PREPARATION OF STATE SPECIFIC DOCUMENT FOR PROVIDING 24 X 7 POWER FOR ALL (PFA)

24x7 –Power For All

- Government of India has decided to take a joint initiative with the states to provide 24X 7 power to all households/ houses, commercial & industrial consumers and adequate supply to agriculture consumers as per the state policy.

- This initiatives aims at ensuring uninterrupted supply of quality power to existing consumers by 2019 and providing access to electricity to all unconnected consumers in a time bound manner by respective State Governments by 2022.

Approach for preparation of state specific 24x7-PFA documents

- State specific 24x7-PFA documents for the states of Rajasthan and Andhra Pradesh have already been prepared and the same are available on the website of MOP.
- It is now proposed to prepare state specific PFA documents for all the other states in a phased manner by the end of 2015.
- All the balance States / UTs have been divided in 3 packages. Each package will be awarded to one consultant.

Approach for preparation of state specific 24x7-PFA documents

- One consultant M/s Crisil, has already been appointed for package A and two more consultants i.e. M/s Deloitte and M/s Mecon are being are being appointed for package B & C. Two states would be taken up by each consultant at a time to complete the work in two months.

- Some of the states have furnished the data/ information as per the formats / table circulated by MOP/ CEA. Other States may also furnish the desired information on priority so that the documents may be completed in time.

What will be included in the document

- Power supply scenario including load forecasting
- Generation plan
- Transmission plan
- Distribution plan
- Renewable energy plan
- Energy efficiency
- Financial position of power utilities
- Time bound deliverables for achievement of 24x7
- Capacity Building
- Other initiatives including Monitoring of the program

Methodology

- An exercise shall be carried out to assess the energy requirement of the state for the next 5 years for providing 24x7 power for all in the state.
- An assessment of the adequacy of availability of power to the states from various sources i.e. from generating sources owned by the state both existing and under construction, from central sector stations both existing and under construction, Common projects, generating sources owned by private sector and PPAs shall be made to work out the gap between the requirement and the availability of power.
- Inter State Transmission System (ISTS), Intra state Transmission System and distribution infrastructure shall be reviewed to work out the gap between the requirement and the availability of T&D infrastructure so as to ensure their adequacy for providing 24x7 power in the states.

Methodology

- Renewable energy & energy efficiency potential in the state along with other measures like capacity building would also be examined in the document.
- Based on the additional energy requirement and T&D infrastructure per unit implication on tariff would be calculated.
- Sensitivity analysis shall be carried under multiple scenarios on various parameters namely, tariff hike, reduction in power procurement cost, increase in interest and moratorium period, AT&C loss reduction, etc.

Sample calculations for the state of Uttarakhand

Calculation of electrified rural & urban households in Uttarakhand in 2014

S. No.	Particulars	As per Census Data			
		2001	2011	CAGR	Total H/H by 2014 (as derived)
1	Total Households	15,86,321	19,97,068	2.33%	21,97,993
2	Rural Households	11,96,157	14,04,845	1.62%	14,98,182
3	Urban Households	3,90,164	5,92,223	4.26%	6,99,811
4	Total Electrified Households	0	17,38,175		18,99,903
5	Rural Electrified Households	0	11,66,756		
6	Urban Electrifie dhouseholds		5,71,419		
6	Households electrified under RGGVY between 2010-14	0	57,919		
7	Rural Electrified H/H in 2014	0			12,24,675
8	Urban Electrified H/H in 2014	0			6,75,228
9	Balance Unelectrified Rural Households		2,38,089		2,73,507
10	Balance Unelectrified Urban Households		20,804		24,583
11	Balance Total Unelectrified Households		2,58,893		2,98,090

Calculation of additional energy required for providing 24x7 power supply to all rural & urban households

Annual Energy Sold in the State during 2013-14 (MUs)	9,001
Annual Domestic Energy Sold in the State during 2013-14 (MUs)	2,070
Annual Domestic Energy Sold in the State during 2013-14 (%)	23.00%
Annual Other than domestic Energy (Agriculture, Commercial, Industrial) Sold in the State during 2013-14 (MUs)	6,931
Average Annual Energy Consumption per household during 2013-14 (kWh)	1,090
Average Daily Energy Consumption per household during 2013-14 (kWh)	2.99
Annual Total Rural Consumption (MUs)	941
Annual per household rural consumption (kWh)	768
Annual Total Urban Consumption (MUs)	1,129
Annual per Household Urban Consumption (kWh)	1,672
Daily per household rural consumption (kWh)	2.11
Daily per household Urban consumption (kWh)	4.58
Urban & Rural consumption taken in the ratio of 1.2:1	

Calculation of additional energy required for state

1. Additional Energy Requirements for Electrified Domestic Consumers

S. No.	Particulars→ ↓			As per State data				
				2014-15	2015-16	2016-17	2017-18	2018-19
I.	: 24x7 Power Supply to Electrified Households							
A	DEMAND PROJECTIONS FOR ELECTRIFIED HOUSEHOLDS							
1	Consumption of Rural Electrified Households							
2	Consumption (units per day per household)		Units	2.5	3.0	3.5	3.8	4.0
3	Annual Energy Requirement for existing electrified Rural Household	1224675	MUs	1,118	1,341	1,565	1,699	1,788
4	Consumption of Urban Electrified Households							
5	Consumption (units per day per household)		Units	4.8	5.0	5.2	5.4	5.5
6	Annual Energy Requirement for existing urban electrified Household	675228	MUs	1,183	1,232	1,282	1,331	1,356
7	Total Annual Energy Requirement for existing electrified households(A3+A6)	(A3 + A6)	MUs	2,301	2,573	2,846	3,029	3,144
B	ADDITIONAL ENERGY REQUIREMENTS FOR ELECTRIFIED DOMESTIC CONSUMERS							
	Additional Energy Required for Electrified Households (Annual projection (-) current Energy available MUs)	(B1-current energy avl.)	MUs	230	503	776	959	1,073

Calculation of additional energy required for State

Additional Energy Required for Electrification of Un-electrified Households

	URBAN			2014-15	2015-16	2016-17	2017-18	2018-19
1	Un-electrified Household as on 31.03.2014		Nos.					
2	Electrification of unelectrified Household	24,583	Nos.	4,917	4,917	4,917	4,917	4,917
3	Cumulative Annual Energy Requirement for Electrification of unelectrified Household		MUs	9	18	27	37	46
	RURAL							
4	Unelectrified Household as on 31.03.2014	273507	Nos.					
5	Targeted Electrification of unelectrified		%	20%	20%	20%	20%	20%
6	Electrification of unelectrified Household		Nos.	54,701	54,701	54,701	54,701	54,701
7	Cumulative Annual Energy Requirement for Electrification of unelcctrified Household		MUs	50	110	180	256	335
8	Total households electrified out of unelectrified		Nos.	59,618	59,618	59,618	59,618	59,618
9	Annual Energy Requirement for Electrification of unelcctrified Household		MUs	59	127	207	292	382

Additional Energy Required for Electrification of Newly Constructed Households

	URBAN			2014-15	2015-16	2016-17	2017-18	2018-19
1	Total Household - Urban (nos.) 2014	699811						
	Yearly Increase in Urban H/H	4.26%	Nos	29,822	31,093	32,418	33,800	35,240
2	Yearly cumulative Increase in Urban H/H as per GOR		Nos.	29,822	60,915	93,333	1,27,133	1,62,373
3	Cumulative Annual Energy Requirement (MUs) for newly constructed Household - Urban		MUs	52	111	177	251	326
	RURAL							
4	Total Household Rural 2014	1498182						
	Yearly Increase in Rural H/H as per GOR	1.62%	Nos.	24,287	24,681	25,081	25,488	25,901
5	Yearly cummulative Increase in Rural H/H as per GOR			24,287	48,969	74,050	99,538	1,25,439
6	Annual Energy Requirement for newly constructed Household		MUs	22	54	95	138	183
7	Total newly constructed households	(D2+D5)	Nos.	54,110	55,774	57,499	59,287	61,141
8	Cumulative Annual Energy Requirement for newly constructed Household	(D3+D6)	MUs	74	165	272	389	509

Calculation of additional energy required for state

Annual Energy Requirements For providing 24x7 power across all Categories of Consumers

	ANNUAL ENERGY REQUIREMENTS			2014-15	2015-16	2016-17	2017-18	2018-19
1	Total Additional Annual Energy Requirement - Domestic Consumer		MUs	363	795	1,254	1,640	1,964
2	Current Energy Available for sale- Total	9001	MUs	9,001	9,001	9,001	9,001	9,001
3	Current Energy Available for sale - Domestic	2070	MUs	2,070	2,070	2,070	2,070	2,070
4	Total Domestic Annual Energy Requirement (Current + Projection)	(E1+E3)	MUs	2,433	2,866	3,324	3,710	4,035
5	Current Energy Available - Other than Domestic	6,931	MUs	6,931	6,931	6,931	6,931	6,931
6	Total Annual Energy Requirement - Other than Domestic Consumers (with 10% growth P.A.)		MUs	7,624	8,387	9,225	10,148	11,162
	Additional Energy Required for other than domestic Categories of Consumers (yearwise)		MUs	693	762	839	923	1,015
7	Additional Energy Required for other than domestic (Cumulative)			693	1,456	2,294	3,217	4,231
8	Total Energy Requirements at consumer level(all)	(E1+E2+E7)	MUs	**10,058**	**11,252**	**12,550**	**13,858**	**15,197**

Calculation of per unit implication due to additional Energy requirement

	IMPLICATION ON TARIFF			2014-15	2015-16	2016-17	2017-18	2018-19
1	Total Additional Energy available for billing		MUs	1,056	2,251	3,548	4,857	6,196
2	AT&C Losses (%)	as per loss trajectory	%	20.18%	18.68%	17.68%	16.68%	16.00%
3	Procurement of Additional Energy for supply		MUs	1,323	2,768	4,310	5,829	7,376
4	Cost of Power Purchase @ Rs. 4.50/kWh		Rs. Crores	595	1,245	1,940	2,623	3,319
5	Annual T&D Infrastructure Cost (Rs. Crores)		Rs. Crores	-	-	1,000	1,000	1,000
6	Total cost of additional energy		Rs. Crores	595	1,245	2,940	3,623	4,319
7	Average Revenue on Subsidy received basis	To be Provided by state	Rs./kWh	4.84	4.84	4.84	4.84	4.84
8	Average Revenue for additional energy available for sale		Rs. Crores	511	1,089	1,717	2,351	2,999
9	Additional Cost		Rs. Crores	84	156	1,222	1,272	1,320
10	Total Energy Sale (Existing + Additional Energy)		MUs	10,058	11,252	12,550	13,858	15,197
11	Per unit Impact on Tariff		Rs./kWh	0.08	0.14	0.97	0.92	0.87

Methodology

The document would also cover the following:

- Issues regarding generation, transmission and distribution including fuel requirement, right of way problem etc.
- Yearwise requirement of funds
- Action plan of the state
- GoI Interventions

Monitoring of PFA

- Year wise Roll-Out Plan of 24x7 “Power for All”
- District wise granular Roll out plan as agreed by sates
- Detailed PERT chart for each and every activity shall be incorporated in the roadmap documents.
- A Project Management Agency (PMA) has to be appointed by the states.
- The progress would be monitored as per the Institutional Arrangement given in the document by MOP and the respective states on regular basis as per the year wise rollout plan listed in the PFA documents and support provided as per the schemes.

THANK YOU

Ravindra Kumar Verma
Chief Engineer, CEA
Ph 9968167199
email: dpd_cea@rediffmail.com