Energy Department

Demand No. 14

TAMIL NADU ELECTRICITY BOARD

POLICY NOTE (2009-10)

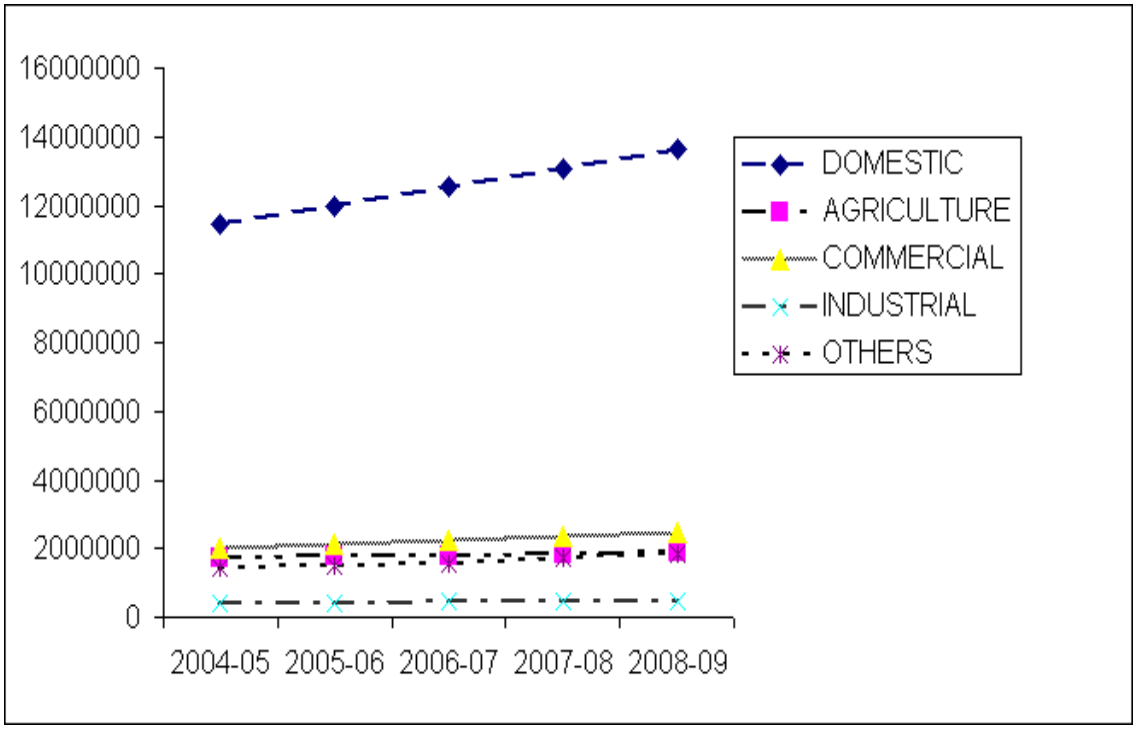
The Tamil Nadu Electricity Board is a body corporate constituted under the Electricity (Supply) Act, 1948 (Central Act 54 of 1948) and authorised to function as the State Transmission Utility and a Licensee by the Notification issued by the Government of Tamil Nadu under clause (a) of Section 172 of the Electricity Act, 2003. The main objective of Tamil Nadu Electricity Board is to generate, transmit and distribute electricity efficiently and to ensure supply of quality power to its consumers.

2.0. As on 30.04.2009 there are 1,260 sub-stations, 1.64 lakh Kms. of Extra High Tension / High Tension (EHT/HT) lines, 5.26 lakh Kms. of Low Tension (LT) lines, 1.86 lakh distribution transformers and 203.22 lakh service connections. The different categories of consumers served in the state, are as follows:

Domestic	:	1,36,61,431
Agricultural	:	18,80,450
Commercial	:	24,93,310
Industrial	:	4,63,463
Others	:	18,23,411
Total	**:**	**2,03,22,065**

The growth pattern of consumers from the years 2004-05 to 2008-09 is shown below:

DESCRIPTION	YEAR-WISE CONSUMERS				
	2004-05	2005-06	2006-07	2007-08	
DOMESTIC	11459503	11974293	12528391	1306407	
AGRICULTURE	1736946	1768052	1801972	1839241	
COMMERCIAL	1992868	2122967	2226580	2343407	
INDUSTRIAL	405827	430248	445110	464609	
OTHERS	1433409	1501907	1573994	1715954	
TOTAL	17028553	17797467	18576047	19427286	



2.1 The total installed generation capacity of Tamil Nadu as on 30.04.2009 is **15,100** Mega Watts as detailed below:

(A) Hydel, Coal, oil based and conventional sources

(i) TNEB's own generating stations : 5690 MW
(Hydel, Thermal, Gas and wind)

(ii) Private Sector Power Plants (IPP) : 1,180 MW

(iii) Share from Central Sector generating stations : 2,825 MW

(iv) External assistance; and

: 305 MW

(v) Others (Captive Power Plants)

: 214 MW

(Supply to TNEB)

TOTAL

: **10214 MW**

(B) Renewable or Non-conventional energy sources:-

(i) Wind Mill Private

(infirm) : 4310.615 MW

(ii) Co-Generation : 466.100 MW

(iii) Bio-mass : 109. 550 MW

Total (Renewable sources)

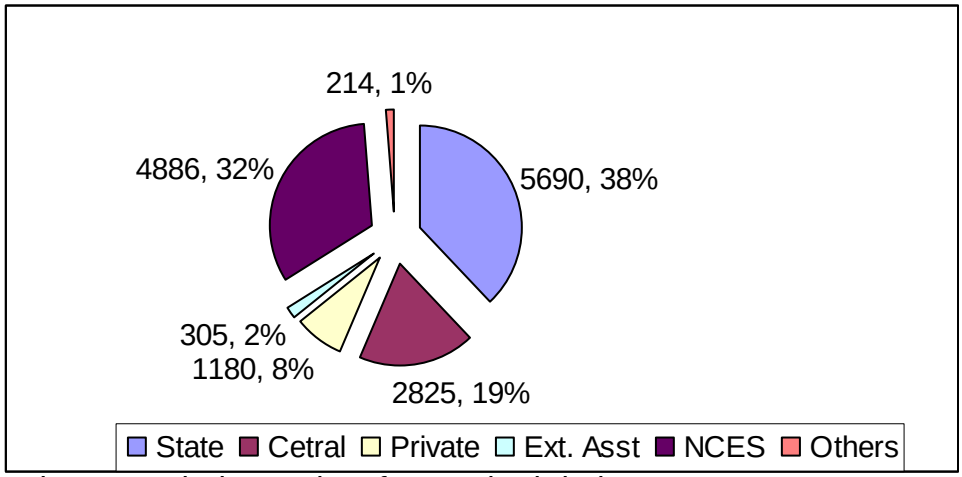
: 4886.265 MW

Grand Total

:15100.265 MW

(C) Besides 677 MW capacity of captive power plants are also are available for use of the owners.

INSTALLED CAPACITY IN MW



2.2 The maximum peak demand so far reached during 2008-09 is 9,567 MW (07.07.2008). A maximum of daily consumption of 202.686 MU was recorded on 14.06.2008. Total energy consumption during 2008-09 was 66,391 Million Units (MU). However highest daily consumption of 214.385 MU has been reached on 12.05.2009.

Green Energy Development

2.2.1 Tamil Nadu is blessed with conducive natural metrological and topographical settings for wind generation. Three passes namesly, Palghat Pass, Shengottah Pass and Aralvoimozhi Pass are

endowed with heavy wind flows because of the tunneling effect during South West Monsoon.

2.2.2. The first wind farm of 1.165 MW capacity was erected at Mullaikadu in Tuticorin District, during 1986, in association with Tamil Nadu Energy Development Agency (TEDA) under the aid of Ministry of New and Renewable Energy (MNRE), Government of India. Subsequently various wind farms were erected by Tamil Nadu Electricity Board at other places in Kayathar, Muppandal and Puliankulam areas. Duirng the year 1993, 8 Nos. of 250 KW Wind mills were erected at Kethanoor in Coimbatore District. Totally 120 Wind mills were erected by Tamil Nadu Electricity Board from 1986 to 1993 totalling to a capacity of 19.355 MW.

Based on successful functioning of these demonstration wind farms, coupled with conducive environment created by Government a number of private developers have set up the following capacities:-

Year	During the year in MW	Cumulative total in MW	Genera (in M.
Upto 1997	0.000	676.155	1485.3

1997-1998	31.140	707.295	765.8
1998-99	17.765	725.060	928.8
1999-2000	45.675	770.735	1156.5
2000-2001	41.895	812.630	1094.1
2001-2002	44.035	856.665	1257.1
2002-2003	133.600	990.265	1305.7
2003-2004	371.225	1361.490	1714.4
2004-2005	678.735	2040.225	2260.7
2005-2006	857.555	2897.780	3444.2
2006-2007	577.910	3475.690	5268.9
2007-2008	381.075	3856.765	6066.6
2008-2009	430.975	4287.740	6655.1
Upto 04.2009	22.875	4310.615	114.6
Total			**33518.**

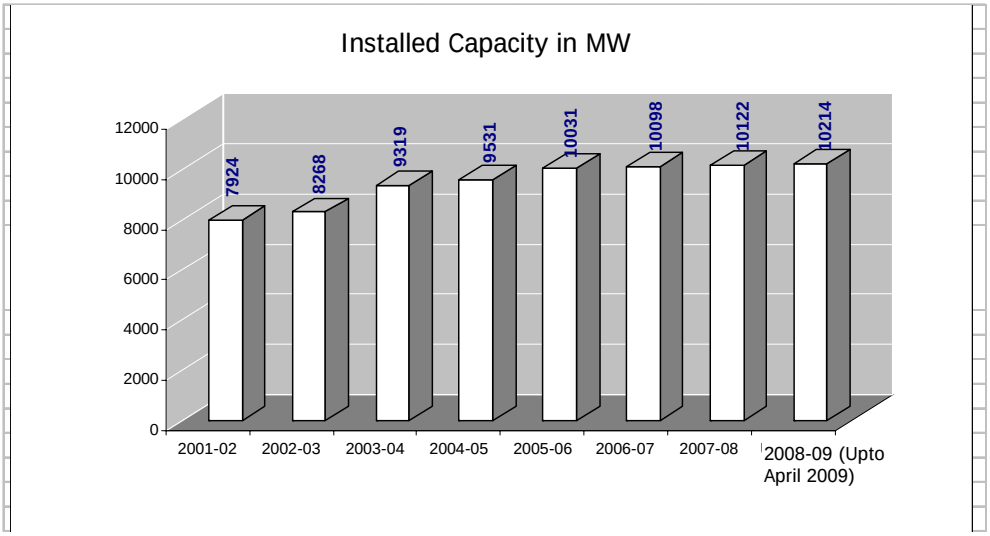
This accounts for about 42.35 percent of the total capacity created in the country.

2.3 GROWTH OF GENERATING CAPACITY:

In the past 5 years the state has witnessed high economic growth and appreciable improvement in the lifestyle and living status of its people. The peak demand has increased from 7473 MW during 2004-05 to 9,459 MW during 2008-09 (Upto April 09). Accordingly, the installed Generation Capacity excluding non-

conventional power source also has increased from 9531 MW during 2004-05 to 10214 MW (upto April 2009). The pattern of growth in installed capacity during last 5 years is shown in the figure below:

Period (At the end of	Installed capacity (MW)	Sustained Peak (MW)
2004-05	9,531	7,473
2005-06	10,031	8,209
2006-07	10,098	8,803
2007-08	10,122	8,969
2008-09	10214	9459



2.4 PROJECTED DEMAND AND AVAILABILITY

As per the 17th Engineering Power Survey the projected portion will be as below:

Year	Installed capacity MW	Capacity Addition during the year Mw	Availability during the year MW	Total net availability in MW	Projected Demand As per CAGR 17th EPS	Surplus Deficit (+) in MW		
	A	B	C	D	E	F(D-E)		
2008-09	10214	--	--	9459*	--	--		
2009-10	11371	1157	984	10443	11675	-1232		
2010-11	12830	1459	1104	11547	12860	-1313		
2011-12	15167	2292	1629	13176	14224	-1048		
2012-13	16014	847	720	13896	15517	-1621		
2013-14	19194	1360	1156	15052	16927	-1875		
* Sustained peak Demand reached on 30.06.2008 at 48.92Hz between 19.3								
** Spinning reserve is considered as at least 5% of the installed capacity								

Above gap in the demand & supply is proposed to be met by utilizing the generation from the renewable and other available sources as follows:

The windy season runs from 15th of Mary to the end of the October of every year. The deficit demand of roughly about 1000 MW thus will be met out from wind generation during the above period. The remaining deficit will be met out from Captive Power Plants and Power purchases from the open market.

3.0. CAPACITY ADDITION

3.1 DURING 2008-09 :

In the State Sector, Valuthur Additional Gas Turbine Power Project in Ramanathapuram District, with a capacity of 92 MW, was commissioned on 17th Feb' 09.

3.2. DURING 2009-10 to 2013-14:

The details of the projects envisaged during this period and the scheduled dates/ months of commissioning are given in the table below:-

Proposed capacity addition during 2009-10:

Project Name	Type	Capacity / Share	Expected Month commissioning
CENTRAL SECTOR		MW	

i) Kaiga APP Stage II Unit 2 (220MW)	Nuclear (Share)	36	December 2009
ii) Neyveli TS-II Expansion Unit - I (1x250MW)	Thermal (share)	163	Feburary 2010
ii) Kudankulam APS Unit -I &2 (2x1000 MW)	Nuclear (share)	925	December 2009/March 201(
Sub Total		**1124**	
STATE SECTOR			
v) Periyar vaigai SHEP -I (2x2 MW)	Hydel	4	December 2009
v) Periyar vaigai SHEP -II (2x1.25 MW)	Hydel	2.5	December 2009
vi) Periyar vaigai SHEP -III toIV(2x2 MW)	Hydel	4	December 2009
vii) Periyar vaigai SHEP - IV (2x1.25 MW)	Hydel	2.5	December 2009
viii) Bhavani Barrage- I (2x5 MW)	Hydel	10	February 2010
x) Bhavani Barrage- II (2x5 MW)	Hydel	10	February 2010
Sub Total		**33**	
Total		**1157**	

Proposed capacity addition during 2010-11:

	Project Name	Type	Capacity / Share	Expected Month of commissioning
(i)	**NTPC - TNEB at Vallur Stage – I (2x500 MW**	Thermal (Share)	375 MW	October -2010 (Unit – I)
(ii)	**Bhavani Kattalai Barage – II (2x15MW)**	Hydro	30 MW	December – 2010
(iii)	**Bhavani Kattalai Barage – III**	Hydro	30 MW	December – 2010
(iv)	**North Chennai TPS Stage – II**	Thermal	600MW	Feb. 2011 (Unit – I)

(v) **PEBR Kalpakkam (2x25MW)**	Nuclear (Share)	167MW	2010-2011
(vi) **Simhadhri Stage – II (2x500 MW)**	Thermal (Share)	95MW	Nov – 2010 (Unit III)
(vii) **Neyveli TS-II Unit – II (1x25 MW)**	Thermal (Share)	162 MW	June 2010
Total		**1459MW**	

<u>* Note</u>: In respect of Simhadhri Stage II, Board has approached Ministry of Power, GOI for higher allocation.

<u>Proposed capacity addition during 2011-12:</u>

Project Name	Type	Capacity / Share	Expected Month of commissioning
(i) **NTPC - TNEB at Vallur Stage – I (2x500 MW)**	Thermal (Share)	375 MW	April -2011 (Unit –2)
(ii) **NTPC –TNEB at Vallur Stage- II (1x500MW)**	Thermal (Share)	375 MW	October – 2011 (Unit 3)
(iii) **NLC-TNEB at Tuticorin Unit – I (2x500 MW)**	Thermal (Share)	247 MW	March 2012 (Unit I)
(iv) **NCTPS Stage – II Unit 2 (1x600MW)**	Thermal	600MW	August. 2011 (Unit – II)
(v) **Mettur TPS Stage – III (1x600 MW)**	Thermal (Share)	600 MW	June -2011
(vi) **Simhadhri Stage – II (2x500 MW)**	Thermal (Share)	95MW	May – 2011 (Unit IV)
Total		**2292 MW**	

<u>* Note:</u> **As this allotment is also meager TNEB has approached Ministry of Power, Government of India for higher allocation.**

<u>Proposed capacity addition during 2012-13:</u>

	Project Name	Type	Capacity / Share	Expected Month of commissioning
(i)	**NLC-TNEB at Tuticorin Unit – 2 (2x500 MW)**	Thermal (Share)	247 MW	August 2012
(ii)	**ETPS Annexe (1x600 MW)**	Thermal	600MW	September 2012
	Total		**847 MW**	

<u>Proposed capacity addition during 2013-14:</u>

	Project Name	Type	Capacity / Share	Expected Month of commissioning
(i)	**TNEB – BHEL Joint Venture at Udangudi – (2x800 MW)**	Thermal (Share)	1200 MW	March 2013 (Unit 1) and September 2013 (Unit 2)
(ii)	**Krishnapatnam/AP,**	Thermal	160 MW	September 2013

UMPP	(Share)		
4000 MW (5X800 MW)			
	Total	**1360 MW**	

3.3. MAJOR PROJECTS ON HAND:

Keeping the above position in view, the Government have initiated several measures for long term augmentation of generation capacity to meet the ever growing demand for power. Some of these are listed below:

i) Contracts have been awarded for setting up of 1200 MW (two units of 600 MW each) capacity in North Chennai Thermal Power Station and works have also commenced. Loan agreements for an amount of Rs.2475 Crores and Rs.2175 Crores respectively have also been signed with Rural Electrification Corporation on 21.09.2008.

ii) Contract has been awarded for setting up of one additional unit of 600 MW capacity in Mettur Thermal Power Station and works have

commenced. Loan agreement for Rs.2221.80 Crores, for 500 MW capacity has been signed with Power Finance Corporation, New Delhi on 19.05.2008 and remaining amount being raised internally.

iii) The process of setting up of a thermal power plant of 600 MW capacity at Ennore Thermal Power station has reached an advanced stage of planning and contract are expected to be awared by December 2009 – January 2010.

iv) Works are also under progress for establishment of 1500 MW (3 x 500 MW) thermal power project under joint venture with National Thermal Power Corporation, at Vallur, in Thiruvallur District.

v) A MoU has been signed between TNEB and BHEL on 26.10.2007 in the presence of Hon'ble Chief Minister of Tamil Nadu to form a joint

venture for establishing a 1600 MW (2 x 800 MW) coal based thermal power plant at Udangudi in Tuticorin District. A Joint Venture Agreement has been signed between TNEB and BHEL on 26.11.2008 in the presence of the Hon'ble Chief Minister. Foundation stone has also been laid on 22.02.2009 at Udangudi for 2x800 MW BHEL – TNEB Joint Venture Project – "Udangudi Power Corporation Ltd".

vi) Project activities for establishment of a 1000 MW (2x500MW) Thermal Power Plant at Tuticorin under a Joint Venture with Neyveli Lignite Corporation have commenced. Foundation stone for 2x500 MW Neyveli Lignite Corporation – Tamil Nadu Electricity Board Joint Venture Project "NLC Tamilnadu Power Ltd" was laid on 28.02.2009 at Tuticorin.

vii) A 2x600 MW Thermal Power Project at Kattupalli of Tiruvallur district has been approved on 05.01.2009. The cost of the above project is about 6000 crores. The land acquisition for the project is under progress.

viii) Administrative approval has been accorded by the Board for the establishment of Co-generation Plants with capacities 7/12/15/18 MW at an estimated cost of Rs.1176.70 Crores, with a total capacity of 234 MW in 15 nos. Co-operative Sugar Mills and 2 nos. public sector Sugar Mills in Tamil Nadu by TNEB and for carrying out Sugar Mill modernization in all the 17 Sugar Mills at an estimated cost of Rs. 321.77 Crores. Thus the total cost comes around Rs.1500 crores. Notice inviting tender has been issued on 28.01.09. Techno Commercial bid was opened on 16.04.09

and evaluation of Techno Commercial bids is under process.

ix) Government of Tamil Nadu are also encouraging establishment of coal based thermal power plants under private sector as **'Merchant Power Plants'**. Letters of facilitation have already been issued to ten firms for establishment of power projects for a total capacity of 18,140 MW as below:-

Sl. No	Name of Promoter	Capacity in MW	L
1.	M/s. Coastal Energen Pvt. Ltd.	1000 MW	T
2.	M/s. Ind-Bharath Power (Madras) Pvt. Ltd.	1320 MW	M
3.	M/s. PEL Power Pvt. Ltd.	1320 MW	Nag
4.	M/s. NSL Power Pvt. Ltd.	1500 MW	Nag
5.	M/s. Tridem Port & Power company Pvt. Ltd.	2000 MW	Nag
6.	M/s. IL&FS Tamil Nadu Power Company Ltd.	4000 MW	Cu
7.	M/s. SRM Energy Power Pvt. Ltd.	2000 MW	Cu

8.	M/s. UDI Infrastructure Pvt. Ltd.	2000 MW	Cu
9.	M/s. Apollo Infrastructure Projects Finance com. Pvt. Ltd.	2000 MW	Mar
10	M/s. Sri City Infrastructure Dev. Pvt. Ltd.	1000 MW	M
	Total	**18140 MW**	

The progress of establishment of most of the above proposals however are only in the initial stages. Government of Tamilnadu and TNEB are extending all the facilities to aid the faster implementation of these projects.

4.0. POWER SUPPLY POSITION:

4.1. The following table indicates the sector wise generation, total purchase and gross generation in the preceding six years.

(in million units)

Sl. No.	**Description is TNEB's**	**2003-04**	**2004-05**	**2005-06**	**2006-07**		
I	**Own generation**						
1.	Thermal	20430	20004	18795	21228		

	Stations (2970 MW)						
2.	Hydro Stations (2184MW)	2067	4426	6141	6292		
3.	Gas Stations (424 MW)	1593	2003	1964	1944		
4.	Wind Stations (17.55 MW)	24	17	15	17		
	Total (I)	**24114**	**26450**	**26915**	**29481**		
II	**Total purchases** **a) CGS** **b) WIND** **c) OTHERS**	**24142** **17638** **1690** **4814**	**25895** **18853** **2426** **4616**	**29811** **20682** **3430** **5699**	**33557** **20689** **5252** **8267**		
	Gross Generation (I+II)	**48256**	**52345**	**56726**	**63038**		

4.2. The generation from Hydel source for the year 2008 – 09 was 5386MU as against 6455 MU compared to the previous year due to less rain in the catchment area. The storage as on 1.04.09 is 733.184MU as against

1243.74MU during the same day last year. Hence the available water is being utilized judiciously during peak hours to meet the demand.

4.3. Besides above, reduced generation from wind mill generators and from Neyveli Lignite Corporation II (NLC) & Atomic power Stations at Kalpakkam & Kaiga and delay in the commissioning of Kudankulam Atomic Power Plant etc., are some of the chief reasons attributable to the power shortage during 2008-09. The reduced generation from Neyveli Lignite Corporation was for want of excavation of adequate lignite from the linked captive mines and the reduction in generation from atomic stations was due to non availability of nuclear fuel. Tamil Nadu Electricity Board was thus forced to impose certain restrictive measures to limit the demand matching with the availability. Moreover, the estimated

power shortage at the National level has been about 13.8%, the same in Tamil Nadu was only 5.5%.

5.0. STEPS TAKEN TO MITIGATE THE POWER SHORTAGE:

5.1. Power purchases from open market Viz., NVVNL, PTC, etc., to the extent of 750.8 MU were made from April 2008 to January 2009 by availing of short term open access. From February to April 2009 the purchase had been to the order of 721.426 MU.

5.2. Power purchase through power exchanges was also resorted to as and when required. The purchase through this mode has been about 247.71 MU from August 2008 to January 2009 and from February to April 2009 was 234.298 MU.

5.3. Captive generation was also harnessed to meet the grid requirement. The captive generators are also allowed to directly sell the power to third parties to HT consumers within the state by availing of **intra state open access**. To encourage the generators the

cross subsidy in respect of such sale through intrastate open acess was also waived.

5.4. Whenever frequency in the southern grid was favourable, over drawal to the extent of 3 to 4 MU per day was also resorted to through Unscheduled Interchange charges.

5.5. The average purchase rate for the year 2007-08 was Rs 3.2654 and during 2008-09 was Rs 3.84.

5.6. In addition to these, in order to maintain power supply in the state as per the guidelines of Government of Tamil Nadu, 40% cut on both demand and energy on High Tension industrial and commercial establishments and 20% energy cut on Low Tension Current Transformer, Low Tension Industrial and Commercial establishments also was also imposed with effect from 01.11.2008. Further to manage the peak period shortage, all HT industries were requested to go out of the grid during evening peak hours i.e(18:00 Hrs to 22:00 Hrs).

5.7. As the generation from windmills has picked up from May 2009 onwards, the power position has improved and the energy cut on Low Tension Current Transformer, Low Tension industrial and commercial establishment has been removed. The power cut to High Tension industries has also been reduced from 40% to 30% from 26.05.2009 for both demand & energy.

6.0. ALLOTMENT OF CAPTIVE COAL MINES:

6.1. TNEB needs about **15 Million Tonnes** of coal annually for generating power from its four thermal power stations of TNEB with a total installed capacity of 2970 MW. However, out of this only about **13 Million Tonnes** is being supplied by Government of India. Therefore, as advised by Government of India to meet the shortfall in supply, about 2 Million tonnes of coal per annum, had to be imported. In addition, as a permanent measure to meet the ever-existing shortfall in supply of

indigenous coal, it was felt necessary to go in for acquisition of captive coal mines to have assured supply of coal. Accordingly, a request was made to GoI and TNEB has been allotted two coal blocks viz., **Gare pelma sector II coal block** in the state of Chhattisgarh alongwith Maharastra State Mining Corporation and **Mandakini B coal block** in the state of Orissa alongwith Orissa State Mining Corporation and Assam & Megalaya State Mining Corporations. TNEB's share from the above coal blocks would be about 5 **Million Tonnes and 3.5 Million tonnes** per annum respectively. The coal to be mined from these captive coal blocks is expected to meet the shortfall in supply of the indigenous coal supplied by Coal India Limited.

6.2. The development of both the blocks is in the initial stages and the formation of the Joint venture Company with Maharashtra State mining Corporation in respect of Gare pelma sector II coal block to be known as **Maha Tamil Colleries Ltd.,** is on the anvil. Another joint venture company (viz) Mandakini 'B' coal corporation has been formed with Orissa, Assam and Mining Meghalaya Mineral

Development Corporations in respect of Mandakini B coal block and matters are being followed up closely.

7.0. CAPITAL OUTLAY FOR THE XI PLAN PERIOD:

(Rs. in Crores)

Sl.No	Description	XI Plan Outlay
		2007-12
1	Generation	12497.67
2	Renovation & Modernisation	551.47
3	Transmission & Distribution	7000.00
4	Rural Electrification	500.00
5	Survey & Investigation	610.00
6.	Interest during construction	
7.	Joint Venture	
	Total	**21159.14**

YEAR WISE BREAK UP FOR THE XI PLAN PERIOD

Rs.in Crores

Category	2007-08	2008-09	2009-10	2010-11	2011	
	Actual Expenditure	Actual Expenditure	Tentative Outlay	Tentative Outlay	Tenta Outl	
Generation	773.39	709.99	2800	3100	3644	
Renovation & Modernisation	27.4	25.16	100	135	136.	
Transmission & Distribution	1835.43	1814.01	1400	1600	16(	
Rural Electrification	149.10	145.34	100	100	10(	
Survey & Investigation &	231.57	261.37	120	120	13(	

Investigation & Computerization & IDC						
Total	3016.93	2955.87	4520	5055	5611	

7.1 TRANSMISSION AND DISTRIBUTION IMPROVEMENTS

7.1. The main objectives of improvements in T&D networks are the following:

a) To ensure quality power to consumers;

b) To reduce T&D losses;

c) To establish stable network for supply of power; and

d) To fully meet the load growth.

7.2. Under Transmission & Distribution network, 90 new substations of various voltage categories and 1500 circuit Kms of EHT lines will be added during 2009-10. During the XI Plan period, establishment of 300 new substations and 4,000 Circuit Kms. of EHT lines are programmed.

7.3. The Transmission & Distribution losses in Tamil Nadu Electricity Board as a whole have been estimated as 18% for the year 2007-08 considering the units generated, units sold out and by computing the consumption of agricultural and hut services. The Aggregate Technical & Commercial (AT &C) losses in Tamil Nadu Electricity Board have been estimated as 19.71% for the year 2007-08, considering the units generated the units sold and the revenue realized. TNEB has proposed to undertake the following improvement measures to gradually reduce the T&D losses so as to achieve the targetted AT&C loss of below 15% by the end of XI Plan.

a) To bring in improvements in the High Tension :Low Tension ratio by introducing high voltage distribution system with small capacity transformers;

b) Erection of new substations and Extra High Tension (EHT) link lines;

and

c) Installation of Low Tension fixed capacitors, strengthening of distribution lines, replacing defective meters, etc.,

7.4. The financial assistance for system improvements in Transmission & Distribution to improve quality and reliable power, is being availed of from Rural Electrfication Corporation & Power Finance Corporation by way of loans.

8.0 FLAGSHIP PROGRAMMES:

Government of Tamil Nadu has been implementing the following Flagship programmes of Government of India.

A: **RESTRUCTURED ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (RAPDRP:** The focus on the programme shall be on reduction of Transmission load and establishment of reliable and automated system for collection of base line data required for energy accounding using information technology.

B: **RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJANA (RGGVY)Scheme:** The focus of the scheme is 100% electrification of village and rural house holds.

8.1. RESTRUCTURED ACCELERATED POWER DEVELOPMENT AND

REFORMS PROGRAMME (RAPDRP)

8.1.1 The Ministry of Power, Government of India has launched the Restructured APDRP scheme under 11th five year plan. The objective of Restructured APDRP Scheme is to provide quality and reliable power supply to the consumers and to bring down the AT&C losses below 15%. To achieve these objectives, MoP, GoI insist on the improvement of measuring systems on priority and to strengthen the distribution systems. The focus of the programme under this Central Sector scheme will be on establishment of **'base line data'** and **'fixation of accountability'**, besides **'reduction of Aggregate Technical & commercial (AT&C) Losses'** and **'adoption of Information Technology'**. The project area will be towns and cities with the population of more than 30,000. In addition, rural areas with heavy loads requiring feeder segregation could also be included in the project area.

8.1.2. The project will be taken up in two parts where -

PART– A will include the projects for establishment of baseline data and IT applications for energy accounting /auditing and IT based consumer service centres; and

PART- B will include regular distribution strengthening projects.

Ministry of Power, Government of India has out of a total of 110 Detailed project reports already accorded sanction for 27 schemes for an amount of Rs.70.04 Crores and has also released an advance of Rs.21.01 Crores for implementing the same. Remaining schemes are also being persued with the Government of India.

8.1.3. Under the project, initially the Government of India will provide 100 percent funds for Part-A and 25 % funds for Part-B projects. The entire amount of loan and interest for Part-A projects will be converted into grant once the establishment of the required baseline data system has been achieved and verified by an independent agency.

8.1.4. During 2009-10, TNEB has proposed to avail about Rs.648.85 Crores under part A at RAPDRP scheme for preparing the baseline data for the project areas covering consumer indexing, Geographical Information System(GIS) mapping, metering of Distribution Transformers and feeders and Automatic Data Logging for all DTs and feeders and Asset mapping in respect of 110 cities and towns qualifying under the project. However, the total cost of works to be executed under Restructured APDRP schemes for parts A& B will be around Rs.1500 Crs.

8.1.5. On execution of the improvement works contemplated in the restructured APDRP schemes, the T&D losses are expected to be reduced considerably in the urban areas. Due to implementation of IT enabled services under the scheme, consumer satisfaction in these areas will also improve.

8.2 RAJIV GANDHI GRAMEEN VIDYUTIKARAN YOJANA (RGGVY) SCHEMES

8.2.1. Towards achieving the goal of total electrification of households in the rural areas, the Ministry of Power,

Government of India have launched a scheme named RGGVY Scheme (Rajiv Gandhi Grameen Vidyutikaran Yojana) with the objective of creating Rural Electricity Infrastructure for electrification of all the rural households by 2012.

8.2.2 Sanction for schemes in respect of 26 districts of Tamil Nadu for an amount of Rs.447.41 Crores in the first phase (out of schemes posed for 29 districts) has been obtained from Government of India and implementation of the scheme is under process through turnkey contract awarded to M/s. TANSI in all 26 districts. The projects are proposed to be completed before 31.12.2009. The works envisaged under this scheme will cover installation of 11,284 Nos. 16/25 KVA Distribution Transformers and 45,911 KMs of HT & LT lines for providing access of electricity to 16,92,235 Nos. Rural households including free of cost electrification of 5,24,569 Nos Below Poverty Line (BPL) households in the state. This will enhance the coverage of households to 95.28% taking the per capita average consumption level to more than 1000 units. The scheme was formally launched on 10.02.2009 by the Hon'ble Minister for

Electricity and as on 30.04.2009, 36,272 BPL household have been Electrified.

9.0 FINANCIAL POSITION

Sl.No	Description	2007-08	2008-09 Tentative	2009-10 Estimated
		(Rupees in Crores)		
1.0	Revenue from sale of power and others	15959.19	16352.17	17640.57
1.1	Government Subsidy	1457.02	1817.11*	1868.08**
1.2	**Total Revenue receipts**	**17416.21**	**18169.28**	**19508.65**
2.0	Expenditure	--	--	--
2.1	Power Purchase	12269.40	14787.09	15677.31
2.2	Generation Cost	3677.21	4245.80	4498.14
2.3	Employee Cost	2153.23	2431.42	2484.81
2.4	Other Expenses	2813.99	3154.48	3952.70
2.5	**Total Revenue Expenses**	**20913.83**	**23943.29**	**26612.96**
3.0	**Revenue Deficit (-)**	**3497.62**	**6449.54**	**7104.31**

4.0	**Capital Expenditure**	**2504.19**	**3194.00**	**4520.00**

* Including Hydro swing subsidy of Rs.250 Crores

** Including Hydro swing subsidy of Rs.125 Crores.

The number of Domestic Consumers in the State is going up by 5 to 6 lakhs each year. As a result the demand for power has also been increasing. On the advice of the Hon'ble Chief Minister, therefore power is also being procured from the market to meet the increased demand. Due to scant rainfall during the last year, the generation from the cheapest hydel source had dwindled. Because of these factors also TNEB had to purchase power from the market at times at higher rates to meet the demand, which has ultimately contributed to high revenue losses.

10.0. SOCIAL OBLIGATORY SERVICES:

10.1. AGRICULTURAL AND ALLIED SERVICES:

As per directions of Government, supply to 40,000 agricultural services is being effected every year. This is effected under various categories:-

a) Target for **Agriculture Services** under Normal Category (Free Category) services has been increased from 10,000 Nos. to 16,000 Nos.

b) Wasteland Development Programme of Hon'ble Chief Minister:

In order to facilitate cultivation of lands being distributed to landless farmers under the Hon'ble Chief Minister's Waste Land Development Programme for providing 2 acres of land to landless farmers, free electricity is being extended for cluster of lands. Under this scheme, free electricity has been extended to 167 services in 21 Districts, so far.

c) TAHDCO scheme:

Under this scheme, agricultural services are extended to 500 women SC/ST beneficiaries on priority, based on the list furnished by TAHDCO.

d) Fast Track Supply Scheme:

Under this scheme, 311 nos. agricultural services were effected against the target of 1000 nos. to Adi Dravidars on priority, based on the list furnished by TAHDCO during 2008-09 and based on the

recommendations remaining services will also be effected during 2009-10.

e) Special Priority service to BC, MBC and DC Community:

Under this scheme, 17 nos. connections have been effected during 2008-2009 against the target of 500 Nos. under priority to Backward Class, Most Backward Classes and Denotified Community, based on the lists given by the District Collectors. The remaining services will also be effected during 2009-2010.

f) Self Financing Scheme:

2.4 Lakhs of agricultural consumers coming under Self Financing Scheme have also been extended free power supply with effect from 01.04.2006 onwards.

10.2. HANDLOOM AND POWER LOOM SERVICES:

a. Free power supply upto 100 units bi-monthly is given to handloom weavers who are having their own work sheds and are engaged in weaving.

b. Similarly free power upto 500 units bi-monthly is being given to the powerloom weavers who run their own powerlooms.

10.3. HORTICULTURE SERVICES:

The tariff rate for the horticulture crops has been reduced from the existing Low Tension Tariff V to Low Tension Tariff III A-1 for services with connected load less than 10 HP and Low Tension Tariff III B for services with connected load of more than 10 HP.

10.4. LOCAL BODIES SERVICES - STEPS TAKEN BY TNEB:

a) To speed up the process of effecting street lights service connections in Local Bodies, TNEB collects from Local Bodies a flat rate of Rs.9,500/- per pole .

b) The Belated Payment Surcharge for Local Bodies has been reduced from 12% to 6% per annum with effect from 13.3.2007. Similarly the BPSC arrears of Rs.31.41 Crores as on 13.3.2007 from the Local Bodies were waived.

c) The period for payment of Current Consumption charges by Local Bodies has been extended from 20 days from the date of demand to 60 days from the date of demand with effect from 13.03.2007.

d) The tariff rate per unit for street lights and water supply schemes has been reduced from Rs.3.40 to Rs.3.00 in Village Panchayats, from Rs.3.40 to Rs.3.30 in Town Panchayats and from Rs.3.50 to Rs.3.30 in Muncipalities and Corporation with effect from 13.3.2007. This has been made applicable to Tamil Nadu Water and Drainage Board (TWAD) and Chennai Metro Water Supply and Sewerage Board(CMWS&SB) also.

e) The total category-wise street lights effected during 2008-09 as on 31.03.2009 is as below:

Sl.No.	**NAME OF THE SCHEME**	**SERVICE EFFECTED DURING 2008-09.**
		IN NOS.
1.	POOLED ASSIGNED REVENUE	38648
2.	Anaithu Grama Anna Marumalarchi Thittam (AGAMT)	33205
3.	Member of Local Assembly Constituency Development Scheme (MLACDS)	3494
4.	Member of Parliament local area Development	99

	Programme(MPLADP)	
5.	Anaithu Peruratchi Anna Marumalarchi Thittam(APAMT)TOWN PANCHAYATS	4107
6.	Anaithu Peruratchi Anna Marumalarchi Thittam (APAMT) (MUNICIPALITIES)	266
7.	GENERAL FUNDS, SFC Etc., (In Village Panchayats, Town Panchayats, Municipalities and Corporations)	35667
8.	Rural Infrastructure scheme	6711
9.	Tsunami Relief Fund	1885
	TOTAL	**124082**

f) TNEB is effecting services for thr water supply schemes on a priority basis and the No.of water supply services effected during 2008-09 is 6611 Nos.

10.5. PROVIDING ELECTRICITY CONNECTION TO THE HOUSES OF BENEFICIARIES UNDER DISTRIBUTION OF FREE COLOUR TV SCHEME:

Providing free colour TV sets to poor families in the State has been one of the mega scheme of the present Government. As the first phase of

implementation, 30,000 families, mostly Tribals in the Nilgiris District were chosen by Government. Under Phase I of this scheme, electricity supply connections were extended to 4,335 families living in inaccessible hill tracts in Nilgiris mountainous area, and 374 new services have been effected in Samathuvapurams. In the second phase a total of 1,83,099 new services and in the third phase 1,20,694 new services have been effected. Thus, free electricity service connections have so far been provided to 3,08,502 consumers under this scheme.

11.0. SERVICE DELIVERY AND CONSUMER SATISFACTION:

The following Information Technology initiatives have so far been taken towards improving of customer satisfaction:

11.1. COMPUTER BASED POWER FAILURE REDRESSAL CENTRES

Computer based power failure redressal centres are functioning in Chennai, Coimbatore, Madurai, Trichy, Erode, Salem, Tiruppur, Tirunelveli, Nagercoil , Karur and Vellore. 'A Common customer care centre' will be provided at Chennai headquarters for entire Tamil Nadu

under the Restructured APDRP in the XI plan period during 2009-12. On establishment of the customer care centre, the customers of TNEB all over Tamil Nadu can contact the above centre for their Grievance redressal like fuse of call, name transfer, bill related matters etc.,

11.2. Data Centre : Under RAPDRP scheme one 'Main Data centre at Chennai' and another 'Disaster Recovery Data Centre at Madurai' are proposed for storage, recovery and retrieval & management of data.

11.3. ONLINE PAYMENT OF CURRENT CONSUMPTION BILLS:

'Online payment' of current consumption charges has become effective from 15.09.2008 through AXIS Bank payment gateway. Subsequently three more banks viz., Indian Bank, ICICI Bank and City Union Bank were added to the facility. The consumers of Chennai can now pay their current consumption charges between 1st and 15th of every month through internet from their homes by using their credit / debit cards. The address of the website is www.tneb.in . This facility is proposed to be extended to the remaining part of the State also during the year 2009-10.

11.4. AUTOMATIC REMOTE METER READING:

Tamil Nadu Electricity Board has planned to introduce 'Online web-based real time remote automatic meter reading for HT Services'. As a first step, TNEB has proposed for a pilot study covering 724 HT Services in Chennai North Region, at a cost of Rs.60 lakhs.

12.0. RESTRUCTURING OF TNEB:

The Electricity Act, 2003 has come into force with effect from 10.6.2003. The main provisions pertaining to the reorganization of Electricity Boards, contained in the Act, are as follows:

a) A State Electricity Board shall be deemed to be and function as the 'State Transmission Utility' and a licensee under the Act for a period of one year after the Act comes into force. Thereafter a State Electricity Board may function as a 'State Transmission Utility' or a 'Licensee' for such further period as may be notified by the State Government and as mutually decided by the Central Government

and State Government (Section 39 and Section 172(a).

b) On expiry of the period specified for the Board to function as the State Transmission Utility or a Licensee, 'the undertaking of the State Electricity Board' is to be transferred in accordance with the transfer scheme required to be prepared by the State Government (Section 172(c).

The Government of India accorded concurrence for continuing the TNEB in its present form as the State Transmission Utility and Licensee for a further period upto 15.06.2009.

12.1. The Government of Tamil Nadu have accorded "**in principle**" approval for the re-organisation of TNEB by the establishment of 'a Holding company', by the name **'TNEB Ltd'**. and two subsidiary companies, namely **'Tamil Nadu Transmission Corporation Ltd'** (TANTRANSCO) and **'Tamil Nadu Generation and Distribution Corporation Ltd'** (TANGEDCO) with the stipulation that the aforementioned companies shall be fully owned by Government. The Govt. have also constituted a Steering Committee to finalise the transfer

scheme for the re-organisation of Board under section 131 of the Electricity Act, 2003.

12.2. A consultant has been appointed for restructuring the Tamil Nadu Electricity Board. The consultant has to submit the report within 3 months.

12.3. Tamil Nadu Electricity Board is taking all necessary steps for restructuring the Tamil Nadu Electricity Board within the due date given by Government of India.

13.0. WELFARE OF TNEB's EMPLOYEES:

13.1. PAY REVISION TO THE EMPLOYEES OF TNEB

The wage revision to the officers and the staff of the Board was due on 01.12.2007. Pending finalization of wage revision an interim relief of Rs.7000/- to all the regular employees and Rs.4000/- to all the pensioners of the Board was paid on 18.02.2009. Total financial commitment on this account during 2008-09 was Rs.85 Crores.

13.2. NEW HEALTH INSURANCE SCHEME

The Government have introduced the New Health Insurance Scheme for the employees of Government, Local bodies, Public Sector Undertakings and Statutory Boards in G.O. Ms. No.430, dt. 10.09.2007. Based on the above G.O. Tamil Nadu Electricity Board also has introduced the New Health Insurance Scheme in the (per) B.P.(CH) No.89, dt. 21.05.2008

Salient features of the scheme are as below.

i) As against the present limitation of assistance of Rupees One lakh throughout the service period, employees can avail of the financial assistance upto Rupees two lakhs in a block period of four years. After this period, he/she will again be eligible for a similar assistance in the next 4 years block and so on till retirement from service.

ii) The monthly subscription under the New Health Insurance Scheme for all the employees is Rs.25/- per month.

iii) The annual premium under the scheme shall be Rs.495/- per employee plus Service Tax for a period of four years from the date of commencement of the Scheme.

iv) An initial payment of Rs.2,87,65,700/- towards premium has already been made.

13.3. REGULARISATION OF CONTRACT LABOURERS:

One of the major decisions towards employee's welfare taken by this Government pertains to the regularisation of the Contract labourers. Total number of employees as contract labourers identified for regularisation during 2007 was 21,600. Out of this first batch of 6000 contract labourers were regularised on 01.12.2007. The second batch of another 6000 contract labourers has been regularised with effect from 03.06.2009. The remaining contract labourers will also be regularised in phases as agreed upon with the Unions.

13.4. In addition, total number of 17,189 field level staff mostly ITI holders, helpers, Mazdoors, helper-cum-meter readers, Assistant Engineers have been appointed in the Board during the last two years so as to ensure better and higher quality of service delivery particularly at cutting edge level.

TAMIL NADU ENERGY DEVELOPMENT AGENCY

POLICY NOTE FOR 2009-2010

The Tamil Nadu Energy Development Agency (TEDA) is the Nodal Agency of the Ministry of New and Renewable Energy (MNRE), Government of India for the promotion of Renewable Energy schemes in the State. It has been registered as a society under the Societies Registration Act and is functioning since 1985. It is under the administrative control of Energy Department.

Tamil Nadu Energy Development Agency has set the following as its main objectives.

- Identifying and estimating the potential for renewable energy in the State.

- Creating awareness on the potential and prospects by use of renewable energy.
- Enhancing renewable energy contribution in the overall energy mix in the State Grid.
- Abatement of Green house gas emissions caused from increasing use of conventional fuels by promoting the use of renewable energy / stand alone systems to combat Global Warming.
- Developing and implementing sustainable energy security policy towards attaining energy independence in small villages.

The installed capacity of power generation in Tamil Nadu from the Renewable Energy sources, which was 4304 MW as on 31.3.2008 has now reached 4790 MW as on 31.03.2009 representing about 37% of the country's capacity. About 99.6% of this capacity has come from the private sector. The major contribution is from Wind which is 4287 MW as on 31.03.2009 (44% of the country's capacity). The others are Bagasse based Co-generation 266 MW, Biomass Power 147.55 MW and small hydro (upto 25 MW) 89.7 MW. Totally 7532 million units of electricity was generated from the

renewable resources in the state during the year 2007-08, which is about 11% of the grid consumption. Tamil Nadu's achievements of 27% in installed capacity and 10% in the units generated as share of renewable resources is way ahead of other States and even the country as a whole, as these were the targets set to be achieved by 2012 and beyond.

I. GRID INTERACTIVE POWER GENERATION

Tamil Nadu has been in the forefront, in producing power from the Renewable Energy sources such as Wind, Biomass etc. and feeding to the Grid supplementing the conventional power. During the 10th Five year Plan period (2002-2007), it was increased from 1000 MW to 3834 MW and presently it is 4790 MW which is 27% of the TNEB's grid capacity, much higher than the target of 10% set by the Government of India to be achieved by 2012. The percentage at the all India level is at present only 9%. The addition made during the year 2008-09 is 431 MW. In the present day context, everyone is most concerned about Global Warming and climate change, it is commendable that the State of Tamil Nadu has achieved such a high percentage of

Renewable share in the Grid Power on par with other Developed Countries of the World.

1. WIND POWER

Wind has considerable potential as a global clean energy source being both widely available, though diffuse, and producing no pollution during power generation, Tamil Nadu is endowed with three lengthy mountain ranges on the Western side with potential of 1650 MW in Palghat pass in Coimbatore District, 1300 MW in Shengottai pass in Tirunelveli District and 2100 MW in Aralvoimozhi pass in Kanniyakumari District and 450 MW in other areas totalling 5500 MW.

There are 41 Wind potential sites in 8 Districts in the State, declared by C-WET, as suitable for Wind Power projects based on the Wind assessment studies carried out by TEDA with the funding assistance of MNRE and the State Government. Wind farms have so far been set up in 26 sites of the above, almost entirely by the private sector, except 19 MW of Demonstration Wind farms in 8 locations set up during 1986 to 1993, jointly by TEDA and TNEB, but now run and maintained

by TNEB. The total installed Capacity of Wind Mills in the State including the 19 MW under public sector is **4287** MW (**8451** Machines) as on **31.3.2009**. The addition made during the year 2008-09 is **431** MW. The capacity addition made during the 10th Five Year Plan (2002-07) and the **two** years under XIth Five year Plan are given below:

Year	Installed capacity addition MW	Units of electricity generated in million units (MU)
2002-03	133	1305.703
2003-04	371	1714.475
2004-05	679	2260.732
2005-06	858	3444.281
2006-07	577	5268.840
Total	**2618**	**13994.030**
2007-2008	381	**6092.369**
2008-2009	**431**	**6655.150**

The total units generated from wind was 26749 million units (cumulative) as on 31.3.2008 and **6655** million units during the year 2008-09 which is 9% of Tamil Nadu's grid consumption.

A package of incentives which includes fiscal concessions, custom duty, excise duty exemption and 10

year tax holiday are available for Wind Power projects from Govt. of India. Intra State open access regulations have been notified and preferential tariff orders issued for Wind Power Projects in Tamil Nadu by the Tamil Nadu Electricity Regulatory Commission (TNERC). As per the revised tariff orders issued in May 2006, the rate is Rs.2.75 per unit for the projects for which agreements had already been signed and Rs.2.90 per unit where the agreements are to be signed. The wheeling and banking charges remain unchanged at 5% each. **The TNERC has issued orders enhancing the rate from Rs.2.90 to Rs.3.39 per unit, effective from 1.04.2009.**

Wind resource assessment studies were carried out in 69 Wind prone Zones by setting up Wind monitoring stations since 1986, out of which 41 sites having annual mean wind speed of 18 KM per hour and above and annual mean Wind power density of 150/200 W/m^2 and above at 30 m / 50 m level, have been declared by Ministry of New and Renewable Energy as potential and viable for commercial projects. Wind mills have so far come up in 26 sites. 9 new wind monitoring stations have been installed through Centre for Wind

Energy Technology, a Govt. of India undertaking in various Districts with 20% cost sanctioned by the State Govt. and balance 80% cost provided by Ministry of New and Renewable Energy to Centre for Wind Energy Technology. They are under study with data being collected every month.

Further Micro survey of Wind resources, around select potential stations has been carried out to provide reliable data to wind farm developers for selecting proper location for Wind mills in potential areas. Apart from 19 stations where the study was carried out with MNRE funding, the study was done in 8 more stations by Centre for Wind Energy Technology with State funding. The total potential in the 27 stations as per the above study is 6385 MW.

Besides the MW scale wind mill generators (grid connected), stand alone type generators upto 30 KW rating are also available.

Wind mills can also be used directly for pumping water for drinking purposes or minor irrigation. MNRE subsidy is available for installation of these systems.

2. BIOMASS POWER

Biomass is produced by green plants through photosynthesis using sunlight. Biomass contains organic matter which can be converted to energy and replenished by human effort. The estimated power generation potential from surplus Biomass in Tamil Nadu is 487 MW as per the District level study carried out by Anna University with MNRE funding. Another 450 MW is available from Bagasse based Co-generation in sugar mills.

Energy can be produced from biomass through gasification as well as combustion route. In combustion route, biomass is burnt fully to produce steam which in turn is used for power generation through turbines. In gasification process, biomass is burnt partially and converted into producer gas which is used for thermal or electrical applications.

The cumulative installed capacity of grid interactive biomass and bagasse based Co-generation is **613.35** MW as on **31.03.2009** (466.10 MW from Bagasse Co-generation **147.25** MW from Biomass

Power **including waste to energy projects**). In the case of Co-generation projects, the total exportable surplus power, after their own consumption, is 266 MW.

In the case of Biomass Power projects, **26** Projects with total capacity of **284.20** MW, recommended by the standing Committee constituted by the Government under the Chairmanship of CMD / TEDA, are in the various stages, out of which **1** No. project (**10** MW) are likely to be commissioned soon, apart from **13** projects (**141.70** MW) already in operation.

Out of the 13 Nos. projects, two projects viz. one in Ramnad District (18 MW) and one in Thoothukudi District (20MW) have opted for 100% coal, instead of Biomass and are in the process of cancelling the Power Purchase Agreement already executed with Tamil Nadu Electricity Board. Therefore the total No. of projects under Biomass power category is only 11, with a capacity of 103.70 MW.

A package of incentives which includes fiscal concessions such as accelerated depreciation, concessional customs duty, excise duty exemption, income tax exemption on projects for 10 years etc are

available from Government of India for these power projects. From December 2006, Capital subsidy in lieu of interest subsidy is being provided by MNRE for grid interactive renewable energy projects (except wind in private sector) through concerned financial institutions, after the project has been successfully commissioned. In the case of bagasse Co-generation, projects in Co-operative / public / Joint Sector sugar mills, 50% of the subsidy amount will be released to the Financial Institutions after sanction of loan and the balance after successful commissioning. As per the Tamil Nadu Electricity Regulatory Commission, tariff orders issued in May 2006, the rate for purchase of power by TNEB is Rs.3.15 per unit with concessional wheeling charge of 3% for distance upto 25 KM and 6% for distance beyond 25 KM. The TNERC has issued orders enhancing the rate to Rs.4.50 per unit w.e.f. 4.5.2009.

3. POWER GENERATION FROM URBAN AND INDUSTRIAL WASTES

Generation of wastes both in solid and liquid form is associated with industrial and other activities. Civic activities generate solid and liquid wastes while industrial

activities mainly generate liquid wastes. Both types of wastes can be used for producing energy through different processes namely Biomethanation and combustion.

Biomethanation is the most preferred route for recovery of energy from Biomass wastes having higher moisture and organic content. Organic wastes segregated from Municipal solid waste, sewage water and other industrial wastes with high levels of Biological oxygen demand (**BOD) /** Chemical oxygen demand (**COD)** can be treated in this method. Combustion technology is used for producing steam from Municipal solid wastes that contain high amount of organic non-bio degradable matter and low moisture content. The steam so produced is used for power generation through conventional turbines. MNRE subsidy is available for all these schemes. Power purchase agreement can also be made with TNEB for export of the power produced. There are 3 projects with total capacity of 4.25 MW in operation in the State including 250 KW at Koyambedu Vegetable complex**.** All the three projects are not

functioning now optimally due to various problems in handling the feed materials.

4. SOLAR POWER GENERATION

In order to promote the use of Solar Energy for producing grid quality power in the country, the Ministry of New and Renewable Energy (MNRE), Government of India, has introduced new policy guidelines in January 2008, whose salient features are given below:

For the first time, generation based incentives will be provided for grid interactive solar power generation. A maximum amount of Rs.12.00 per Kwh will be provided as incentive for electricity generated from solar photovoltaics and Rs.10.00 per Kwh for electricity generated through the solar thermal route and fed to the grid from a power plant of minimum 1 MW capacity and above. This incentive will be provided to the project developers at a fixed rate for a period of ten years for the projects which are commissioned by 31st December 2009. This incentive will be available for all the existing registered companies, Central and State

power generation companies and public / private sector photovoltaic power project developers who have set up or propose to set up a registered company in India. The maximum capacity per project will be 5 MW either through a single project or multiple projects of a minimum Capacity of 1 MW each. Each State may be allowed to set up upto 10 MW under this programme. These projects are to be undertaken on Build, Own and Operate basis.

Based on the Global Tender issued by TEDA, 5 MW SPV project and 1 MW Solar Thermal Power Project by private promoters have been identified under this scheme and the proposals received from the firms have been recommended to MNRE. They had also entered into an Energy Purchase Agreement (EPA) with Tamil Nadu Electricity Board.

II. STAND ALONE RENEWABLE ENERGY SYSTEMS

The one great advantage of Renewable energy is that it can be generated wherever it is required with

locally available sources such as Solar, Wind, Biomass etc. It thus reduces the burden on the centralized generation systems in the grid involving long transmission lines with consequent losses. TEDA encourages installation of these systems by the industries, institutions and local bodies with subsidy provided by the Government of India (MNRE) or the State Government or both. A brief outline on the various systems available is given below:

1. SOLAR THERMAL SYSTEMS

Solar thermal systems harness the heat energy from the sun, through Solar thermal collectors using specially coated black metal plates and use the same for heating of water or air. Solar Water heating system, Solar air heating system / dryer and Solar Cookers are some of the best examples of Solar Thermal systems in use.

1.1 Solar Water Heating System

A Solar Water Heater is a device that uses heat energy of the sun to provide hot water for various applications such as bathing, Washing, Cleaning etc in

homes as well as Hotels, Hospitals and other industries where hot water is required. A domestic Solar Water Heater, with a Capacity of 100 LPD (liters per day), is sufficient for a family of 4 or 5 members. It can easily replace a 2 KW electric geyser and can save upto 1500 units of electricity a year. It pays back the cost in 3 to 5 years, after which hot water is available almost free of cost during the remaining life span of the systems, which is about 15 – 20 years. Any higher capacity systems as required can be installed in multiples of 100 LPD. The only condition is that a shadow free open space is required on the ground or terrace. About 3 sq.m space is, required for 100 LPD system. It works automatically and one does not have to operate any part of the system.

In view of its inherent advantages, the State Government had made the use of Solar Water heating system mandatory in certain types of new buildings in the State by the orders issued in the year 2002, for amending the building byelaws.

The Government of India (MNRE) is providing soft loan @ 2% to domestic users, 3% to institutional users

not availing accelerated depreciation and 5% to industrial / commercial users availing depreciation through IREDA and Public / Private sector banks etc. Capital subsidy equivalent to upfront interest subsidy @ Rs.1900/- per sq.m of Collector area will be available to Housing complexes, @ Rs.1750 per sq.mtr. to registered institutions and @ Rs.1400 /- per sq.m. of Collector area to registered Commercial establishments that do not avail soft loans.

The State Government had also earlier provided subsidy to domestic and institutional users for installing the Solar Water heating systems. But now, it has been restricted to providing 100% cost for installation in Government institutions only. Every year, a few Government Hostels / Hospitals have been provided with these systems. As on 31.3.2008, Solar Water Heating System have been installed in 66 Government buildings, 3522 residences for domestic purposes and 440 industries / Institutions for commercial purposes under various subsidy schemes. Apart from the above, the solar water heating systems, sanctioned by the Government (Rs.214.00 lakhs) under the special

scheme, in March 2008, are under installation at the residences of Hon'ble Ministers, High Court Judges, State Guest House, MLA's Hostel and special Houses for IAS & IPS Officers. 76 Nos. of systems totalling 15200 LPD have so far been installed under the scheme. For the year 2008-09, Rs.20.00 lakhs has been sanctioned under Part-II scheme for installation in Government Hospitals etc. with a total capacity of 10,000 LPD.

1.2 SOLAR AIR HEATING SYSTEMS

In the Solar Air Heating system or Solar dryer also, the sun's heat energy is used to heat the air which is made to blow over the materials to be dried. A raise in ambient air temperature of 30 to 40^{o}C can be obtained and the usage of conventional fuels such as firewood, coal etc can thus be reduced to the extent of 25%. The Solar Air Heating systems are being used in processing of tea leaves, fruits, vegetables and drying of grains, etc. and the same has been extended to drying of fish, salt, spices, leather etc. The uniform heating obtained

through the use of Solar Air Heating systems, improves the quality of the dried items.

The Government of India (MNRE) is providing subsidy for installation of Solar Air Heating system at 50% of the cost of the system, subject to a maximum of Rs.2500/- per sq.m of Collector area for non-profit making institutions, organizations and 35% of the cost subject to a maximum of Rs,1750/- per sq.m. of collector area for commercial and industrial users.

The State Government also had provided subsidy for installation of 32 systems with a total Collector area of 498 sq.m in the years 2003-04 and 2005-06 when the Government of India subsidy was not available. Totally 46 systems with a total Collector area of 4575 sq.m have been installed under subsidy schemes.

SOLAR COOKER

A Solar Cooker is a device that uses heat energy from the sun to cook food. Two types of Solar Cookers are available viz box type and dish type. A box type Solar Cooker, suitable for a family of 4 or 5, can cook food in 3 to 4 hours. The Cooker has to be kept outside

in the Sun, and can cook upto 4 items at a time. It is available with electrical backup, so it can be used even in non-shine hours. It can save upto 4 LPG cylinders, a year. However, food cannot be fried in the box type solar cooker. There is no Government subsidy for this type of Solar Cooker. However, under arrangements made by the Government of India (MNRE), interest free loan is available for the bulk users through Indian Renewable Energy Development Agency (IREDA) and some of the banks.

A dish Solar Cooker can cook food in lesser time than a box cooker. It can be used even for preparing chappaties and for frying. It can however, be used to cook only one item at a time. The Government of India (MNRE) subsidy is available upto 30% of the cost. The State Government also sanctioned in 2006-07, Rs.2.40 lakhs for providing 40 Nos. Solar Dish Cookers at full cost to Noon Meal Centre / Hostels. The same was allotted to the most Backward Class and Denotified Communities Welfare Department Student Hostels.

Solar steam cooking system is also available which can be installed where boilers are used for steam generation and the food cooked for thousands of persons. One solar steam cooking system with 1100 Sq. m. dish area, is under installation in an institution in Chennai. The Government of India (MNRE) has sanctioned Rs.55.00 lakhs as subsidy @ Rs.5000/- sq.m. for this solar cooker, out of the project cost of 110.00 lakhs.

2.0 SOLAR PHOTOVOLTAIC SYSTEMS

Solar energy is converted into electricity through solar photovoltaic (SPV) Cells / modules and utilized to operate various electrical appliances.

2.1 SPV DEVICES

SPV devices can be used for meeting the needs of home lighting, office lighting and Street lighting and promoted in the State under Government of India (MNRE) scheme with subsidy upto 50% of the cost. Local bodies in rural and urban areas can avail this subsidy and thus reduce the recurring Electricity charges. Totally 5732 Nos. SPV Street lights, 2076

SPV Home lights and 285 SPV pumps have been installed in the State under the subsidy scheme.

Under Part-II scheme for 2007-08 and 2008-09 the State Government has sanctioned Rs.10.00 lakhs for each financial year for providing 5 Nos. Solar Operated Vaccine Refrigerators @ Rs.2.00 lakhs to Primary Health Centres in remote areas to make available the essential Vaccines and life saving medicines to the needy people. The scheme is under implementation.

2.2 ELECTRIFICATION OF REMOTE HABITATIONS

Tamil Nadu has achieved total electrification of villages long time ago. But there are still a few remote habitations in forest areas which could not be electrified due to problems involved in extending long transmission lines, of long distance, forest clearance etc. Based on the list of habitations furnished by TNEB, which might not be electrified through the grid, the Government of India (MNRE) sanctioned the Remote Village Electrification Phase-I programme for electrification of 150 remote habitations using Solar lighting systems. The cost of which including 5 year maintenance is to be shared by the Central and State Governments. The work has been

completed in March 2007 by providing 5190 Nos. SPV Home lighting systems and 283 SPV Street lighting systems in 128 habitations in 12 Districts at a total cost of Rs.8.25 crores.

Further under Phase-II, electrification of another 32 habitations in 6 Districts has been sanctioned by Government of India (MNRE). Fund release against the sanction of Rs.1,02,77,376/- is awaited from the Government of India (MNRE). On receipt of the funds from the Government of India (MNRE), the scheme will be implemented.

3.0 BIOMASS GASIFIERS

Biomass gasification is basically conversion of solid biomass such as wood, wood waste, agricultural residues etc., into a combustible gas mixture normally called producer gas. They can be utilised for thermal and electrical applications.The required biomass yield can be obtained from energy plantations grown on waste lands. Further, all types of agricultural wastes viz Rice husk, Coconut shells, briquettes of various agricultural residues, maize crops branches and twigs of plants are the possible fuel stocks for the Gasifier.

Government of India (MNRE) provides subsidy for these gasifiers as below:

Industries / Institutions		
Thermal	:	Rs.2.00 lakhs / 300 KWe
Electrical Dual Fuel	:	Rs.2.50 lakhs / 100 KWe
100% Gas engine	:	Rs.15.00 lakhs / 100 KWe (educational Institution) Rs:10.00 lakhs / 100 KWe (Commercial / Industries purpose)
Gasifier installed under MNRE / State subsidy		--
Industries / Institution	:	2670 KWe (Thermal) 2140 KWe (Electricity)
Village Panchayat (Small Capacity)	:	614 KWe (64 Nos.)

The Government of India (MNRE) had sanctioned CFA of Rs.35.00 lakhs for installing of 1.40 MW Biomass Gasifier (Dual Fuel) for captive power generation plant using Biomass at M/s. Sri Gomathi mills P. Ltd. Tirunelveli District on reimbursement basis. The plant was commissioned on 10.5.2008.

4.0 BIOGAS PLANT

Biogas is a flammable gas and is used as fuel. It is technically possible and economically feasible to

generate biogas from cattle dung, agro waste, Kitchen waste, sugarcane, press mud etc. and also human waste. It is the most appropriate option for meeting the growing energy needs in rural areas. It is a clean and convenient fuel for cooking and lighting in households and also for power generation in KW scale.

The Government of India (MNRE) subsidy is available for installation of Biogas plant upto Rs. 5.00 lakhs/project or 20% of the project cost. MNRE has sanctioned 2 Nos. biogas based power generation systems, one of 10 KW capacity and another 5 KW capacity to be installed in Coimbatore and Salem Districts respectively by self Help Groups. The power generated will be utilized for electrification of tribal areas.

The Government of India (MNRE) had also sanctioned Central Financial Assistance of Rs.134.90 lakhs for installation of 1.4 MW captive power generation plant using Biogas produced under biomethanetion process from distillery waste through biogas engine at Trichy Distilleries and chemical plant on reimbursement basis. The plant was commissioned on 27.3.2008.

The State Government also provided subsidy at 30% of cost for installation of Toilet linked Biogas plants in institutions and Women sanitary complexes in Panchayats. Totally 19 Nos. in institutions and 39 Nos. in Panchayats were installed during 2003-04 and 2004-05 through the Director of Rural Development and Panchayat Raj.

III. OTHER SCHEMES

1. PUBLICITY AND AWARENESS PROGRAMMES

TEDA has been organizing Seminars and exhibitions to extend the use of Renewable energy and promote energy conservation among industries, local bodies and other Institutions. Consequently many Panchayats, made aware of the benefits of Solar Street lights, Home lights, Biomass gasifiers and biogas plants are keen to install them and reduce their recurring current charges. Further, Energy Clubs have been formed in 120 Engineering Colleges, which help in making the students aware of the benefits of Renewable Energy and make them enthusiastic in their further of the people.

Rajiv Gandhi Renewable Energy Day on 20th August is also being celebrated in all the Districts and at the State level, with rallies, contest for students, cultural programmes etc.

2. RENEWABLE ENERGY PARK

Renewable Energy Parks are being set up in various institutions to create awareness among public on the uses of Renewable energy devices. Government of India (MNRE) provides subsidy at 75% cost of equipments for the first District level park and 50% for the second park in the same District. So far, 19 Energy Parks are functioning in 8 Districts.

Further a State Level Energy Park is being set up at Tamil Nadu Science and Technology Centre, Kotturpuram in Chennai with Rs.89.00 lakhs provided by Ministry of New and Renewable Energy towards the cost of the equipments and Rs.52.00 lakhs provided by the State Government for civil works. The work will be completed by **2009.**

3. BATTERY OPERATED VEHICLES

Use of Battery Operated Vehicles is another option to conserve petroleum products and control pollution due to Vehicular emission. These Vehicles run without Petrol, make no noise and are pollution free. They are ideally suited for taking the public for short distances in places like Zoo etc. The Government of India (MNRE) provides subsidy upto 33% the cost of the vehicle for use by Institutions and other Public organization.

4. EVALUATION STUDIES

The State Government has sanctioned in 2007-08, Rs.5.00 lakhs for carrying out a study and collect data on private wind mills installed in the State and their Performance.

Another Rs.8.00 lakhs has also been sanctioned for carrying out the performance evaluation study of the Renewable energy devices installed with Government subsidy. They are, the SPV Street lights, SPV Home lights, Solar Water Heating systems, Solar Air Heating systems and Toilet linked biogas plants installed during the period from 2002-03 to 2005-06.

5. RESEARCH & DEVELOPMENT PROJECTS

Tamil Nadu Energy Development Agency has taken up the following Research & Development Projects, jointly with Anna University, at a total cost of Rs.40.00 lakhs shared equally by the State Government and Anna University.

i) Development of Solar Cooker based on Thermal Storage system for Cooking during night / early morning

ii) Design and development of Energy efficient building using Solar Passive Architecture.

iii) Design and development of Bagasse drying unit using waste heat.

The works in respect of item (i) and (ii) are expected to be completed by 2009, and the balance item during 2009-2010.

6. WESTERN GHATS DEVELOPEMNT PROGRAMME

Under the Western Ghat Development Programme (WGDP), the Government has sanctioned in 2008-09 Rs.29.70 lakhs for installation of 99 Nos. Solar PV Street lights in the Districts viz. Coimbatore,

Kanniyakumari, Dindigul, Erode, Madurai, Tirunelveli, Virudhunagar and Theni Districts.

IV NEW SCHEMES UNDER PART-II FOR 2009-2010

SL. No.	New schemes under Part-II for 2009-2010		Total outlay proposed for 2009-2010 (Rs. in lakhs)
1.	Solar Water Heating Systems in Govt. Hospitals / Hostels / Institution (14000 LPD)	:	43.00
2.	New Wind Monitoring Stations (State share 20%) (3 Nos.)	:	6.00
3.	Toilet / Kitchen Waste Biogas Plant in Govt. College Hostels (6 Nos.)	:	36.00
	Total		**85.00**

ELECTRICAL INSPECTORATE DEPARTMENT

1. INTRODUCTION & ADMINISTRATION

Electricity is a subject included in the concurrent list of Constitution of India. Electricity Act, 2003 (Act 36 of 2003) has been made repealing the enactments of Indian Electricity Act, 1910, Electricity (Supply) Act, 1948, the Electricity Regulatory Commission Act, 1998. The said Electricity Act, 2003, has come into force with effect from 10th June 2003.

The Electrical Inspectorate Department with Chief Electrical Inspector to Government, as Head was created in September 1961. Electrical Inspectorate has come under the administrative control of the Energy Department, after the formation of the Energy Department at Secretariat on 1.8.93.

2. FUNCTIONS AND DUTIES

The Electrical Inspectorate Department is entrusted with the following duties and functions:-

a. Carrying out scrutiny of Electrical drawings and inspections and other services under Indian Electricity Rules,

1956, till regulations are made under the Electricity Act, 2003 (Act 36 of 2003).

i. Approval of High and Extra-High Voltage electrical installations of Generating Companies, Tamil Nadu Electricity Board and High Tension consumers under Rule 63 of Indian Electricity Rules, 1956.

ii. Periodical inspection of High Tension installation of High Tension Consumers under Rule 46 of Indian Electricity Rules, 1956.

iii. Periodical inspection of supplier's High and Extra High Voltage Installations, under Rule 46 of Indian Electricity Rules, 1956.

iv. Review of all electrical accidents under Rule 44A of Indian Electricity Rules, 1956, in connection with the generation, transmission, supply or use of energy, and suggesting remedial measures.

b. As per Tamil Nadu Lift Act, 1997 and Tamil Nadu Lift Rules, 1997, regularising all the lifts erected before 1997, and carrying out of inspection of new lifts and issuing licence.

c. Duties specified in Tamil Nadu Cinema (Regulation) Rules, 1957, in respect of Electrical Installation of Cinema Theatres.

d. Functioning as Member of Technical Committee Bureau of Indian Standards, which make Indian Standards Specifications in Electro Technical Field.

e. The Chief Electrical Inspector to Government has to function as Ex-Officio President of the Tamil Nadu Electrical Licensing Board constituted under Rule 45 of the Indian Electricity Rules, 1956.

f. The Chief Electrical Inspector to Government has to function as the Ex-Officio President of the Government Board of Examiners for Cinema Operators constituted under Tamil Nadu Cinema (Regulation) Rules, 1957.

g. Also as per powers conferred under Section 15(d) of the Energy Conservation Act, 2001, Government of Tamil Nadu has already notified The Electrical Inspectorate as the "Designated Agency" to co-ordinate, regulate and enforce the provisions of the Energy Conservation Act, 2001 (Central Act 62/2001).

The Bureau of Energy Efficiency, under the Ministry of Power, Government of India have allocated funds in order to implement various Energy Conservation measures in the State of Tamil Nadu for the financial year 2009-2010.

Based on the above, the following schemes are proposed to be carried out by the Tamil Nadu State Designated Agency, during the year 2009-2010.

I. Awareness creation and capacity building Schemes at an expenditure of Rs. 24.78 Lakhs.

- Half yearly State Level Meeting with certified Energy Managers and Energy Auditors and conducting

refresher course.

- Half yearly regional meeting of State Designated Agencies for exchange of information about lessons learned on state level implementation of EC Act.
- Training of SDA and other department personnel as well as Training of Designated consumers.

- State Level EC Day Celebration and Constitution of State Level EC Awards.

- Design and printing of promotional material to be distributed among the stakeholders.

II. Demonstration Projects

- Investment Grade Energy Audit (IGEA) in 15 State Government Buildings at various places of Tamil Nadu for achieving energy conservation at an expenditure of Rs.22.5 lakhs.

- Development of SME clusters among Lime Kiln Manufacturing Unit at an expenditure of Rs.45.7 lakhs.

- Energy efficient pumping system at underground sewage pumping station, Alandur at an expenditure of Rs.17 lakhs.

3. DUTIES UNDER TAMIL NADU TAX ON CONSUMPTION OR SALE OF ELECTRICITY ACT & RULES, 2003

This Act has come into force on and from 16.06.2003, repealing the existing Tamil Nadu Electricity (Taxation on Consumption) Act, 1962 and Tamil Nadu Electricity Duty Act, 1939.

a. Tax rates under this Act:

i) Self generated consumption of electrical energy is ten paise per unit.

ii) On sale of energy by Tamil Nadu Electricity Board or any other licensee 5% on the consumption charge.

b. Exemptions:

Following categories of consumers are exempted from the levy of the above tax.

i. For consumption by any Governments
ii. Railway Administration
iii. Any Local Authority

iv. Energy sold by Tamil Nadu Electricity Board or any other licensees for the use of domestic, huts and agricultural purposes.

v. Energy sold for the consumption of developers of Special Economic Zones, Industrial Units and other establishments within Special Economic Zones.

vi. Energy sold for the consumption of first new Industrial units set up in Tamil Nadu for a period of 3/4/5 years, depending upon the amount invested in eligible fixed assets from the date of first invoice.

4. <u>STANDARDS LABORATORY AND MOBILE LABORATORIES</u>

The Government Electrical Standards Laboratory attached to the Head Quarters

office caters to the need of calibrating the energy standards maintained by the Electricity Boards from various States of this Country. The licensed electrical Contractors' instruments and testing of electrical installations at the consumer's premises are also undertaken for the benefit of the end user. There are mobile Electrical Testing Laboratories in Chennai, Salem, Tirunelveli and Standard Electrical Testing Laboratories are in Madurai, Coimbatore and Trichy.

NEW SCHEME UNDER PART-II FOR THE 2009-2010

Sl. No.	Name of the Scheme	Total outlay proposed for 2009-2010 (Rupees in Lakhs)
1	Improvement of Testing facilities at the Government Electrical Standards Laboratory – Procurement of Potential Transformer Test Kit.	15.00

TAMIL NADU POWER FINANCE AND INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED

The Tamil Nadu Power Finance and Infrastructure Development Corporation Limited (TN Power Finance) was incorporated on 27.06.1991.The Corporation is registered with Reserve Bank of India as a Non Banking Finance Company. The objective of the Corporation is to mobilize funds for the Power Sector in Tamil Nadu, particularly for the schemes relating to generation, transmission and distribution network of the Tamil Nadu Electricity Board. The authorized share capital of the Corporation is Rs.50 crores and the Paid up Share Capital as on date is Rs.22 Crores.

FIXED DEPOSITS:

Concern and care for the customers and consistent profits have considerably expanded the deposit base over the last decade besides leaving an indelible imprint in the minds of the investors. Due to the failure of many private Non Banking Finance Companies which lured investors with exorbitant interest rates in the past, the

investors have reposed faith in Tamil Nadu Power Finance and Infrastructure Development Corporation Limited. Coupled with this fact, Powerfin's offer of 1% interest more than the nationalized banks has resulted in the substantial growth of deposit base from Rs.2.09 crores in 1991-92 to Rs.3,733.38 crores as on 30/04/2009 and the number of deposits from 816 in 1991-92 to 3,53,014 deposits as on 30/04/2009.

TN Power Finance has revised the interest rates for deposits with effect from 01/05/2009 which is as follows:-

Period	Rate % per annum
12 Months	8.25
24 Months	8.75
36, 48 & 60 Months	9.25

Besides, Tamil Nadu Power Finance is offering additional interest @ 0.25% per annum for 12 months and 24 months and 0.50% per annum for 36, 48 and 60 months on deposits made by Senior Citizens who have completed 58 years.

FINANCIAL ASSISTANCE

The funds mobilized by Power Finance are being utilized to finance Tamil Nadu Electricity Board for its

generation/ transmission / distribution and other activities. The gross cumulative financial assistance to Tamil Nadu Electricity Board as on 30/04/2009 is Rs.10,244.16 crores and the net loan outstanding from Tamil Nadu Electricity Board is Rs.4,339.98 crores as on 30/04/2009. In addition to the above, a sum of Rs. 105.00 crores has been provided as gross financial assistance to other Government Corporations like Poompuhar Shipping Corporation Limited, Tamil Nadu Industrial Investment Corporation Limited (TIIC),Tamil Nadu Industrial Development Corporation Limited (TIDCO) etc.,out of which Rs.28.70 crores is the net loan outstanding from Tamil Nadu Industrial Investment Corporation Ltd (TIIC) as on 30/04/2009.

MANAGEMENT OF GOVERNMENT SCHEMES:

A sum of Rs.395.56 crores (as on 30/04/2009) benefiting 2,59,751 children has been received as deposit under the "Sivagami Ammaiyar Ninaivu Penn Kuzhanthaigal Paadukaappu Thittam".

A sum of Rs.25.51 crores (as on 30/04/2009) has been received covering 10202 temples under "Oru Kala Pooja" Scheme.

A sum of Rs.3.75 crores (as on 30/04/2009) has been received under the scheme for providing assistance to school students who have lost their earning parents in accidents.

A sum of Rs. 6.76 crores (as on 30/04/2009) has been received for providing assistance to 150 orphaned children and adolescent, unmarried girls affected by Tsunami.

PROFITABILITY & DIVIDEND:

The Corporation has been making profit consistently since its inception in 1991. It is also declaring dividend at 20% on its Paid up Share Capital continuously for the past twelve years since 1995-96. Upto 2007-08, the Corporation has paid dividend totaling Rs.52.02 crores to the Government of Tamil Nadu.

FUTURE PLANS:

1. Mobilise a sum of Rs.500 crores as net deposits from public and institutions in the financial year 2009-10.

2. Provide financial assistance of Rs.1750 crores for power and infrastructure projects to be implemented by Tamil Nadu Electricity Board in the year 2009-2010.

ARCOT N. VEERASWAMI
MINISTER FOR ELECTRICITY.