GUJARAT ELECTRICITY REGULATORY COMMISSION
Gandhinagar

Minutes of the 16th Meeting of the Co-Ordination Forum held on 27th April, 2015.

The 16th meeting of the Co-ordination Forum was held in the Conference room of the office of the Gujarat Electricity Regulatory Commission, Gandhinagar on 27th April, 2015 at 11:30 AM.

The following were present in the meeting,

1. Shri Pravinbhai Patel, Chairman, GERC
2. Dr.M.K.Iyer, Member (Finance), GERC
3. Shri K. M. Shringarpure, Member, GERC

Members / Representatives of Co-ordination Forum:

1. Shri Sandeep Kumar, IAS, Managing Director, PGVCL
2. Shri P. K. Solanki, IAS, Managing Director, DGVCL
3. Shri S. B. Khayalia, Managing Director, MGVCL
4. Shri S. K. Negi, Managing Director, GETCO
5. Shri K. P. Jangid, GM, GUVNL
6. Shri Jinal Mehta, Director, TPL
7. Shri S. B. Patil, Deputy Director, GEDA
8. Shri P. N. Gandhi, Chief Electrical Inspector,
9. Shri B. B. Mehta, CE, SLDC
10. Smt. S. A. Nair, CE, DGVCL
11. Smt. C. R. Desai, CE, UGVCL
12. Shri K. M. Bhuva, CE, PGVCL
13. Shri S. H. Upadhyay, SE, GETCO
14. Shri S. P. Trivedi, EE, GUVNL
15. Shri J. J. Gandhi, SE, PGVCL
16. Shri R. P. Raval, SE, UGVCL
17. Shri Chetan Bundela, GM, TPPL
18. Shri Amit Sachan, Assistant Manager, GETCO
19. Shri Piyush Pandya, GM, CLP India Pvt. Ltd.
20. Shri Dipak Gajjar, Assistant Manager, MPSEZ Utilities Pvt. Ltd.

Officers of the Commission:

1. Shri S. T. Anada, I/c Joint Director,
2. Shri Apurva Adhvaryu, Deputy Director,
3. Shri Gopal Dayalani, Deputy Director,

Shri S. T. Anada, I/c Joint Director welcomed all the members of the State Co-ordination Forum in the meeting.

The meeting was presided over by Shri Pravinbhai Patel, Chairman, GERC. Chairman welcomed all the members to the meeting and introduced new members of the Forum Shri K. M. Shringarpure-Member GERC, Shri P. K. Solanki new Managing Director of DGVCL and Shri Jinal Mehta Director, TPL. Thereafter, the discussion took place on the agenda items.

Agenda Item No. 1: Approval of the minutes of the 15th Meeting of the Co-ordination Forum held on 27th April 2015

Minutes of the last meeting as circulated to the members was confirmed as no comments were received. It was observed that the Action Taken Reports from the concerned utilities are not submitted in time. The Commission laid emphasis on timely submission of action taken report on the proposed actions in the minutes of meeting.

Agenda Item No. 2: Action Taken Report on the minutes of the 15th Meeting of the Co-ordination Forum.

2.1 Item No. 2.2 (6): On asking about the status from the Chief Electrical Inspector about issuance of guidelines for the procedure to be adopted for removal of illegal cables, it was informed by CEI that a letter is written to the Energy and Petro Chemicals Department, Gujarat requesting the Department to forward the matter to the respective departments of the State Government as the cable removal activity requires coordination of District Magistrate and concerned Commissioner of Police. EPD has yet to take a view as the matter involves many other departments and legal issues to deal with. As such, the matter is still pending with the E & P Department. MD PGVCL reported that cables from 58000 locations were removed on the basis of notification issued in this regard by eight District Magistrates. However, after some time cables found to be reinstalled at most of the locations. He opined that cable removing activity being a continuous task requires enormous manpower and efforts. Similar was the views of MDs of other DISCOM. It was decided that Distribution Companies should take actions, as deemed appropriate by them keeping in view the local conditions and strive to ensure safety. It was also decided that the Forum may discuss the matter after about an year on the basis of experience gained by the DISCOMs.

2.2 Item No.2 (10): Progress of installation of meter on Distribution Transformers was reviewed during the meeting. MGVCL confirmed to complete 100% DT metering by June 2015. MD PGVCL informed that meter installation on small capacity transformers (5 kVA, 10 kVA) of JGY and Urban feeders is pending in absence of availability of single phase DLMS protocol compliant meters which is a pre-requisite of RAPDRP programme. However, appropriate decision will be taken in this regard to complete 100% DT metering of JGY and Urban feeders. MD DGVCL replied that 67.11% metering is completed as on March 2015 and stated that they are facing problem of unavailability of meters. UGVCL Representative stated that 73.93% metering is completed. Director TPL has replied that 100% metering is completed on DTS.

It was observed from the data furnished in the Agenda, that different DISCOMs are furnishing data in different formats. It was decided that the data should be submitted on a common format indicating feeder category wise DT metering status.

DISCOMs have submitted DT metering report showing feeder category wise status of DT metering as on March 2015, which is attached herewith as Annexure 1.

The Commission directed taking up pilot study of the JGY feeders with high losses for the purpose of energy audit. For the purpose of energy audit, as a first step, indexing of consumers with the transformer through which it is being fed should be taken up. Each DISCOM shall complete minimum 100 transformers covering at least 4 to 5 JGY feeders for indexing work within three months.

(Actions: Distribution Companies)

2.3 Agenda Item No. 2 (2.4): The issue about pendency of Agriculture Connection Applications was discussed at length in the 21st meeting of the State Advisory Committee. PGVCL was given target to clear applications registered up to the year 2008 latest by March 2016.

(Action: PGVCL)

2.4 Agenda Item No. 2 (2.6): On expression of concern about large number of fatal human and animal accidents CEI stated that a meeting was arranged with DISCOMs where DISCOMs were advised to strengthen earthing at various points and analyze accidents with minute details and take corrective measures based on the analysis.

On query raised regarding some accidents due to non-fencing of transformers, CEI briefed the Commission that due to the fatal human accident in Surat 2 years ago, DISCOMs have started taking preventive measures and providing fencing around transformers. MD MGVCL informed that FRP fencing around 1000 transformers is already provided in urban areas though the cost of providing fencing is very high. MD DGVCL apprised the Commission that around 7000 fencing is already provided in urban and sub-urban areas. MD PGVCL informed that while in all other areas barbed wire fencing is provided, a tender is floated to provide FRP fencing in Rajkot city area. Director TPL apprised that fencing around all outdoor transformers is provided. Representative MPSEZ informed that all the transformers are in-house.

Chairman observed that losses of PGVCL were high during April 2015 to September 2015 and the same was case with UGVCL. To which, both PGVCL and UGVCL cited the reason of agriculture load during the second quarter. Efforts of MGVCL to bring down AT & C losses were appreciated. On observance of less% of billing and collection efficiency in PGVCL and UGVCL area during April 2015 to September 2015, PGVCL replied that as the unmetered consumption was higher compared to the metered consumption, billing and collection efficiency were lower to which UGVCL also agreed. PGVCL also furnished that apart from agriculture for other categories AT & C losses were 16.53% during the same time in the previous year which reduced to 15.23% and this is the main rationale for high AT & C losses. TPL, on explanation regarding less collection efficiency, cited the reason that due to heat wave and time lag between billing and collection time, percentage of collection efficiency is less. All distribution utilities were directed to submit full year data in the next meeting.

It was also observed that transformer failure in PGVCL area is higher and there is no improvement seen compared with the same period of the last year. MD PGVCL replied that due to overloading on 10,16 and 25 kVA transformers which are mostly used in agriculture category in widely distributed area makes it difficult to monitor. He informed that a special team has been set up to monitor agriculture loading. It was also observed that in case of TPL (Ahmedabad) and TPL (Surat) transformer failure rate has increased compared to previous year to which TPL cited reason of overloading. The Forum inquired about the time taken to restore the power supply in case of transformer failure to which TPL stated that within 6 hours failed transformer is changed. However, consumers

are not affected as they are connected with the adjacent transformer center through change over mechanism. MD PGVCL stated that time to replace the transformer depends on the season but generally within 24 hours replacement is done.

The Forum expressed their concern on large number of meters pending for replacement and time taken to replace the meters. MD MGVCL stated that due to large number of single phase failed meters it takes time to complete the replacement. MD DGVCL stated that most of the meters pending for replacement are from January 2015 which are carried forward. It was also stated that a plan is devised for meter replacement and target is given to Division and Sub-Division offices. MD MGVCL confirmed that 3-phase meters are replaced within specified time frame as the same are revenue earning meters. The Forum directed DISCOMs to speed up the activities of meter replacement and submit a progress report in the next meeting.

Agenda Item No. 3: Petitions for Truing up of FY 2013-14 and Determination of Tariff for FY 2015-16

It was informed that the tariff orders for all the utilities have been issued and the new tariffs have been made applicable effective from 1st April 2015.

Agenda Item No. 4: Draft Supply Code 2014

It was intimated that comments have been received from 33 Stakeholders on the Draft Supply Code and the Commission is in the process of finalization of Supply Code.

Agenda Item No. 5: Standard of Performance (SoP) and Monitoring of performance of CGRFs

This agenda item was discussed at length with agenda item no. 2 (2.6) while discussion on action taken report for last meeting of the Co-Ordination Forum.

Agenda Item No. 6: Status of Renewable Purchase Obligation (RPO)

GEDA informed the Forum that GUVNL and TPL have complied their RPO during year 2014-15 while ASPEN Infrastructure Limited, KPT and Jubilant Infrastructure Limited are not obligated entities as they purchase power from Distribution Companies. GEDA also informed the Forum about capacity addition of wind and solar power during the year

and how it compared with other States. GUVNL stated that on an average 200 to 250 MW capacity is added during every year to fulfill the RPO.

Agenda Item No. 7: Status of Transmission Projects.

MD, GETCO briefed the Forum about Transmission Infrastructure Capacity addition during FY 2014-15 along with capitalization, reduction in equipment failure rate from 2008-09 to 2014-15, reduction in transmission losses from 2002-03 to 2014-15, planning for 2015-16, modernization of SLDC such as WAMS, ADMS, AMR etc. , Steps taken towards Smart Grid.

Copy of the presentation is attached at Annexure - II.

Agenda Item No. 8: Status of RPO.

During discussion of Agenda Item No. 6 on Status of RPO, Shri S. B. Patil of GEDA informed the Forum about the RPO compliance status of Distribution utilities during 2014-15, wind and solar installed capacity and capacity addition during the year. Copy of the presentation is attached at Annexure - III.

Agenda Item No. 9: Presentation on Power sector Scenario by GUVNL.

General Manager, GUVNL made a detailed presentation on the power scenario in the State. He mentioned that total capacity as on 1st April, 2014 was 18510 MW and during FY 2014-15 702 MW capacity was added. As per the demand growth, installed capacity required by 2016 will be 18730 MW while capacity addition planned for 2016 is 1616 MW, so there will be surplus by 2098 MW by 2016. He also briefed the Forum about the Capacity Addition Plan up to 2016-17. He further briefed about installed Renewable Capacity and fulfillment of RPO obligations during 2014-15.

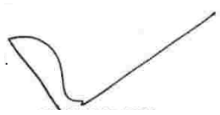
Copy of the presentation is attached at Annexure - IV.

Agenda Item No. 10: Any other Item with the permission of Chair

Chairman took up a communication received from Torrent Power Limited regarding introduction of 'E-bill' facility for discussion. TPL stated that it has introduced e-bill facility considering the higher penetration of internet and mobile service. TPL stated that when a consumer opts for e-bill facility, paper bill facility is stopped after 3 billing cycles. TPL confirmed that this e-bill facility is not mandatory and consumers can switch

over to paper bill facility whenever they want. Moreover, the consumer can download the bill and get it certified from TPL in case there is any legal issue.

The meeting was concluded with a Vote of Thanks to the chair.



SECRETARY

GERC

Annexure 1

DT metering report showing feeder category wise status of DT metering as on March 2015

DGVCL

Category	Total DTR	DTR with Meter (beginning of the month)	DTR meter installed during the month	DTRs with meters at the end of the month	Pending for metering as on 31/03/2015
Industrial	10188	5610	16	5626	4562
GIDC	5255	2114	0	2114	3141
Urban	13592	11214	12	11226	2366
JGY	21766	11002	37	11039	10727
AG. DOM	44912	33826	406	34232	10680
Total	95713	63766	471	64237	31476

MGVCL

Category	Total DTR	DTR with Meter (beginning of the month)	DTR meter installed during the month	DTRs with meters at the end of the month	Pending for metering as on 31/03/2015
Industrial	1652	1646	6	1652	0
GIDC	2064	2051	13	2064	0
Urban	12093	11986	107	12093	0
JGY	23809	21889	489	22378	1431

AG. DOM	61456	60183	897	61080	376
Total	101074	97755	1512	99267	1807

PGVCL

Category	Total DTR	DT with sigle connections (beginning of the month)	DTR with Meter (beginning of the month)	DTR meter installed during the month	DTRs with meters at the end of the month	DT with single connections at the end of Month	Pending for metering as on 31/03/2015	Pending for metering as on 31/03/2015 (including DT with single meter)
Urban	38658	0	37357	185	37542	0	1116	1116
Industrial	7637	0	7546	61	7607	0	30	30
GIDC	2537	0	2445	8	2453	0	84	84
JGY	36869	0	36329	489	36818	0	51	51
AG. DOM	401128	179619	60431	4043	64474	186287	336654	150367
Total	486829	179619	144108	4786	148894	186287	337935	151648

UGVCL

Category	Total DTR	DTR with Meter (beginning of the month)	DTR meter installed during the month	DTRs with meters at the end of the month	Pending for metering as on 31/03/2015
Industrial	4899	4690	70	4760	139
GIDC	2184	2118	37	2155	29

Urban	10805	10353	51	10404	401
JGY	22939	21133	79	21212	1727
AG. DOM	158441	108594	195	108789	49652
Total	199268	146888	432	147320	51948

16th Meeting of The Co-ordination Forum

Overview of Transmission Projects

Gujarat Energy Transmission Corporation Limited

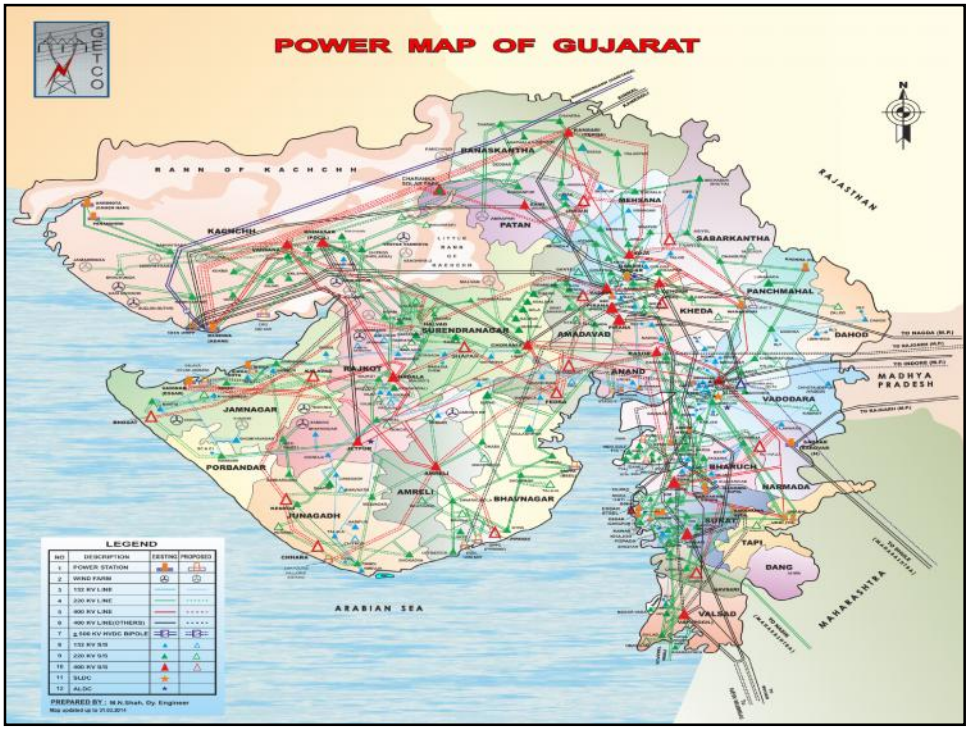
[An ISO 9001 : 2008 Company]

27th April, 2015

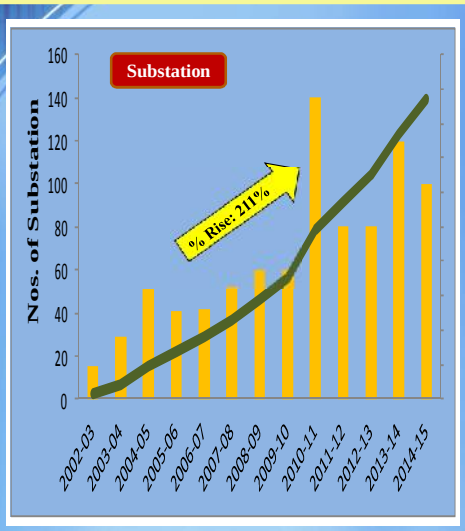
Presentation Outline

1. Development of Transmission Network
2. Performance of Transmission Network
3. Progress of FY 2014-15 & Planning of 2015-16
4. Modernization of SLDC
5. Step towards Smart Grid

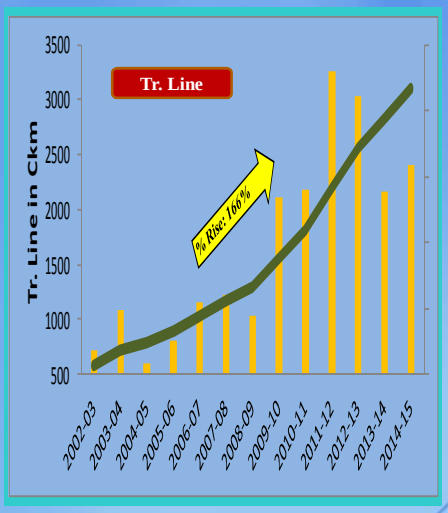
1 Development of Transmission Network



Transmission Infrastructure Capacity Addition

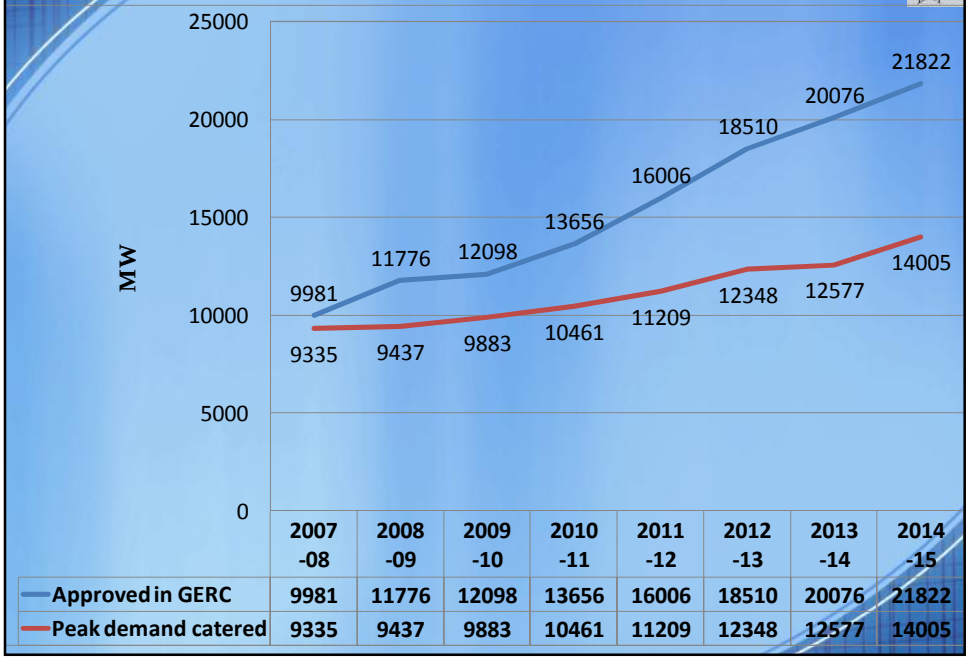


Year	2002-03	2014-15
No of Substation	743	1570



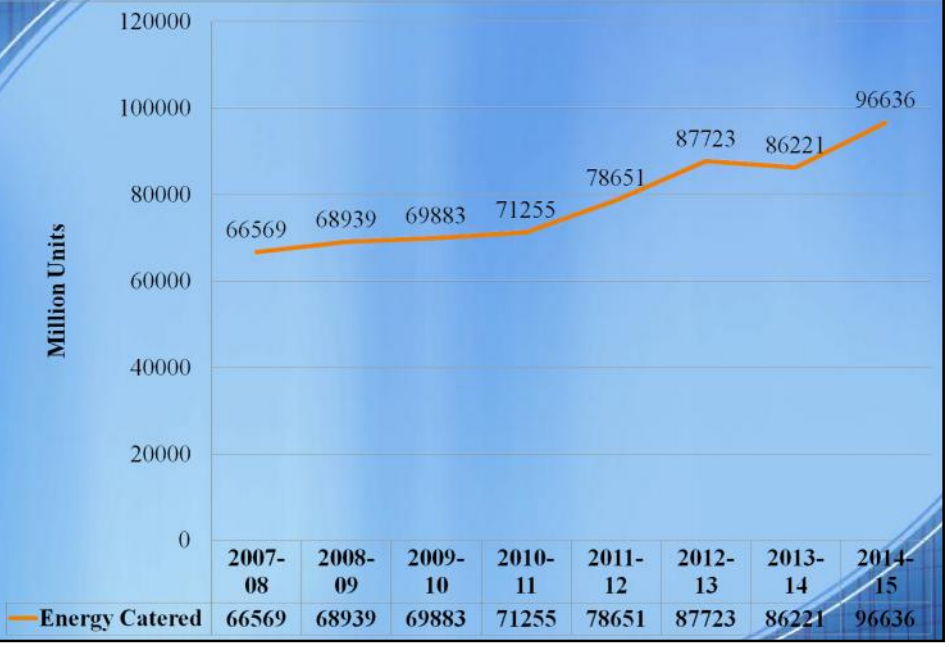
Year	2002-03	2014-15
Transmission line (Ckm)	31707	52533

Transmission Capacity Growth



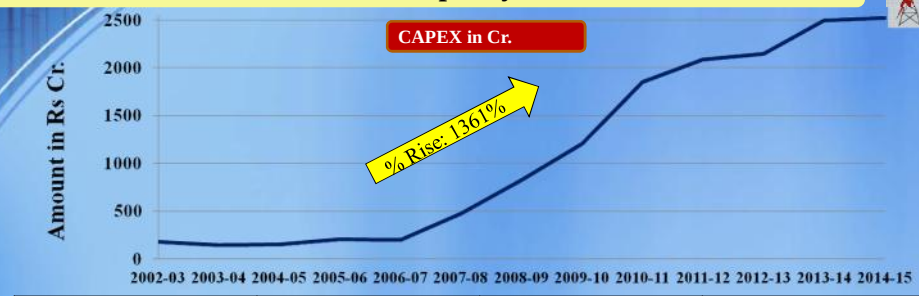
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Approved in GERC	9981	11776	12098	13656	16006	18510	20076	21822
Peak demand catered	9335	9437	9883	10461	11209	12348	12577	14005

Energy Catered in MUs



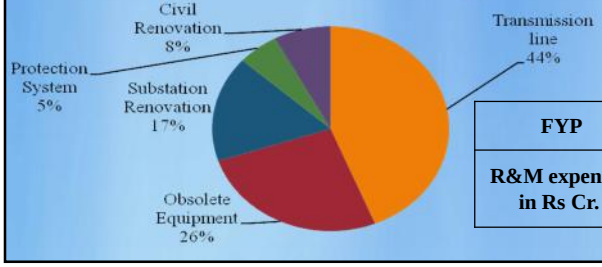
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Energy Catered	66569	68939	69883	71255	78651	87723	86221	96636

Transmission Infrastructure Capacity Addition – Investment



FYP	10th	11th	12th (3 yrs)
Capex in Rs Cr.	883	6439	7170 (Exp- 12500)

Financial expenditure under R&M activity (in Rs Crores): 1466 Crore



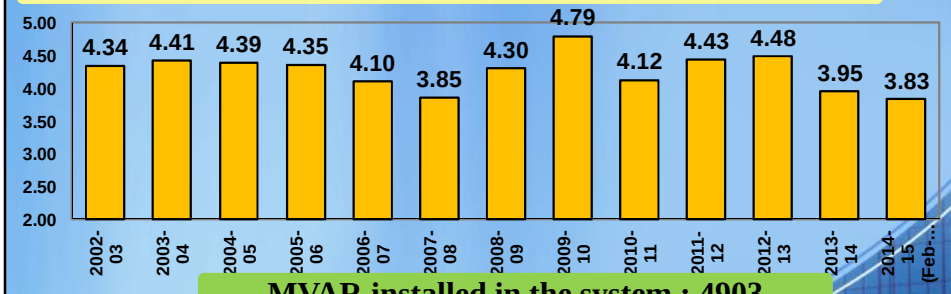
FYP	11th	12th (3 yrs)
R&M expenses in Rs Cr.	907	559

2 Performance of Transmission System

Improvement in System Availability

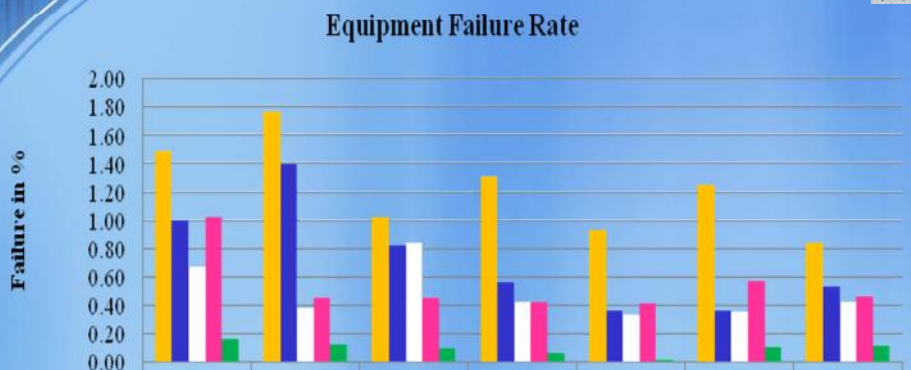
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2013-14	2014-15
S/S	99.21	99.84	99.84	99.67	99.81	99.81	99.77	99.78	99.81	99.81	99.82	99.85	99.85	99.86
Line	98.53	99.07	99.23	99.22	99.19	99.41	99.35	99.51	99.57	99.48	99.49	99.63	99.63	99.63

Reduction in Transmission Losses



MVAR installed in the system : 4903

Reduction in Equipment Failure Rate



	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Transformer	1.48	1.77	1.02	1.31	0.93	1.25	0.84
CT	1.00	1.40	0.82	0.57	0.37	0.36	0.53
PT	0.67	0.39	0.84	0.42	0.34	0.35	0.42
LA	1.02	0.45	0.45	0.43	0.41	0.57	0.46
CB	0.16	0.13	0.09	0.06	0.02	0.11	0.11

Reduction in Equipment Failure Rate – New Action Taken

- Failure investigation team formed for root cause analysis and Corrective & Preventive action
- Web based Transmission Asset Management System (TAMS) for monitoring of entire life cycle of equipment and R&M planning
- Third party diagnostic monitoring of 66 kV class transformer and CTs
- To curb failure of CTs - replacement of ITC make CTs of batch 1992 – 96
- Replace 132/11 KV transformer with 132/ 66 KV.
- Addition in Equipment Specification
  - Online Diagnostic like DGA Equipment and Tan delta measurement of bushing
  - Lightning impulse and temperature rise test as special test on 1 out of lot of 5 units of 66 kV class and acceptance test for EHV class
  - 600 multiple chopped lightning impulse withstand test - As a type test
  - Manufacturing stage wise inspection and proto inspection incorporated
  - Measurement of Tan delta and Capacitance of every CT
  - Tan delta is limited to 0.3% in CT
  - Leakage current is limited to 0.5 mA – Acceptance test
  - Moisture content is limited to 0.5% of total mass in power transformer
  - SFRA test before dispatch and on receipt in transformer

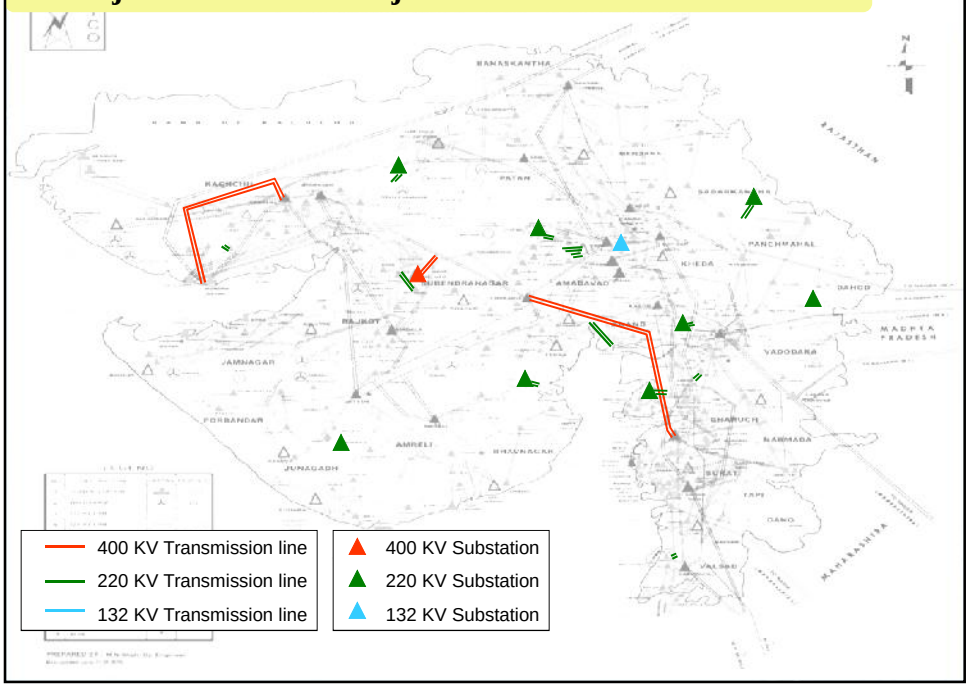
3 Progress of FY 2014-15 & Planning of 2015-16

Achievement of FY 2014-15

Voltage Class	Substations (Nos)		Transmission Lines (Ckm)	
	Planned	Achieved	Planned	Achieved
400KV	1	1	432	146
220KV	5	6	1000	711
132KV	1	3	10	69
66KV	93	90	600	1474
Total	**100**	**100**	**2042**	**2400**

Particulars	GERC Commitment	Anticipated
CAPEX	2232	2500
Capitalization	1607	1700

Major transmission Projects commissioned in FY 2014-15



Planning of FY 2015-16

Voltage Class	Substations (Nos)	Transmission Lines (Ckm)
	Planned	Planned
400KV	2	510
220KV	5	1140
132KV	3	139
66KV	90	550
Total	**100**	**2339**

4 Modernization of SLDC

Modernization of SLDC

- Up gradation / Replacement of SCADA System. (Target- June 2015)
- Wind Generation Forecasting for Gujarat State.
- Wide Area Monitoring System (WAMS)
  - PMUs (110 Nos.) at all 25 locations commissioned.
  - Three Analytics from PMU data for system operation is under development by IIT-Mumbai. One Analytics Oscillation Mode identification is commissioned.
  - Development of two Analytics Hybrid State Estimator and Dynamic Security Assessment (DSA) is under progress and target to commission in June and August 2015 respectively.
- Development of Energy Accounting and scheduling software with Automatic Meter Reading (AMR) solution.
  - Control center hardware is commissioned.
  - 1200 Modems installed for AMR solution.
- Automatic Demand Management System (ADMS)
  - Hon'ble CERC directed SLDC to implement ADMS in compliance of IEGC clause no.5.4.2- Demand disconnection.
  - Field Device installed at 20 substations covering 100 feeders.
  - System will be put in service by end of April-2015

5 Step towards Smart Grid

Technology adoption and Smart Grid

Technologies adopted	Purpose
Substation Automation System	Human interface at limited points - Manpower optimization
Optical CT and merging units	A step towards Digital Substation for better reliability and availability
OPGW – Replacement of Conventional PLCC to FOTE	To do away with obsolete technology Bigger band width for data transmission
GIS and Hybrid switchgear	Maintenance free and economical on life cycle cost basis
Geographical Information System (GIS)	Asset mapping for network planning
Reactive power compensation - 4903 MVAR installed	Quality power
PMU and WAMS – Sponsored R&D project with IIT, Mumbai	Pre-warning analytics 1. Oscillation mode identification 2. Hybrid State Estimator 3. Dynamic Security Assessment
New Energy Accounting Software for Deviation Settlement Mechanism (DSM)	Automated Energy Accounting at SLDC
High performance conductor in place of traditional ACSR conductor	50% more capacity with lesser transmission loss

Technology adoption on the anvil

- Automatic Demand Management Scheme (ADMS)
- Load Forecasting for Wind Energy
- Energy Accounting & Scheduling Software with Automatic Meter Reading (AMR) solution at GETCO-SLDC, Gujarat for Interface ABT meters installed at Various locations.
- 220kV Super Conducting Fault Current Limiter (SCFCL) project
- Inter- operationality among IEDs of different vendors as per IEC 61850 standards

Major transmission lines commissioned in FY 2014-15

Sr. No.	Name of Transmission Lines	Ckts	Length in Ckm
A	**400 kV Scheme**		
1	400 kV Kosamba - Chorania	D/C	460
2	LILO of one ckt. of 400kV D/C Mundra-Chorania line at 400kV Halvad	D/C	3
3	Termination of 400 kV Mundra-Zerda line no 2 at 400 kV Varsana (under stop gap arrangement)	D/C	169
4	Both ckt of 220kV Viramgam-Bhat line LILO at 400kV Sanand S/s	D/C	22
B	**220 kV Scheme**		
1	LILO of 220kV Karamsad – Vartej S/C at Dhuvaran CCPP-III with ACSR Zebra conductor	D/C	78
2	LILO of 220kV Gavasad - SLPP line NO.3 at 220kV Karjan S/S	D/C	23
3	220kV LILO to Suva from one ckt. of Kosamba - Mobha line with ACSR Zebra conductor	D/C	115
4	220kV Tappar-Nani Khakhar line LILO at Mokha S/s	D/C	23
5	220kV Morbi-Lalpar line LILO at 220kV Sartanpar S/s	D/C & M/C	16
6	220kV LILO to Atul from Navsari-Bhilad line	D/C	9
7	220kV Botad-Vartej line LILO at Vallabhipur S/s.	D/C	2
8	LILO of both ckt. of 220kv d/c Kadana -Dhansura line at 220kv Modasa s/s on m/c towers	D/C	22
9	220 kV D/C Shivlakha - Deodar line LILO at PS-2 line with ACSR Zebra conductor	D/C	56
10	LILO of 220kV Asoj-Karamsad line at 220kV Mogar S/s	D/C & M/C	15
11	LILO of 220kV Dhanki-Viramgam Line at 220kV Dhanki (GWIL) S/s	D/C	1

Major Substations commissioned in FY 2014-15

S. No.	Name of Sub-Station	Voltage Ratio (kV/kV)	Capacity (MVA)
1	400 kV Halvad	400/220	2x315
		220/66	2x100
2	220KV Mogar (Asodar)	220/66	2x160
3	220KV Faredi (Modasa)	220/66	1x100+1x160
4	220KV Suva (Near Dahej)	220/66	2x100
5	220KV Nani Hamipur (PS-2)	220/11	2x25
6	220KV Vallabhipur	220/66	1x100
7	220KV Dhanki-2	220/66	2x50
8	132KV Chandkheda	132/66	2x50
9	132KV Bhavnath	132/11	1x25
10	132KV Zoz	132/66	1x50

Augmentation in FY 2014-15

Sr. No.	Name of Substation	MVA
1	132 & Above kV	2287
2	66 kV	2880
	Total	**5167**

Ongoing System Strengthening Lines

SR. NO.	NAME OF LINE & (Type of Conductor)	Length (CKM)	Target
A	**400kV SCHEME**		
1	400kV D/C Mundra - Zerda Line No.2 with ACSR Twin Moose Conductor	664.00	Apr-16
2	400kV D/C Vadinar(Essar)-Amreli with ACSR Twin Moose Conductor	356.01	Mar-16
3	400kV D/C Mundra - Zerda Line No.1 with ACSR Twin Moose Conductor	664.00	Mar-18
4	400kV D/C Amreli - Kasor line with ACSR Quad Moose Conductor	470.55	Dec-16
5	400kV D/C Vadavi - Halvad Line with ACSR Twin Moose conductor	290.82	Sep-16
6	400kV D/C Varsana - Halvad Line with ACSR Twin Moose conductor	237.19	Dec-16
7	400 kV D/C Charanka – Veloda (Sankhari) line with ACSR Twin Moose conductor	199.24	Mar-16
8	LILO of one ckt. of 400kV D/C Vadavi-Zerda line at Veloda (Sankhari) S/s	29.30	Mar-16
9	LILO of one ckt. of 400kV D/C Kosamba-Chorania line at 400kV Sanand-II GIDC S/s	90.00	Mar-17
10	Interconnection of One circuit of 400kV D/C Jhanor-Navsari line with One circuit of 400kV D/C Ukai-Kosamba line.	3.00	Mar-16

Ongoing System Strengthening Lines

SR. NO.	NAME OF LINE & (Type of Conductor)	Length (CKM)	Target
A	**400kV SCHEME**		
11	LILO of 400kV D/C Vadinar-Hadala Line No.1 at 400kV Kalawad	7.76	Apr-16
12	LILO of 400kV D/C Vadinar-Hadala Line No.2 at 400kV Kalawad	7.63	Apr-16
B	**220kV SCHEME**		
1	220kV D/C GSEG(Hazira) - Mota line with AL-59 Conductor	111.06	Mar-16
2	220kV D/C GPPC - Dhokadava line with ACSR Zebra conductor	94.44	Jun-15
3	220kV D/C Sikka - Moti Paneli line with AL-59 conductor	156.00	May-15
4	220kV D/C Gavasad - Salejada line with AL-59 conductor	194.00	May-16
5	220kV D/C BECL - Botad line with ACSR Zebra conductor	190.00	Jun-16
6	220kV D/C Halvad - Sadla line with AL-59 conductor	76.00	Jun-15
7	220kV D/C Bhatiya - Kalawad line with AL-59 conductor	238.00	Jun-16
8	220kV D/C Kalawad - Kangasiyali line with AL-59 conductor	111.88	Dec-15
9	LILO of 220kV Kasor – Botad S/C at Dhuvaran CCPP-III with ACSR Zebra conductor	82.00	Jun-15
10	220kV D/C Varsana - Jamanwada line with AL-59 conductor	347.78	Jun-15
11	220kV Jamnagar - Jetpur Line No.2 LILO at Sikka with ACSR Zebra conductor	120.00	Nov-15
12	Termination of one D/C line of 220kV Achhaliya-Jambuva line at Vyankatpura (Jarod) S/S with ACSR Zebra conductor	68.39	Mar-16

Ongoing System Strengthening Lines

SR. NO.	NAME OF LINE & (Type of Conductor)	Length (CKM)	Target
B	**220kV SCHEME**		
13	220 kV D/C Charanka – Jangral line with AL-59 conductor (From AP-13 to Jangral)	190.96	Jun-15
14	220 kV D/C SSNNL PS-1 – PS-2 line with ACSR Zebra conductor	21.96	15.04.15
15	220kV D/C Visavadar - Timbdi line with AL-59 conductor	185.04	May-16
16	220kV D/C Amreli - Sukhpar line with AL-59 conductor	79.60	Oct-15
17	220kV Vadavi-Chhatral line LILO at 220kV Santej S/s (Work for Initial part from Santej)	7.40	Dec-15
18	220kV Vadavi-Chhatral line LILO at 220kV Santej S/s	43.26	Mar-16
19	220kV D/C Vadavi-Sanand DFCC line	61.08	May-16
20	220kV D/C Botad-Chorania line	103.24	Dec-16
21	220kV D/C Jamnagar-Hadala line	139.14	Jun-16
22	220kV Amreli-Dhasa line LILO at 220kV Botad S/s	99.88	Jun-16
23	LILO of 220kV Sankhari-Jangral line at Veloda (Sankhari) S/s	4x11.323 + 2x3.297 = 51.886	Sep-15
24	220kV D/C Kasor-Herang (DFCC) line	36.80	May-15
25	220kV D/C Visavadar-Amreli line.	132.06	May-16
26	LILO of 220kV Nyara-Kangasiyali line at 400kV Hadala S/s.	33.12	Jun-15
27	220kV D/C Kheralu-Dharewada (DFCC) line	53.36	Dec-15
28	LILO of 220kV Karamsad-Ranasan line at 220kV Barejadi S/s.	15.58	Oct-15

Ongoing System Strengthening Lines

SR. NO.	NAME OF LINE & (Type of Conductor)	Length (CKM)	Target
B	**220kV SCHEME**		
29	220kV D/C Botad-Parabadi (Ajmer) line	64.000	Mar-16
30	220kV D/C Soja-Jorang (DFCC) line	43.420	Jun-16
31	220kV D/C Mitha-Becharji line	58.000	Jun-16
32	220kV Chharodi-Ford line	4x8.5 +2x2.201 =38.402	Dec-15
33	220kV D/C Palanpur-Amrigadh DFCC Line	80.000	Dec-16
34	220kV D/C Gavasad-Bhayali DFCC Line	46.420	Jun-16
35	220kV LILO to Jhanor S/s from 220kV Haldarwa-Zaghadia Line	14.000	Mar-16
36	LILO of one ckt. of 220kV Jamanwada-Varsana line at Ukheda S/s	10.244	Jun-15

Reduction in Equipment Failure Rate – New Action Taken

- Failure investigation team formed for root cause analysis and corrective & preventive action
- Web based Transmission Asset Management System (TAMS) for monitoring of entire life cycle of equipment and R&M planning
- **Transformer**
  - Online Diagnostic like DGA Equipment and Tan delta measurement of bushing
  - Maintenance free condition control breather provided
  - Fibre optic Cable for transformer winding temperature measurement
  - Lightning impulse and temperature rise test as special test on 1 out of lot

    of 5 units of 66 kV class and acceptance test for EHV class
  - Third party diagnostic monitoring of 66 kV class
  - Moisture content is limited to 0.5% of total mass
  - Manufacturing stage wise inspection carried out
  - SFRA before dispatch and on receipt

Reduction in Equipment Failure Rate – New Action Taken

- **CT & PT**
  - Replacement of ITC make CTs of batch 1992 – 96
  - 600 multiple chopped lightning impulse withstand test - As a type test
  - Manufacturing stage wise inspection and proto inspection incorporated
  - Measurement of Tan delta and Capacitance of every unit
  - Tan delta is limited to 0.3%
  - Hermetic sealing through SS bellow/Nitrogen cushioning
  - Third party diagnostic monitoring of 66 kV class
- **LA**
  - 24 hours water emersion seal leak test – Acceptance test
  - Upgrading of Discharge class from II to III for 66 kV and III to IV for EHV
  - Leakage current is limited to 0.5 mA – Acceptance test
  - Wire-less Leakage Current Monitoring kit
  - Eccentric ZnO block stacking discontinued
- **CB**
  - DCRM test included as acceptance test
  - Control switching device for 400 kV important breakers
  - Interlocks provided for 11 kV switchgears
  - Voltage detectors provided on 11 kV breakers

THE 16th MEETING OF THE CO-ORDINATION FORUM

Date : 27th APRIL, 2015

STATUS OF RPO

PRESENTED BY:

GUJARAT ENERGY DEVELOPMENT AGENGY, GANDHINAGAR

GERC (PROCUREMENT OF ENERGY FROM RENEWABLE SOURCES) (FIRST AMENDMENT) REGULATION, 2014

- The Commission has approved the following trajectory for the RPO.

	Minimum Quantum of purchase (in %) from renewable sources (in terms of energy in kWh)			
Year	Wind	Solar	Other	Total
2010-11	4.5	0.25	0.25	5.0
2011-12	5.0	0.5	0.5	6.0
2012-13	5.5	1.0	0.5	7.0
2013-14	5.5	1.0	0.5	7.0
2014-15	6.25	1.25	0.5	8.0
2015-16	7.0	1.5	0.5	9.0
2016-17	7.75	1.75	0.5	10.0

Obligated Entities for year 2012-13, 2013-14 & 2014-15

(1) GUVNL (MGVCL+PGVCL+UGVCL+DGVCL)
(2) Torrent Power Ltd. (A,bad + Surat)
(3)Torrent Energy Ltd. (Dahez, SEZ)
(4) Jubilant Infrastructure Ltd.
(5) Aspen Infrastructure Ltd.
(6) Kandla Port Trust
(7) MPSEZ Utilities Pvt. Ltd.

13 May 2015 STATUS OF RPO 3

Status Report for RPO Compliance of Obligated Entities for the Year 2013-14

	RPO 2013-14 %	Required MUs	Purchased MUs	REC`s Purchased Mus	Total MUs upto Present Quarter	Shortfall in MUs	RPO Achieved %
(1) GUVNL- Consumption of Units During 2013-14 (April to March) - 65749 MUs							
Solar	1.00	657	1362	0	1362	-705	2.07
Non Solar	6.00	3945	3280	0	3280	665	4.99
(2) TPL (Ahmedabad + Surat) - Consumption of Units During 2013-14 (April to March) - 10102.28 MUs							
Solar	1.00	101.02	4.12	2.56	6.68	94.34	0.07
Non Solar	6.00	606.14	96.35	363.00	459.35	146.79	4.55
(3) Torrent Energy (Dahej)- Consumption of Units During 2013-14 (April to March) - 88.55 MUs							
Solar	1.00	0.89	0	0.55	0.55	0.34	0.62
Non Solar	6.00	5.31	0	4.10	4.10	1.21	4.63
(4) MPSEZ Utilites Pvt. Ltd. - Consumption of Units During 2013-14 (April to March) - 176.82 MUs							
Solar	1.00	1.77	0	0	0	1.77	0
Non Solar	6.00	10.61	0	0	0	10.61	0

13 May 2015 STATUS OF RPO 4

Status Report for RPO Compliance of Obligated Entities for the Year 2013-14

(5) **M/s. Jubilant Infrastructure Ltd:** M/s. Jubilant have signed an agreement with DGVCL for purchase of power for the year 2013-14. Hence, RPO is not applicable to them.

(6) **M/s. Aspen Infrastructure Ltd:** M/s. Aspen have been exempted for the RPO compliance for the year 2013-14.

(7) **M/s. Kandla Port Trust** has informed that as they are procuring power from PGVCL, they are not obligated for compliance of RPO.

Status Report for RPO Compliance of Obligated Entities for the Year 2014-15

RPO Status Report of OE for the Year 2014-15							
(1) GUVNL - Consumption of Units During 2014-15 (April to March) - 69521 MUs (Provisional)							
	RPO 2014-15 %	**Required MUs**	**Purchased MUs**	**REC`s Purchased MUs**	**Total MUs Purchased**	**Shortfall in MUs**	**RPO Achieved %**
Solar	1.25	869.01	1402.00	0	1402.00	**-532.99**	**2.02**
Non Solar	6.75	4692.67	3780.00	0	3780.00	**912.67**	**5.44**
TOTAL	8.00	5561.68	5182.00	0	5182.00	**379.68**	**7.45**
(2) TPL (Ahmedabad + Surat) - Consumption of Units During 2014-15 (April to March) - 10636.81 MUs							
Solar	1.25	132.96	72.22	0	72.22	**60.74**	**0.68**
Non Solar	6.75	717.98	101.19	615	716.19	**1.79**	**6.73**
TOTAL	8.00	850.94	173.41	615	788.41	**62.53**	**7.41**
(3) Torrent Energy (Dahej)- Consumption of Units During 2014-15 (April to March) - 152.61 MUs							
Solar	1.25	1.91	0	1.89	1.89	**0.02**	**1.24**
Non Solar	6.75	10.30	0	10.18	10.18	**0.12**	**6.67**
TOTAL	8.00	12.21	0.00	12.07	12.07	**0.14**	**7.91**
(4) MPSEZ Utilities Pvt. Ltd. - Consumption of Units During 2014-15 (April to March) - 253.00 MUs							
Solar	1.25	3.16	0	0	0	**3.16**	**0**
Non Solar	6.75	17.08	0	0	0	**17.08**	**0**
TOTAL	8.00	20.24	0.00	0.00	0.00	**20.24**	**0**

Status Report for RPO Compliance of Obligated Entities for the Year 2014-15

(5) M/s. Jubilant Infrastructure Ltd: Details Awaited.

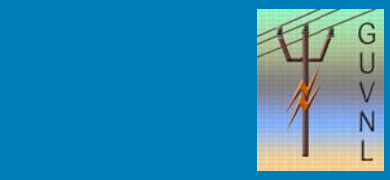
(6)M/s. Aspen Infrastructure Ltd: M/s. Aspen have requested for exemption form RPO fulfillment during 2014-15, as they procured power form MGVCL.

(7) M/s. Kandla Port Trust: Details Awaited.

THANK YOU

Presentation to Co-ordination Forum

Gujarat Power Sector Scenario



Gujarat : Power Scenario

Total Capacity (as on 01-04-14)	**:**	**18510 MW**
Capacity added in 2014-15	**:**	**702 MW**
Total Capacity (as on 01-04-15)	**:**	**19212 MW**
State	**:**	**7765 MW** (41%)
Centre share	**:**	**3840 MW** (20%)
IPP	**:**	**7607 MW** (39%)

Coal: 11960	***Gas: 4874***	***Hydro: 779***	***Lign: 1040***	***Nucl: 559***
62.25%	25.37%	4.05 %	5.41 %	2.91%

Projected Peak Demand by 2016 (14005 MW@ 7% growth)	***14,985 MW***
Installed Capacity Required by 2016 (at 80% PLF)	***18,730 MW***
Planned Capacity Addition by 2016	***1616 MW***
Capacity Available by 2016	***20,828 MW***
Surplus by 2016	***2098 MW***

Capacity Added - 2014-15

Project	Dev.	Sector	Fuel	MW	COD
GPPC Pipavav	GPPC	State	Gas	702	July-14
Total				702	

Capacity Addition Plan 2015-16

Project	Dev.	Sector	Fuel	MW	Likely COD
Dhuvaran CCPP Expansion	GSECL	State	Gas	376	Ready for operation. No gas allocation.
Sikka (Unit 3 & 4)	GSECL	State	Coal	500	May-15 & July-15
Bhavnagar Energy Co (Unit 1 & 2)	BECL	State	Lignite	500	Jun-15 & Dec-15
Vindhyachal V	NTPC	Central	Coal	120	Aug-15
Mouda Stage II (Unit 1)	NTPC	Central	Coal	120	Mar-16
Total				1616	

Gujarat - Renewable Capacity in MW

(As on 1.4.2015)

Source	Installed Capacity
Wind	3542
Solar	917
Biomass	41.2
Small Hydel	9.6
Total	4510

- Wind includes WTGs set up for wheeling of power for captive use/ 3rd party
- Wind includes PPA of 205 MW under REC Mechanism
- Biomass includes 11.2 MW plant set up for wheeling of power
- Solar includes 50 MW of M/s Kindle for Torrent & 10 MW of SSSNL for captive use

Demand/supply scenario

(MW)

Year	Cap. Add. during the year	Cumulative Capacity available	Demand as per 17th EPS Report	Demand @ 7% growth p.a.
As on 01.4.2015	-	19212	17351	14005 *
2015-16	1616	20828	18475	14985
2016-17	876	21704	19670	16034

** Actual*

Power purchase from Renewable Sources

RPPO for FY 2014-15 – As per MYT

In Million Units

2014-15 (PROV)	Wind	Solar	Others	Total
RPPO (%) – As per GERC	6.25%	1.25%	0.50%	8.00%
Energy Required to Meet RPPO (on Purchase of 69521 MUs)	4345	869	348	5562
Units Purchased (Actual)	3682	1402	98	5182
RPPO fulfilled	5.30%	2.02%	0.14%	7.45%

GERC has fixed Renewable Purchase Obligation as under:

Year	Wind	Solar	Others	Total
2015-16	7.00%	1.50%	0.5%	9%
2016-17	7.75%	1.75%	0.5%	10%

Power Scenario of Gujarat

Particulars	2011-12	2012-13	2013-14	2014-15
Total Energy Catered (MUs)	78651	87723	86221	96636
Daily Max. Energy Catered (MUs)	251.8	274.6	286	312
Daily Max Catered (MW)	11209	12348	12577	14005
Wind Energy Generation (Mus)	3960	5436	5288	5660
Daily Max wind Energy (MW)	1711	2208	2096	2558
Average Frequency (Hz.)	49.80	49.93	50.03	49.97

Thank You

Consumption Pattern – FY 2013-14

Rs/unit

	No. of consumers	Million Units	Avg. Realization	Per Unit Avg. ED	Avg. Realization incl. ED
Residential	10034924	8519	4.68	0.59	5.27
Commercial	75410	201	5.15	0.56	5.71
Industrial LT	1438888	8969	6.19	0.88	7.06
Public lightning	28558	234	5.03	0.05	5.07
Water works	59858	1416	4.32	0.08	4.40
Agriculture	1073960	15058	2.41	0.00	2.41
Industrial HT	11165	15693	6.69	0.94	7.63
Railways	14	710	6.37	0.00	6.37
Bulk Lic. & others	1	8593	3.95	0.00	3.95
Total	12722778	59393	4.84	0.80	5.64

Capacity Addition Plan - Conventional

In MW

Year	State	Central	Private	Total	Cum. Add.
Capacity as on 01.4.2015					19212
15-16	1376	240	-	1616	20828
16-17	-	876	-	876	21704
Total	1376	1116	-	2492	

Capacity Addition Plan 2016-17

Project	Dev.	Sector	Fuel	MW
Mouda Stage II (unit 2)	NTPC	Central	Coal	120
Kakrapar Extension (Atomic)	NPCIL	Central	Nuclear	476
Lara (Unit 1 & 2)	NTPC	Central	Coal	280
Total				876