership with industry / civil society. However, for a proposal from academic institutions, Government/non-profit research organizations and NGOs, the MNRE provides upto 100% funding. The guidelines have special focus on core-support to R&D institutions to strengthen their expertise in the specific area for technology development and deployment and technology validation and demonstration projects in association with industry to facilitate commercialization in the country. In addition, the MNRE has established three institutes, namely, National Institute of Solar Energy (NISE), National Institute of Wind Energy (NIWE) and National Institute of Bio Energy (NIBE) for R&D, testing and evaluation in solar, wind and bioenergy, respectively.

The focus areas for R&D are solar energy, wind hybrid systems, biogas, biofuels, hydrogen, fuel cells and related components. R&D projects undertaken have strengthened R&D/ academic institutes, industries for furthering RD&D for technology development for commercialization. In solar photovoltaics, the focus has been on indigenous development of solar cells with improved efficiency at par with international level, with cost reduction. Crystalline silicon solar cell of 18% efficiency has been developed at lab scale. R&D efforts are continuing for improvement of efficiency with cost reduction. R&D in solar thermal power provided feedback on operational aspects of the technology for further development. R&D in hybridization of solar and wind is being pursued for ensuring improved energy supply from renewable energy. In addition, R&D efforts are going on for design, development and demonstration of hydrogen and fuel cells for power generation and other uses.

A total amount of Rs.446.78 crore has been spent on RD&D during the current Five Year Plan till February2016 on R&D during the last four years and the current year.The R&D efforts have led to design and development of solar water heating system, solar cookers, solar photovoltaic system, biogas plants, improved biomass cookstoves, gasifiers, biomass cogeneration, etc.

vii) Thrust Areas for RD&D

The MNRE organized a day long "Brainstorming Consultations Meeting on RD&D" on 5th January 2016 under the chairmanship of Secretary, MNRE for reviewing and for identifying thrust areas for RD&D. "Thrust Areas with Action Plan for RD&D" prepared in the said meeting was adopted for implementation by MNRE.

viii) IMPRINT Programme

The MNRE is also partner to the MHRD initiated Programme on Impacting Research Innovation and Technology (IMPRINT). IIT Kanpur is the National Coordinator of the programme. Under this programme, MNRE has to share 50% of the cost of projects recommended by the Apex Committee. The balance 50% cost is to be shared by MHRD. Secretary, MNRE is the member of the Apex Committee. The funds for such projects will be provided under the RD&D Programme.

ix) National Lab Policy for Testing, Standardization and Certification

As follow up to the recommendation of the National Workshop that was organized by MNRE on 10th September 2015, the MNRE has prepared a draft "National Policy for Renewable Energy Sector for Testing, Standardization and Certification" for quality control of the renewable energy systems/components. The said policy has brought out the clarity about testing and standardization making the testing and standardization mandatory and suggesting the plan for implementation. The draft document has been approved by Secretary, MNRE and Hon'ble Minister. The Lab Policy will be released in a National Workshop on the subject likely to be held in February 2016 in New Delhi.

x) Technical Regulation for Renewable Energy

As follow up to a meeting taken by Department of Commerce on 27.11.2015 regarding adopting technical regulation of products, the MNRE prepared Technical Regulation for SPV Systems/Components under BIS Act for quality control. The draft

Technical Regulation has been approved by Hon'ble Minister and sent to Ministry of Law for vetting. Thereafter the same will be submitted to Department of Commerce for consideration of notifying to Technical Barriers to Trade(TBT) Committee of WTO and then seeking comments for other countries.

Annexure-I

State-wise RPO Compliance for the year 2015-16

States/UTs	Electricity Consumed 2015-16 (MU)	RPO Solar	RPO Non-Solar	RPO Total	RPO (% Compliance)	RPO Compliance level
Andaman and Nicobar	127	1.15%	2.80%	3.95%	374.6%	Above 100%
Meghalaya	3242	0.40%	0.60%	1.00%	203.5%	
Karnataka	77605	0.25%	10.00%	10.25%	126.5%	
Nagaland	980	0.25%	7.75%	8.00%	113.2%	
Himachal Pradesh	14037	0.25%	12.00%	12.25%	111.8%	
Andhra Pradesh	60087	0.25%	4.75%	5.00%	103.4%	
Tamil Nadu	103816	2.00%	9.00%	11.00%	81.7%	Between 60-100%
Maharashtra	150571	0.50%	8.50%	9.00%	79.4%	
Rajasthan	73394	2.50%	8.90%	11.40%	78.9%	
Gujarat	105230	1.75%	8.25%	10.00%	76.1%	
Haryana	48466	1.00%	2.75%	3.75%	73.9%	
Madhya Pradesh	58890	1.00%	6.00%	7.00%	70.6%	
Chhattisgarh	23614	1.00%	6.25%	7.25%	70.2%	
Punjab	54820	0.19%	3.81%	4.00%	67.2%	
Uttarakhand	13054	0.30%	9.00%	9.30%	57.9%	Less than 60%
West Bengal	52607	0.25%	5.25%	5.50%	55.6%	
Lakshadweep	52	1.15%	2.80%	3.95%	50.0%	
Kerala	24769	0.25%	4.85%	5.10%	49.0%	
Mizoram	699	0.25%	8.75%	9.00%	43.9%	
Uttar Pradesh	124074	1.00%	5.00%	6.00%	43.0%	
Tripura	1502	1.15%	1.85%	3.00%	41.0%	
Telangana	50842	0.25%	4.75%	5.00%	40.4%	
Arunachal Pradesh	755	0.20%	6.80%	7.00%	34.9%	
Odisha	30231	0.30%	6.70%	7.00%	20.5%	
Puducherry	2579	1.15%	2.80%	3.95%	15.7%	
Jammu & Kashmir	23612	2.00%	7.00%	9.00%	14.3%	
Assam	9760	0.25%	6.75%	7.00%	13.3%	
Bihar	23608	1.25%	4.25%	5.50%	12.7%	
Delhi	25820	0.35%	8.65%	9.00%	5.5%	
Chandigarh	1561	1.15%	2.80%	3.95%	5.5%	
Daman & Diu	2223	1.15%	2.80%	3.95%	4.8%	
Jharkhand	21693	1.00%	3.00%	4.00%	2.3%	
Dadar & Nagar Haveli	5691	1.15%	2.80%	3.95%	0.2%	
Goa	4246	1.15%	2.80%	3.95%	0.0%	
Manipur	1125	0.25%	4.75%	5.00%	0.0%	

Annexure-II

Solar Power Capacity Deficit States as per actual RPO for 2016-17

(Capacity in MW)

S. No.	State	Solar Capacity Required to fulfill Solar RPO	Solar Capacity available (as on 31.12.2016)	Deficit in solar capacity
1	Arunachal Pradesh	1.30	0.27	1.04
2	Assam	50.05	11.18	38.87
3	Bihar	129.48	95.91	33.57
4	Chhattisgarh	156.75	135.19	21.56
5	Delhi	68.02	38.78	29.24
6	Goa	28.16	0.05	28.11
7	Haryana	307.69	53.27	254.42
8	Himachal Pradesh	17.15	0.33	16.82
9	Jammu & Kashmir	158.36	1.00	157.36
10	Jharkhand	226.66	17.51	209.15
11	Kerala	35.33	15.86	19.47
12	Maharashtra	861.66	430.46	431.20
13	Manipur	1.51	0.00	1.51
14	Mizoram	1.14	0.10	1.04
15	Meghalaya	5.56	0.00	5.56
16	Nagaland	1.10	0.50	0.60
17	Odisha	253.20	77.64	175.56
18	Sikkim	4.39	0.00	4.39
19	Tripura	47.95	5.00	42.95
20	Uttar Pradesh	573.69	239.26	334.43
21	West Bengal	155.46	23.07	132.39
22	Chandigarh	12.71	6.81	5.91
23	Daman & Diu	18.55	4.00	14.55
24	Dadar & Nagar Haveli	49.56	0.00	49.56
25	Puducherry	24.72	0.03	24.69
	Total	**3190.15**	**1156.21**	**2033.94**

Annexure-III

Solar Power Capacity Deficit States as per MoP RPO Trajectory for 2016-17

(Capacity in MW)

S. No.	State	Solar Capacity Required in MW to fulfill Solar RPO	Solar Capacity available as on 31.12.2016	Deficit in solar capacity
1	Arunachal Pradesh	13.31	0.27	13.04
2	Assam	112.64	11.18	101.46
3	Bihar	255.06	95.91	159.15
4	Chhattisgarh	425.69	135.19	290.50
5	Delhi	482.49	38.78	443.71
6	Goa	67.34	0.05	67.29
7	Gujarat	1548.74	1158.50	390.24
8	Haryana	772.33	53.27	719.06
9	Himachal Pradesh	64.45	0.33	64.12
10	Jammu & Kashmir	95.09	1.00	94.09
11	Jharkhand	399.69	17.51	382.18
12	Karnataka	961.82	340.08	621.74
13	Kerala	264.88	15.86	249.02
14	Madhya Pradesh	979.97	840.35	139.62
15	Maharashtra	2253.33	430.46	1822.87
16	Manipur	9.35	0.00	9.35
17	Mizoram	7.90	0.10	7.80
18	Meghalaya	17.57	0.00	17.57
19	Nagaland	8.00	0.50	7.50
20	Odisha	342.11	77.64	264.47
21	Punjab	667.92	571.20	96.72
22	Sikkim	4.52	0.00	4.52
23	Tripura	18.42	5.00	13.42
24	Uttarakhand	165.32	45.10	120.22
25	Uttar Pradesh	1438.02	239.26	1198.76
26	West Bengal	772.80	23.07	749.73
27	Chandigarh	15.31	6.81	8.50
28	Daman & Diu	44.36	4.00	40.36
29	Dadar & Nagar Haveli	118.52	0.00	118.52
30	Puducherry	59.10	0.03	59.07
	Total	**12386.06**	**4111.44**	**8274.62**

Annexure-IV

Non-Solar Power Capacity Deficit States as per actual RPO for 2016-17

(Capacity in MW)

S. No.	State	Non-Solar Capacity required to fulfill Non-Solar RPO	Non-Solar Capacity available as on 31.12.2016	Deficit in non-solar capacity
1	Assam	114.11	34.11	80.00
2	Bihar	334.57	114.12	220.45
3	Chhattisgarh	744.58	355.90	388.68
4	Delhi	1277.68	16.00	1261.68
5	Goa	52.11	0.05	52.06
6	Haryana	643.08	118.80	524.28
7	Jammu & Kashmir	421.23	156.53	264.70
8	Jharkhand	401.94	4.05	397.89
9	Kerala	520.95	248.52	272.43
10	Maharashtra	6548.63	6268.76	279.87
11	Manipur	17.99	5.45	12.54
12	Odisha	384.86	84.63	300.23
13	Punjab	971.46	335.65	635.81
14	Telangana	1215.15	98.70	1116.45
15	Tripura	36.44	16.01	20.43
16	Uttarakhand	665.26	285.33	379.93
17	Uttar Pradesh	2180.04	906.10	1273.94
18	West Bengal	1535.96	124.50	1411.46
19	Chandigarh	23.53	0.00	23.53
20	Daman & Diu	34.33	0.00	34.33
21	Dadar & Nagar Haveli	91.71	0.00	91.71
22	Puducherry	45.74	0.00	45.74
	Total	**18261.31**	**9173.20**	**9088.11**

Annexure-V

Non-Solar Power Capacity Deficit States as per MoP RPO Trajectory for 2016-17

(Capacity in MW)

S. No.	State	Non-Solar Capacity required to fulfill Non-Solar RPO	Non-Solar Capacity available as on 31.12.2016	Deficit in non-solar capacity
1	Assam	272.38	34.11	238.27
2	Bihar	616.77	114.12	502.65
3	Chhattisgarh	1029.40	355.90	673.50
4	Delhi	1166.75	16.00	1150.75
5	Goa	162.84	0.05	162.79
6	Haryana	1867.63	118.80	1748.83
7	Jammu & Kashmir	229.94	156.53	73.41
8	Jharkhand	966.53	4.05	962.48
9	Kerala	640.52	248.52	392.00
10	Manipur	22.60	5.45	17.15
11	Meghalaya	42.50	31.03	11.47
12	Odisha	827.28	84.63	742.65
13	Punjab	1615.15	335.65	1279.50
14	Telangana	2092.73	98.70	1994.03
15	Tripura	44.53	16.01	28.52
16	Uttarakhand	399.78	285.33	114.45
17	Uttar Pradesh	3477.41	906.10	2571.31
18	West Bengal	1868.77	124.50	1744.27
19	Chandigarh	37.02	0.00	37.02
20	Daman&Diu	107.27	0.00	107.27
21	Dadar & Nagar Haveli	286.61	0.00	286.61
22	Puducherry	142.92	0.00	142.92
	Total	**17917.32**	**2935.48**	**14981.85**

Annexure-VI

Revised Tariff Policy 2016
Major Provisions relating to Renewable Energy

Para 4.0: The objectives : (e) Promote generation of electricity from Renewable sources;

Para 5.11 c) Depreciation:
Power from those plants of a generating company, where either whose PPAs have expired or plants have completed their useful life, may be bundled with power from renewable generating plants to be set up through the process of bidding or for which the equipment for setting up such plant is procured through competitive bidding. In such cases, power from such plants can be reallocated to beneficiaries purchasing power from renewable energy generating plants on the principles to be decided by Appropriate Government. The Obligated Entities which finally buy such power shall account towards their renewable purchase obligation to the extent of power bought from renewable energy generating plants.

The scheduling and despatch of such conventional and renewable generating plants shall be done separately.

Para 6.4 Renewable sources of energy generation including Co-generation from renewable energy sources:

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

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

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

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

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

obligated entities enabling the latter to meet their renewable power purchase obligations. The REC mechanism should also have a solar specific REC.

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

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

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

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

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

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

Provided further that in case any existing coal and lignite based thermal power generating station, with the concurrence of power procurers under the existing Power Purchase Agreements, chooses to set up additional renewable energy generating

capacity, the power from such plant shall be allowed to be bundled and tariff of such renewable energy shall be allowed to be pass through by the Appropriate Commission. The Obligated Entities who finally buy such power shall account towards their renewable purchase obligations.

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

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

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

Explanation: "Renewable Energy Service Company" means an energy service company which provides renewable energy to the consumers in the form of electricity.

8.0 Distribution

Micro-grids supplying renewable energy are being set up in such areas where the grid has not reached or where adequate power is not available in the grid. Investment involved in setting up of such microgrids is substantial.

One of the risks of investment is grid reaching the area before the completion of the project life and thereby making power from micro grids costly and unviable. In order to mitigate such risk and incentivize investment in microgrids, there is a need to put in place an appropriate regulatory framework to mandate compulsory purchase of power into the grid from such micro grids at a tariff to be determined under section 62 of the Act considering depreciated cost of investments and keeping in view industry benchmark and with a cap if necessary, as approved by the Appropriate Commission. The Appropriate Commission shall notify necessary regulations in this regard within six months.

Para 8.5 Cross-subsidy surcharge and additional surcharge for open access

8.5.1 SERCs may calculate the cost of supply of electricity by the distribution licensee to consumers of the applicable class as aggregate of (a) per unit weighted average cost of power purchase including meeting the Renewable Purchase Obligation; (b) transmission and distribution losses applicable to the relevant voltage level and commercial losses allowed by the SERC; (c) transmission, distribution and wheeling charges up to the relevant voltage level; and (d) per unit cost of carrying regulatory assets, if applicable.

Annexure-VII

Consolidated Status of NTPC schemes (EPC and Bundling), VGF scheme (750 MW, 2000 MW and 5000 MW) and State/ UT Schemes
State-wise tenders under various schemes as on 15.12.2016 w.e.f 01/04/2015

Sl. No	State	NPTC-NSM(Bundling scheme)	NTPC-EPC Project	SECI-VGF	SECI-PMC+ Other CPSU	Under State policy
1	**Andhra Pradesh (4196 MW)** PPA signed: 1846 LOI issued: 0 In process: 1850 Cancelled: 500	**500 MW(**Kurnool S.P.) **PPA signed w.ef 22/03/16** Sun Edison- 500 MW	**250 MW (DCR)** (**Ananathapura SP**) Commissioned 100 MW: Tata power 50 MW: Lanco 50 MW: BHEL 50 MW: sterling Wilson	**400 MW (**Ananthapur S.P.) PPA signed on 16.09.2016 100 MW: FRV Solar 150 MW: ACME 100 MW: Tata Power 50 MW: Azure **100 MW(DCR)** (Ananthapura SP) e RA scheduled on 14.12.16 **500 MW** (Kadappa S.P.) Last date of bid submission: 23.12.16 **150 MW(DCR)** (Kadappa SP) Last date of bid submission: 23.12.16 **100 MW** (storage) (Kadappa SP) Last date of bid submission: 20.12.16	**10 MW**(PMC-VPT) LOI issued	**500 MW** (EPC mode) Under Solar Park **Cancelled/Retender**
		350 MW(Kurnool S P) * PPA signed wef 21/03/16 SBG Cleantech(Soft Bank) **150 MW)(DCR) (**Kurnool SP) * PPA signed wef 21/03/16 50 MW : Prayatana(Adani) 100 MW: Azure	**125 MW** (Ananthapur S P) • Board has approved award of 125 MW subject to investment approval & PPA signing. • PPA to be signed with Discom • Successful Bidder			**186 MW** (From previous PPA) Commissioned

			Vikram Solar			
		250 MW (**Kadapa S P**) • Retender due to change in plot layout in solar park • Pre-bid meeting held on 23.11.16	**625 MW** (Ananthapur S P) • RA completed on 20/10/16 • Successful bidder: 250 MW: Mahindra Susten 125 MW: Sterling Wilson 125 MW: Jackson 125 MW: Tata power • PPA to be signed with Discom			
2	**Rajasthan: (1675 MW)** PPA signed: 925 LOI issued: 0 In process: 750 Cancelled: 0	**420 MW**(Bhadla II Solar Park) PPA signed on 26.04.16/29.04.16/02.05.2016 70 MW- Fortum 140 MW- Rising Sun 140 MW- Yarrow 140 MW- Solaire Direct	**260 MW(DCR)** (Bhadla-II Solar Park) Award placed on31.03.16 130 MW: Vikram solar 65 MW: Jackson 65 MW: Tata Power	**500 MW**(Bhadla III Solar Park, Saurya urja) Tender issued on 08.11.16 Last date of bid submission: 23.12.16	**10 MW** (SECI Own project) Commissioned	
		100 MW(DCR)(Non solar park) • PPA signed on 13/06/16 20 MW- Janardan 20 MW- Maharashtra Seamless 60 MW- Suzlon		**250 MW** (Bhadla IV Solar Park, Adani) Tender issued on 08.11.16 Last date of bid submission: 22.12.16	**5 MW** (Indo-Pak scheme) Commissioned	
		130 MW(Non solar park) • PPA signed wef 29/08/16 60 MW: Mahindra Susten 50 MW: Shapoorji 20 MW: Prayatna				
3	**Telangana: (3008 MW)**	**50 MW(DCR)** (Non solar park) PPA signed wef 20/07/16 with Prayatna			**15 MW** (OFB Medak, under Defence scheme)	**1988 MW** PPA signed

	PPA signed: 3003 LOI issued: 5 In process: 0 Cancelled: 0	**350 MW** (Non solar park) PPA signed wef 20/07/16 50 MW: Yarrow 100 MW: Azure 50 MW: ParamPujya 100 MW: Renew Power 50 MW: Karvy Consultanat			Order placed to BHEL **5 MW**(BDL-Bhanur) under Defence scheme LOI issued	**600 MW** (From previous PPA) Partly commissioned
4	**Karnataka** **(4060 MW)** PPA signed: 3480 LOI issued: 100 In process: 480 Cancelled: 0	**100 MW(DCR)** (Pavagada Solar Park) LOI issued on 04.11.16 50 MW: Tata Power 50 MW: ParamPujya	**250 MW(DCR)** (Pavagada Solar Park) • Retender package • NIT issued on 29.09.16 • Pre Bid meeting held on 04.11.16 • Last date of bid submission: 30.12.16	**920 MW (Non Solar Park)** PPA signed on 02.08.16 200 MW: Hero Solar 100 MW: Energon 160 MW: ACME 350 MW: Parampujya(Adani) 110 MW: Others **50 MW(DCR) (Non Solar Park)** PPA signed on 02.08.16 10 MW: Karnataka Power Cor 40 MW: Parampujya **30 MW** Retender will be issued soon **200 MW (Storage)** (Pavagada Solar Park) Last date of bid submission: 06.01.17	**4 MW** (New Mangalore Port) Commissioned	**306 MW** (Farmer scheme) PPA signed commissioned by March,2017 **1200 MW** (Taluka scheme) PPA signed **500 MW** (From previous PPA) Partly commissioned
		500 MW (Tumkur Solar Park) PPA signed wef 21/06/16 with 50 MW: Yarrow 100 MW: ParamPujya 100 MW: Fortum 100 MW: ACME 100 MW: Tata power 50 MW: ReNew	**750 MW** (Pavagada Solar Park) Retender package NIT to be done in December,2016			

5	**Uttar Pradesh (640 MW)** PPA signed: 640 LOI issued: 0 In process: 0 Cancelled: 0	**100 MW(** Non Solar Park) PPA signed on 29.04.16 with 50 MW: Azure 50 MW: Prayatana		**125 MW(**Solar Park) PPA signed on 09.06.16 75 MW: Solairedirect 50 MW: RattanIndia **40 MW**(Solar Park)-Rebidding PPA signed on 08.10.16 40 MW: Azure **160 MW** (Non Solar Park)- PPA signed on 16.09.16 160 MW: Essel Green		**215 MW** (PPA signed) commissioned by March,2017
6	**Madhya Pradesh (1510 MW)** PPA signed: 550 LOI issued: 10 In process: 950 Cancelled: 0		**250 MW** **(Neemuch-Agar Solar Park)** Award Placed on 31.03.2016 100 MW: Lanco 50 MW: Vikram Solar 50 MW: BHEL 50 MW: Tata power		**200 MW** (CIL) e-RA held on17.03.165 100 MW: Vikarm Solar 100 MW: Sterling Wil **10 MW(OF Itarsi)** Under Defence scheme LOI issued	**300 MW** (PPA signed) Will be commissioned by March,2017 **750 MW** **(Solar Park)** Bid submission date extended upto January,2017
7	**Gujarat (400 MW)** PPA signed: 225			**160 MW**(Charanka Solar Park) PPA signed on 04.08.16		

	LOI issued: 25 In process: 150 Cancelled: 0			**65 MW**(Charanka Solar Park) PPA signed on 29.08.16 **25 MW(DCR)** (Charanka Solar Park) LOI issued on 18.11.16 **150 MW**(Charanka Solar Park) Last date of bid submission: 10.01.17		
8	**Maharashtra (1082 MW)** PPA signed: 507 LOI issued: 450 In process: 125 Cancelled: 0			**450 MW(Non Solar Park)** PPA signed on 10.04.16 100 MW: Orange Renewable 100 MW: Welspun 70 MW: Suzlon 50 MW: AMPL cleantech 50 MW: Talettutayi 40 MW: Sep set 30 MW: Bhageria 10 MW: Krishna **450 MW(Non Solar Park)** LOI issued on 23.11.16 130 MW: Solar Edge 100 MW: NEEL Metal 80 MW: Canadian Solar 60 MW: Essel Green 50 MW: Lightsource Renewable 20 MW: Sukhbir Agro 10 MW: Vijay Printing **50 MW(DCR)(Non Solar Park)** PPA signed on 16.07.16 30 MW: Tata Power Renewable 20 MW: Adani Green	**7 MW**(OFB) Under Defence Scheme Order placed Commissioned by December,2016	**75 MW** under tendering process

				50 MW(DCR)(Non Solar Park) e RA held on 08.12.16		
9	**Jharkhand** **(1101 MW)** PPA signed: 0 LOI issued: 1101 In process: 0 Cancelled: 0					**1101 MW** • LOI issued in June,2016 but PPA not signed **91 MW-cancelled**
10	**Punjab** **(1078 MW)** PPA signed: 578 LOI issued: 0 In process: 0 Cancelled: 500					**500 MW** (Ph III) PPA signed in January,2016 Will be commissioned by March,2017 **500 MW** (farmer scheme) **Cancelled** **78 MW** (from previous PPA) Commissioned
11	**Haryana** **(165 MW)** PPA signed: 0 LOI issued: 165 In process: 0 Cancelled: 0					**165 MW** LOI issued but PPA not signed due to regulatory issue
12	**Uttarakhand** **(181 MW)** PPA signed: 181					**181 MW** (PPA signed)

	LOI issued: 0 In process: 0 Cancelled: 0					
13	**Tamil Nadu** **(485 MW)** PPA signed: 485 LOI issued: 0 In process: 0 Cancelled: 0				**1 MW**(Kamrajar Port) In process	**484 MW** (from previous PPA)
14	**Kerala** **(50 MW)** PPA signed: 0 LOI issued: 0 In process: 50 Cancelled: 0				**50 MW** (IREDA) 40 MW commissioned **50 MW**(THDCIL) **Tendering in process**	
15	**Odisha** **(320 MW)** PPA signed: 10 LOI issued: 310 In process: 0 Cancelled: 0			**300 MW** (Non Solar Park) LOI issued on 21.11.16 240 MW: Essel Green 20 MW: IBC Solar 10 MW: Jyoti Infrastructure	**10 MW**(Paradip Port) LOI issued **10 MW(OF Bolangir)** Under Defence scheme LOI issued	
16	**Chattisgarh** **(100 MW)** PPA signed: 100 LOI issued: 0 In process: 0			**100 MW(Non Solar park)** PPA signed on 02.08.16 100 MW: Parampujya(Adani)		

	Cancelled: 0					
17	**Puduchery (35 MW)** PPA signed: 0 LOI issued: 0 In process: 35 Cancelled: 0			**35 MW(Non Solar park)** Tender issued on 29.04.16		
18	**Himachal Pradesh (52.5 MW)** PPA signed: 0 LOI issued: 0 In process: 52.5 Cancelled: 0			**50 MW(Non Solar park)** Tender issued on 29.04.16	**2.5 MW** (SECI- Kaza) Tendering is in process	
19	**West Bengal (2 MW)** PPA signed: 2 LOI issued: 0 In process: 0 Cancelled: 0				**2 MW**(Kolkata Port) Commissioned	
20	**Bihar (150 MW)** PPA signed: 0 LOI issued: 0 In process: 0 Cancelled: 150					**150 MW** **(No response)** **Cancelled**

21	**A&N** **(25 MW)** PPA signed: 0 LOI issued: 0 In process: 25 Cancelled: 0		**50 MW(with battery storage)** 25 MW: tender issued			
22	**Canal Bank/Top** **(100MW)** PPA Signed- 60 In process: 30					
	Total (20465 MW)	**3000 MW**	**1785 MW**	**5410 MW**	**391 MW**	**9779 MW**
	Solar park (8145 MW)	2270	1760	2765	100	1250
	Non Solar park (12320 MW)*	730	25	2645	291	8529
	DCR category (1805 MW)	400	760	425	220	0
	Open Category (18560 MW)	2600	1025	4985	171	9779

*** 100 MW is added under Non solar park category for Canal bank/top scheme**