About National Insurance Academy :

National Insurance Academy is established in 1980 primarily as Training Institute for senior executives of Insurance Industry by Life Insurance Corporation of India and General Insurance Corporation of India with participation and active support of the Ministry of Finance, Government of India. Major component of education at the Academy is based on an act of Parliament followed by IRDA Regulations.

Academy caters to the needs of Insurance Management Education in more than 65 Afro-Asian countries. On passage of IRDA Act 1999 and on repeal of GIBNA Act 1972, the Academy is now broad-based with autonomous status. It stills holds statutory professional education status for accreditation of insurance intermediaries as per IRDA regulations as mandated by an Act of the Parliament viz. IRDA Act 1999 as amended in 2002. NIA is an autonomous institute approved by AICTE and recognized by University of Pune. The courses offered by the Academy are:

- PG (MBA and E-MBA)
- MDP and
- PhD

Registration Status:

National Insurance Academy is registered under the Societies Registration Act, 1860 and its Registration No. BOM 785/80 GBBSD dated 16th December 1980. It is also registered under the Bombay Public Trust Act, 1950 and Registration No. F – 7891 (Pune) dated 6th January 1992. NIA is an autonomous institute approved by AICTE and recognized by University of Pune.

Formed by:

The Government of India along with Public Sector Insurance Companies:

- Life Insurance Corporation of India,
- General Insurance Corporation of India, National Insurance Co. Ltd.,
- The New India Assurance Co. Ltd.,
- The Oriental Insurance Co. Ltd., and
- United India Insurance Co. Ltd.

Funding:

The initial fund provided by the Ministry of Finance by transfer of Government Funds to NIA Society and the corpus was augmented by the insurance companies wholly owned by the Government of India.

Governing Council:

Consists of all Government nominees including the Controller of Insurance, Government of India. As the position of the Controller of Insurance, Government of India merged with Finance Department, subsequently Secretary, Banking and Insurance of Ministry of Finance took over the assignment of Governing Council / Board Member of National Insurance Academy, which is an ex-officio position till date.

Governing Board:

- Consists of Joint Secretary & Mission Director – NHRM, Ministry of Health & Family Welfare, Govt. of India,
- Chairmen of all public sector Insurance Companies and
- Independent specialists including the Director of NIA.

Building Profile:

National Insurance Academy shifted to NIA Balwadi Campus, Pune in June 1990 after the construction of its first phase was over. NIA is functioning in a picturesque 31.5 acres campus at Balewadi in Pune city. The campus comprises of Academy Complex, Computer Centre, Administrative block, Library, 5 hostel blocks and Residential Complex etc, with a total built up area of 30,341 Sq. Mts. The entire campus is lush green with vegetation and gardens.

Availability of Land in M^2		Built-up area in M^2	
Academic Area	**45,318**	**Institutional Area**	**18,489**
Play Grounds	**7,640**	**Administrative Area**	**2,085**
Hostels	**36,978**	**Amenities Area**	**1,910**
Staff Quarters	**31,428**	**Residential Area**	**7,857**
Others	**6,136**		
Total area…	**1,27,500**	**Total area….**	**30,341**

Total area of campus	(31.49 acres x 4048 Sq.M)	1,27,500 Sq.M
Total gardens and lawn	53,550 Sq.M	42% of total area
Total trees and plants	35,700 Sq.M	28% of total area

NIA Campus after completion of its second phase expansion, is powered through 1000 KVA and 500 KVA (Standby) Transformers. The 22KV H.T. Urban Feeder of MSEDCL caters the power to the campus. The standby power is made available for the institutional and residential buildings through 3 x 125 KVA and 1 x 380 KVA D.G. sets. In the event of failure of supply, all the four D.G. sets start automatically to cater emergency power to all the buildings through A.M.F. panels. However, the arrangement is made in such a manner that only one 380 KVA D.G. set cope up the emergency power requirement of all buildings. The remaining 3 – 125 KVA D.G. sets are put on standby mode. After restoration of electricity, the emergency supply feeders get energized through the normal supply from MSEDCL.

Right from the beginning, NIA is making constant endeavor in implementing various energy efficiency, conservation and management measures to use the available energy efficiently and judiciously. There are greatest challenges ahead for the energy users in terms of resource conservation measures like site planning, total water management, energy conservation, eco-friendly and energy efficient building materials, renewable energy, solid waste management and other innovative technologies and we are implementing these opportunities not only to get the benefits to our Academy but ultimately to help our nation.

As there are various developments and execution of infrastructural projects at the campus, utmost care at the planning level itself is being taken so that repetitive energy efficiency and conservation measures need not required to be implemented again.

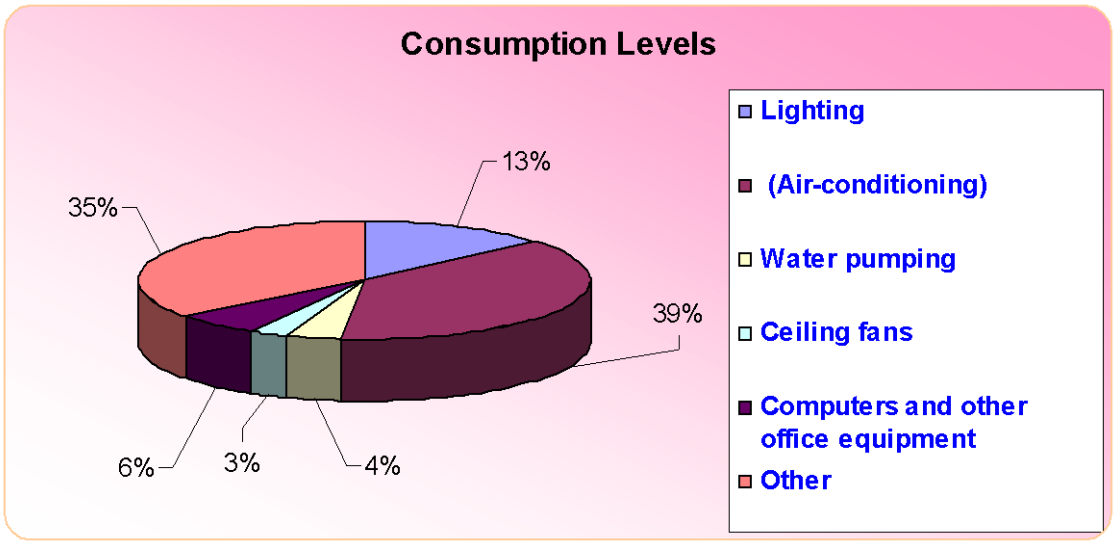
We have also encouraged our electrical engineers to appear for the National Level Certification Examination (Energy Manager / Auditor). Accordingly our Systems Administrator has appeared and passed the National Level Certification Examination in 2006.

The Academy has implemented and completed various projects at no cost, low cost as also with cost towards energy efficiency, conservation and management, proves that our Academy has concentrated on the greatest challenge of energy security.

Energy Consumption Details:

Year	KWH (EB)	Avg Demand KVA	Avg P.F.	Avg.Cost per KWH Rs.	Bill (EB) Rs.	KWH (DG)	Diesel Cost Rs.	Total Cost Rs.
2005-06	1244020	312	0.99	4.58	5668024	40384	754246	6422270
2006-07	1299720	329	0.98	5.61	7256723	65782	861939	8118662
2007-08	1457840	334	0.99	5.26	8244414	54749	670548	8914962

Consumption Level of Main Utilities:



Load and Specific Energy Consumption:

YEAR	LOAD	KWH	SEC
2005-06	1929.46	1284404	665.68
2006-07	1941.43	1365592	703.39
2007-08	1981.64	1512589	763.30

(*SEC- Specific Energy Consumption=kWh (yearly) / kW connected)

YEAR	NO OF PARTICIPANTS
2005-06	5196
2006-07	5405
2007-08	5679

(SEC - values are also related to the number of participants attended training programmes during the years)

Energy conservation measures carried out in-house.

- **Water conservation and recycling Sewage Treatment Plant. (1990)**

Wastewater generated from the domestic waste is treated in this Plant. The scheme to provide treatment of the wastewater is essentially based on the principle of extended aeration; the sewage collected through a network of sewerage system is brought to the treatment plant. The sewage after passing through screens is aerated in a tank along with the activated sludge returned from the settling tank. Aerated sewage is then allowed to settle suspended solids from the sludge and is taken to a separate sump. A part of the sludge that is in the activated form is returned to the aeration tank and the balance excess sludge is taken to the sludge drying beds for its final treatment and disposal, which is used for gardening manure. The treated sewage water is brought to a holding tank and is chlorinated. A part of the treated and chlorinated sewage is used for horticulture purpose in the NIA Complex with the help of garden hydrant system to the connected gardening areas in the 31.5 acres of NIA Campus and the balance if any is disposed to the nearby stream for final disposal.

- **Reduction in Contract Demands of Institutional as well as Residential Substations to save on Demand charges. (1994)**

In October 1989, NIA had made two agreements with MSEDCL for the supply of electricity to Academy buildings and Residential Complex. The details of the original contract demands and connected loads were as under:

	Substation No.1 (Institutional Buildings)	Substation No.2 (Residential Buildings)
Connected Load	700 KW	330 KW
Original Contract Demand	400 KVA	150 KVA
Original Billing Demand	300 KVA	113 KVA

As per the two parts tariff, the demand charges were payable at the 75% of the contract demands or established maximum demands during the billing month whichever was higher.

In both the cases the Contracts Demands were on higher side and NIA was paying demand charges for 75% of Contract Demands. As per the observations, being the educational institute all the loads were not coming up simultaneously and as the coincidental demands of both the substations were far less w.r.t. the connected load, the contract demand for both the substations were subsequently revised, in the year 1994.

	Substation No.1 (Institutional Buildings)	Substation No.2 (Residential Buildings)
Connected Load	700 KW	330 KW
Revised Contract Demand	250 KVA	70 KVA
Revised Billing Demand	188 KVA	53 KVA

Due to this, the demand charges in electricity bills were considerably reduced to the extent that NIA could save Rs.15 Lakhs from 1994 till the end of 2003.

- **Conversion of Street and Boundary Lighting. (1996)**

Renovation of Street and boundary lighting was carried out in 1995 by converting existing 130 Nos. of 125W HPMV fixtures into 100W HPSV.

S.NO.	SAVINGS	SALIENT FEATURES
1	Saving in connected load per fixture - 25 Watts.	Existing output from 125W HPMV lamp – 5800 lumens and from 100W HPSV lamp – 10000 lumens. Higher maintained illumination due to lower depreciation.
2.	No. of fixtures- 130	Minimum replacement and maintenance cost on account of three times greater life. (Burning hours)
3.	Operating Hours - 10	Better visual perception due to spectrum of the light being better adapted to the eye sensitivity curve.
4.	Savings per annum.	Rs.32, 384.00 @ Rs.2.73 per KWH (25x130x10x365/1000)

- **Merger of residential load into institutional load and converting two separate H.T. supply points into single H.T. supply point to get the benefit of combined contract demand. (2003-04)**

During second phase expansion of NIA campus, the load of residential complex was merged into the total load of the Academy buildings and the two H.T. supply points were converted in to single point HT supply from Substation No.1.
This benefited the Academy on:

1. Saving in Demand Charges due to merging of residential load into institutional load. 70 KVA contract demand got merged into new demand.
2. Reduced operating and maintenance cost on account of removal of H.T. equipments and 315 KVA Transformer from Residential Substation.

- **Permanent disconnection of 315 KVA Transformer and shifting residential load on 1000 KVA Transformer. (2003-04)**

22 KV H.T. Panel (MOCB)

315 KVA Transformer

As we diverted entire residential load on Substation No.1, disconnected existing 315 KVA Transformer, 22KV HT Panel, battery bank and battery charger, four pole structure etc. thereby reducing the operating and maintenance cost.

As we disconnected 315 KVA Transformer, saving in energy consumption due to transformer's iron core loss and copper losses was achieved.

- **During second phase expansion, introduced MCCB operated distribution feeders in the new L.T. Panels in place of HRC fuse feeders and also replaced all HRC fuses in all feeder pillars by required rating MDS MCBs. (2003-04)**

This was done to avoid consumption due to loose contacts of HRC fuses (Heat ∂ I^2 Rt) as also to lower operating and maintenance cost.

Feeders with HRC Fuses (SFU) –Existing

Feeders with MCCBs – New

- **Introduced Single L.T. Panel for catering emergency electric supply according to the need and requirement of power from three D.G.sets. (2003-04)**

As a part of second phase expansion work, installed 380 KVA D.G. set to meet the additional demand of emergency load. This D.G. was installed in addition to the existing 2 x 125 KVA D.G. sets. Earlier each 125 KVA D.G. was catering emergency power to Institutional and Residential Premises independently. During installation of 380 KVA D.G. set, a distribution board of a fail-safe logical control was designed and introduced with its simplicity of operation. This was done by using Power Contactors with electrical and mechanical interlocks and required logical control. Due to this existing emergency load of residential as well as institutional premises got shifted on 380 KVA D.G. set panel. During Mains failure the need of emergency power is met by operating 380 KVA D.G. only by keeping 2 x 125 KVA D.G. sets "OFF." Partial load of entire emergency load can also be fed by two 125 KVA D.G.sets. This resulted in avoiding unnecessary operation of 125 KVA D.G. Sets and ultimately savings in fuel cost.

- **Installation of Solar Hot Water System for all Hostel Blocks and Gymkhana (Jacuzzi and Hydro Massager). Total Capacity – 11000 LPD.**

1. Installation of 17 Nos. of Solar Hot Water Closed Loop Systems 300 and 400 ltrs capacity for Hostel No.4 & 5. (2003-04)

2. Installation of 14 Nos. of Solar Hot Water Closed Loop Systems 300 and 400 ltrs capacity for Hostel No.1, 2 & 3. (2004-05).

3. Installation of 2 Nos. of Solar Hot Water Closed Loop Systems 300 ltrs capacity for Hostel No.4. (2007-08)

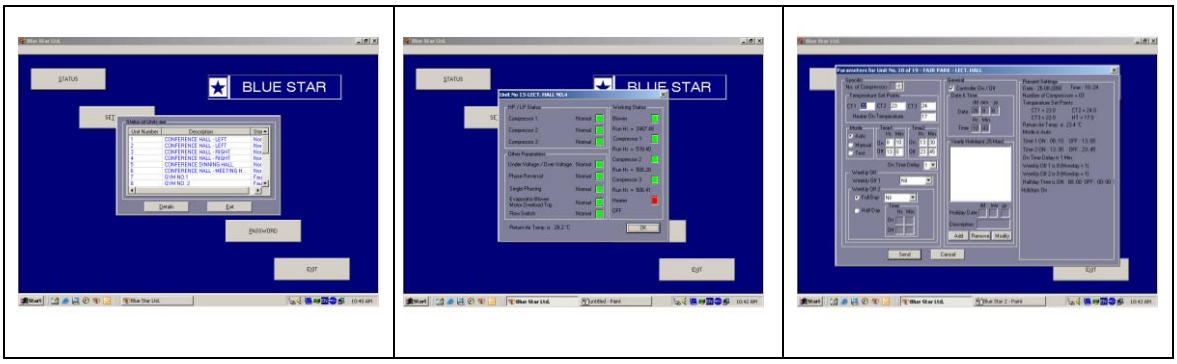
4. Installation of 3 Nos. of Solar Hot Water Closed Loop Systems 300 ltrs capacity for Hostel No.1, 3 & Gymkhana. (2007-08)

- **Installation of UPS systems having unity power factor for incoming supply. (2004-05)**

Installed 2 Nos. of 30 KVA and 2 Nos. of 12 KVA UPS Systems at various locations, having the latest state of the art of IGBT technology offering unity power factor and with microprocessor based control. This resulted in reducing KVA demand on D.G. set.

- **Installation of BRAMS Controller for all packaged air conditioners. (2004-05)**

Installed BRAMS Controller for all the Packaged and Ductable Split Air Conditioners with RS – 485 Ports and PT-100 Sensor for single point control and better optimization of energy efficiency. The ACs located at various locations are integrated in one Main Controller with PC through 6 Pair x 0.9 mm dia, telephone copper armoured cables.



- **Installation of Triodonic Ballast and Lutron Dimmers for CFL and 300 W PAR fixtures. (2004-05)**

Installed 2 Nos. of Lutron GXI-3104 (Integral) Dimming Modules for dimming 2 x 36 Watts (6 Nos.), 2 x 26 Watts (24 Nos.) and 2 x 18 Watts (20 Nos.) CFL fixtures in the auditorium and 1 No of Lutron GRX – 3106 Dimming Module for dimming 300-Watts PAR fittings (10 Nos). The CFL fittings are provided with Tridonic Ballasts for preset based lighting system for varying the lighting level in the auditorium as per the application like meetings, presentations and cultural activities.

- **Installation of Drip irrigation, Sprinkler and Pop up System (2005-06)**

Installed advanced mechanical and hydraulic design energy efficient range of sprinklers, which operate at substantially lower pressure than conventional sprinklers. The drip irrigation and sprinkler systems cover the entire gardening area spread over in 31.5 acres of NIA Campus.
Some of the salient features of the energy efficient sprinklers are:

1. Cut running cost
2. Cut Capital Cost
3. Irrigate more land
4. Less wear and Tear
5. No need to change existing pump sets.

1. Reduction in Contract Demand to get the benefit in Demand Charges:
Electricity bills by way of Demand Charges payable to M.S.E.D. Co. Ltd. (2006 -07)

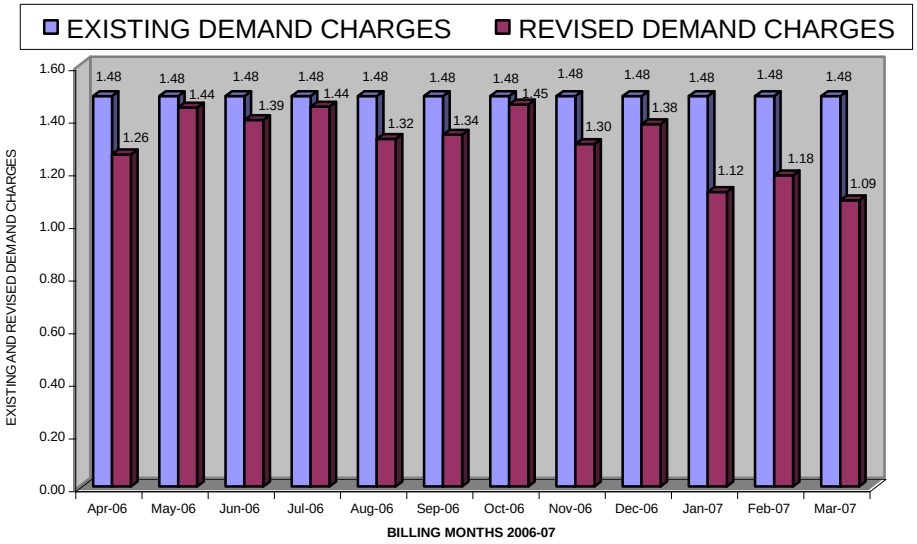
After second phase expansion of the campus was over in the year 2004 and completion of all construction activities the total connected load of the campus worked out was as under:

Total connected load	:	2300 KW
Total connected load in KVA considering p.f. as 0.9	:	2555.55
Estimated Contract Demand considering diversity factor from 0.3 to 0.8 for various types of loads	:	1297 KVA
Actual Contract Demand, demanded from MSEB considering maximum demand of 60%	:	750 KVA
Existing load before expansion.	:	750 KW
Additional load after expansion	:	1550 KW

As per the observations the highest maximum demand established over a period of two years for 2004 and 2005 was 348 KVA as compared to the contract demand of 750 KVA. As there was a large diversity factor involved in NIA's day-to-day activities, we once again decided to go for reduction in contract demand, in order to achieve significant saving in the electricity billing.

For this project, initially there was no any expenditure involved, however expenditure for replacing the existing current transformers of metering kiosk by lower rating current transformers - 3 Nos. was considered but not required to be incurred. The savings for the year 2006-07 of Rs. 2,08,428.50 is as under:

SAVINGS IN Rs. AFTER REDUCTION IN CONTRACT DEMAND FROM 750 KVE TO 450 KVA 2006 – 2007										
		EXISTING DEMAND CHARGES				REVISED DEMAND CHARGES				
Month & Year	MD Reco-rded KVA	Billing Demand KVA	Demand Charges	Elect. Duty On Demand Charges	Total Demand Charges	Billing Demand KVA	Demand Charges	Elect. Duty On Demand Charges	Total Demand Charges	Net Saving In Rs.
Apr-06	319	375	131250.00	17062.50	148312.50	319	111650.00	14514.50	126164.50	22148.00
May-06	364	375	131250.00	17062.50	148312.50	364	127400.00	16562.00	143962.00	4350.50
Jun-06	352	375	131250.00	17062.50	148312.50	352	123200.00	16016.00	139216.00	9096.50
Jul-06	365	375	131250.00	17062.50	148312.50	365	127750.00	16607.50	144357.50	3955.00
Aug-06	334	375	131250.00	17062.50	148312.50	334	116900.00	15197.00	132097.00	16215.50
Sep-06	338	375	131250.00	17062.50	148312.50	338	118300.00	15379.00	133679.00	14633.50
Oct-06	367	375	131250.00	17062.50	148312.50	367	128450.00	16698.50	145148.50	3164.00
Nov-06	329	375	131250.00	17062.50	148312.50	329	115150.00	14969.50	130119.50	18193.00
Dec-06	348	375	131250.00	17062.50	148312.50	348	121800.00	15834.00	137634.00	10678.50
Jan-07	283	375	131250.00	17062.50	148312.50	283	99050.00	12876.50	111926.50	36386.00
Feb-07	299	375	131250.00	17062.50	148312.50	299	104650.00	13604.50	118254.50	30058.00
Mar-07	249	375	131250.00	17062.50	148312.50	275	96250.00	12512.50	108762.50	39550.00
									Total…	208428.50


EXISTING DEMAND CHARGES
REVISED DEMAND CHARGES
EXISTING AND REVISED DEMAND CHARGES
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1.48
1.26
1.48
1.44
1.48
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1.48
1.32
1.48
1.34
1.48
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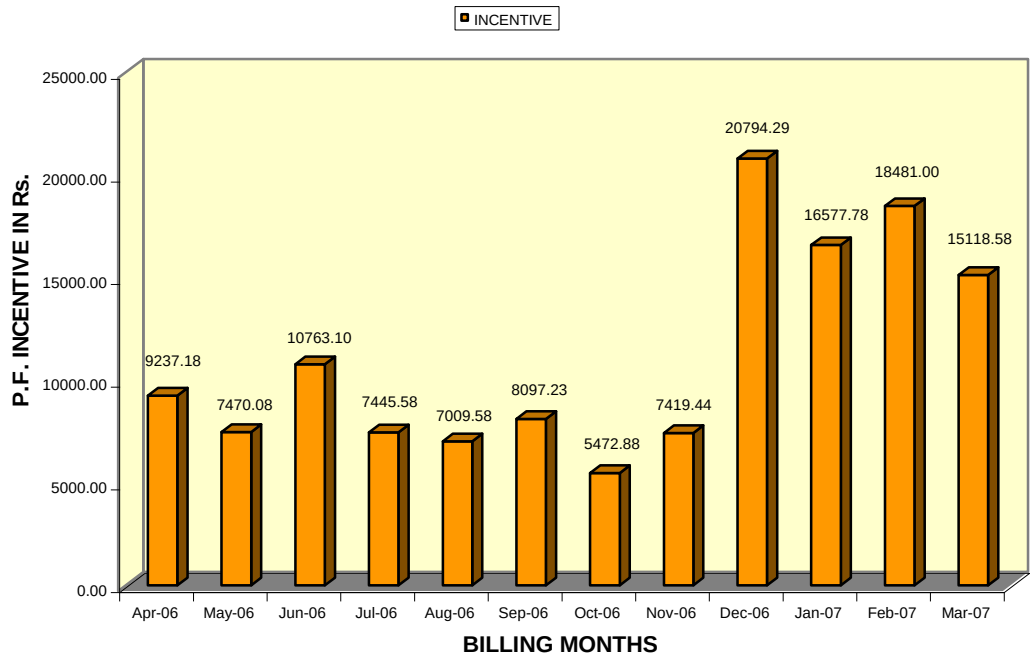
1.48
1.30
1.48
1.38
1.48
1.12
1.48
1.18
1.48
1.09
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
BILLING MONTHS 2006-07

2. Maintenance of P.F. above 0.99. (2006-07)
Re-commissioned Rudrashakti APFCR by replacing existing 1600 / 5 A C.T. by 1000-500/ 5 A C.T, for maintaining power factor above 0.99 to unity.

Inspite of having APFCR Panel installed in the Substation, there was no automatic switching and we were required to manually operate the capacitor banks. This was mainly because of the improper size CT ratio of 1600/5 A, installed in the main L.T. Panel. For proper functioning of the controller, introduced 1000–500/5 A C.T by replacing the old C.T.
Earlier the P.F. was ranging in between 0.97 to 0.98, however there was the possibility of Capacitive Reactive Power due to manual switching of the excess capacitors in the system. Since automatic switching of capacitors was done in the panel, we are getting at least 5% incentive on power factor in the energy bills. Since then the P.F. is getting maintained from 0.99 to unity. The savings are not considered as we were maintaining the P.F. above 0.97 right from the beginning.

MONTH & YEAR	KWH	KVAH	P.F.	INCENTIVE	REMARK
Apr-06	85620	86610	0.99	9237.18	Manual switching
May-06	120230	122800	0.98	7470.08	Manual switching
Jun-06	102650	103580	0.99	10763.10	Manual switching
Jul-06	117690	119530	0.98	7445.58	Manual switching
Aug-06	108700	110620	0.98	7009.58	Manual switching
Sep-06	124580	127300	0.98	8097.23	Manual switching
Oct-06	122420	125790	0.97	5472.88	Manual switching
Nov-06	103310	106360	0.97	7419.44	Manual switching
Dec-06	115360	116470	0.99	20794.29	Automatic Switching
Jan-07	98620	99370	0.99	16577.78	Automatic Switching
Feb-07	105830	106630	0.99	18481.00	Automatic Switching
Mar-07	94710	95210	0.99	15118.58	Automatic Switching



3. Energy Efficiency and Conservation in Transformer Losses.
Disconnected 500 KVA Transformer and diverted entire load of the campus on 1000 KVA Transformer. (2006-07)

As per the arrangements, the load of Academy buildings was connected to existing 500 KVA transformer (First Phase). The load of new buildings (Second Phase) was connected to the new 1000 KVA transformer. As per the record the maximum load on 500 KVA transformer was 150 KVA where as on 1000 KVA transformer, it was 200 KVA. Accordingly we calculated the losses in both the transformers, as under:

1.	Total losses (Iron core + copper) in both the transformers as per the existing power supply arrangement	4086.80 Watts.
2.	Total losses if entire load is shifted on 500 KVA transformer	4584.4 Watts.
3.	Total losses if entire load is shifted on 1000 KVA transformer	3612.34 Watts.
4.	Savings in transformer losses when only 1000 KVA transformer in operation.	474.46 Watts.

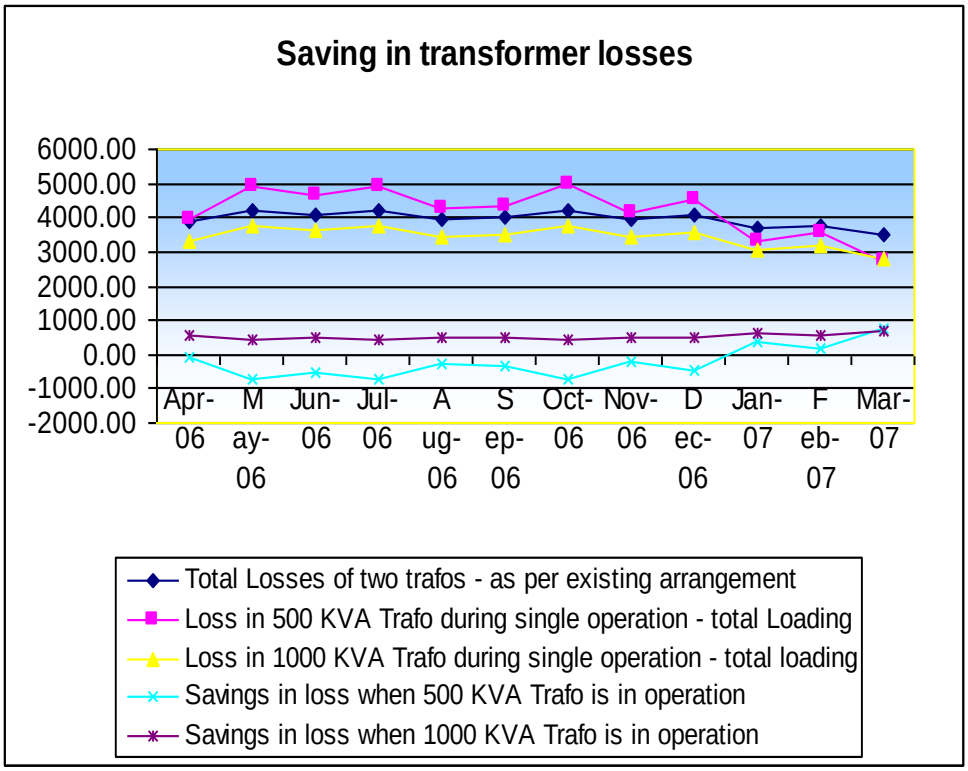
Considering the energy saving potential of 0.474 KW, disconnected 500 KVA transformer and shifted entire load of 500 KVA transformer on 1000 KVA. The break even point was around 252 KVA loading on 1000 KVA transformer, however we observed that the total load is never got reduced below 283 KVA.

Estimated Loss and Energy Saving when 1000 KVA Transformer is in operation

Month	M.D. Recorded	Losses in 500 KVA Trafo - 43% Loading	Losses in 1000 KVA Trafo - 57% Loading	Total Losses of two Trafos - as per existing arrangement	Loss in 500 KVA Trafo during single operation - total Loading	Loss in 1000 KVA Trafo during single operation - total loading	Savings in loss when 500 KVA Trafo is in operation	Savings in loss when 1000 KVA Trafo is in operation
Apr-06	319	1448.98	2435.16	3884.15	3957.25	3339.38	-73.10	544.77
May-06	364	1620.83	2566.60	4187.43	4886.68	3743.91	-699.25	443.52
Jun-06	352	1572.79	2529.85	4102.65	4626.86	3630.82	-524.21	471.82
Jul-06	365	1624.91	2569.71	4194.63	4908.72	3753.51	-714.10	441.12
Aug-06	334	1503.75	2477.05	3980.80	4253.45	3468.30	-272.65	512.50
Sep-06	338	1518.78	2488.55	4007.33	4334.74	3503.68	-327.41	503.65
Oct-06	367	1633.10	2575.98	4209.07	4953.00	3772.78	-743.92	436.30
Nov-06	329	1485.22	2462.87	3948.09	4153.21	3424.67	-205.12	523.42
Dec-06	348	1557.14	2517.88	4075.02	4542.18	3593.97	-467.17	481.05
Jan-07	283	1327.81	2342.49	3670.30	3301.89	3054.13	368.40	616.16
Feb-07	299	1379.87	2382.31	3762.18	3583.49	3176.70	178.70	585.49
Mar-07	249	1226.67	2265.14	3491.81	2754.91	2816.06	736.90	675.75

Considering Max. Demand established during billing month and total load on 1000 KVA Transformer, the estimated saving achieved is shown in Column I

The Average saving in transformer loss is worked out to	0.52 KWH
The average KWH cost per year	Rs. 5.61
Yearly savings achieved = 0.52KWH x 24 Hrs x 365 Days x Rs.5.61	Rs. 25554.67
Cost of the project executed (For cable - Material + Labour)	Rs. 71300.00
Simple Pay Back period	2.8 years


Saving in transformer losses
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-1000.00
-2000.00
Apr-06
May-06
Jun-06
Jul-06
Aug-06
Sep-06
Oct-06
Nov-06
Dec-06
Jan-07
Feb-07
Mar-07
Total Losses of two trafos - as per existing arrangement
Loss in 500 KVA Trafo during single operation - total Loading
Loss in 1000 KVA Trafo during single operation - total loading
Savings in loss when 500 KVA Trafo is in operation
Savings in loss when 1000 KVA Trafo is in operation

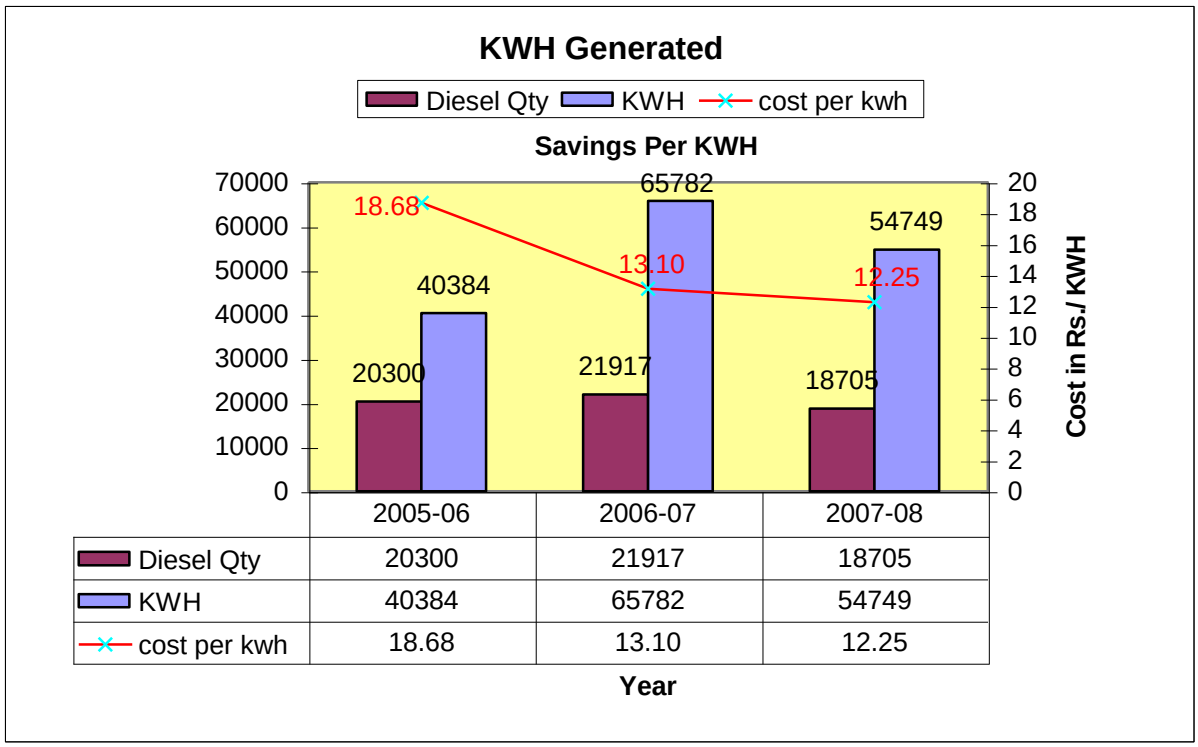
4. Management of load and operating pattern according to the T.O.D. tariff of MSEDCL for getting the benefit of lower energy cost. (2006-07)

As per MSEDCL notification, we have tried to reduce energy consumption by keeping off following services on daily basis. This was done according to T.O.D. tariff to get the benefit of lower energy charges.

1.	Office ACs	-	Daily 3 hours
2.	Library AC	-	Daily 3 hour
3.	Street Light	-	Alternate light post off during night.
4.	Neon Sign	-	7.00 P.M. to 10.00P.M. and 12.00 P.M. onwards.
5.	Hostel A.C.	-	Daily 6.00 P.M. to 10.00 P.M.

5. Diverted essential Air-conditioning load on 380 KVA D.G. set for better optimization of DG capacity and increase in fuel efficiency. (2006-07)

Earlier load on DG was around 30 - 40%, diverted essential AC load of classrooms on DG set. Now that the load on DG is about 250 KVA i.e. 60 – 70%. This resulted in achieving on an average of 3.01 KWH (generated) per litre of diesel. Per unit cost of generation got reduced to Rs.12.25.

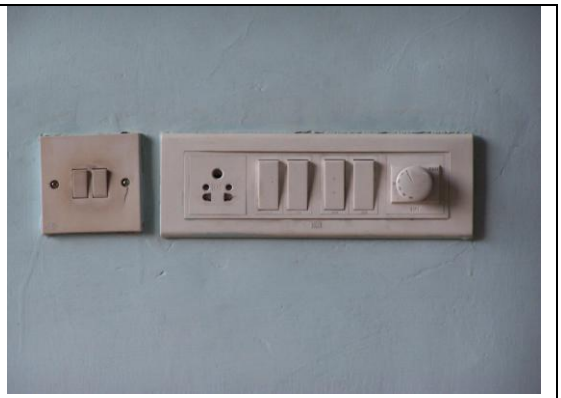


6. Replacement of Conventional type indicating lamps by LED indicating lamps. (2006-07)

Analysis		
Description	**Conventional Type**	**LED Type**
Wattage	10	0.5
Qty	380	380
Operating Hours	8760	8760
KWH/Year	33288	1664
Yearly Savings		31624 KWH
Savings in Rs. @ 5.61		Rs.1,77,410.00
Cost per LED lamp		Rs.195.75
Total cost of the project		Rs. 74,385.00
Simple Pay back period		0.42 years

7. Replacement of Conventional type Ceiling Fan Regulators by Step Type Electronic Regulators. (2006-07)

Replaced all conventional type fan regulators by Step type regulators – 245 Nos.



8. Provision of Cyclic Timers for ON/OFF switching of Exhaust fans in the Toilets (2006-07)

Cost Analysis of Timer		
Description	**Exhaust Fans**	
Wattage	100 watts	145 watts
Qty	2	9
Operating Hours	24	16
By introducing cyclic timer operating time is reduced to	8	5
KWH/Year - Before	1752	7621
KWH/Year – After	584	2382
Yearly Savings	1168	5239
Savings in Rs. @ 5.61	Rs. 6552.00	Rs.29391.00
Cost per Timer	Rs.807.00 x 2 = Rs.1614.00	Rs.807.00x 9 = Rs.7263.00
Total cost of the project	Rs.8877.00	
Simple Pay back period	0.25 years	

Annexure 'A'

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure: **(1) Replacement of 40 W Tube light fittings by 28 W T5 fixtures.**	Sector: Office Buildings
Year to be filled by BEE		Technology: Energy Efficient Lighting

Description of the energy conservation measure:
Replaced 1 x 40 Watts old tube light fittings at following locations by 28 Watts T5 Tube light fittings.

- **Lecture Hall No.2: - 25 Nos.**

Cost Analysis		
Description	**FTL 1X40W (Before)**	**FTL 1X28W T5 (After)**
Wattage with choke	55 watts	29 watts
Qty	25	25
Operating Hours	3200	3200
KWH/Year (for 320 Days)	4400	2320
Yearly Savings	2080	
Savings in Rs. @ 5.26	Rs.10,941.00	
Total cost of the project	Rs.9675.00	
Simple Pay back period	0.88 years	

- **Dining Halls: - 105 Nos.**

Cost Analysis		
Description	**FTL 1X40W (Before)**	**FTL 1X28W T5 (After)**
Wattage with choke	55 watts	29 watts
Qty	105	105
Operating Hours	2920	2920
KWH/Year	16863	8891
Yearly Savings	7972	
Savings in Rs. @ 5.26	Rs.41,933.00	
Total cost of the project	Rs.45,478.00	
Simple Pay back period	1.08 years	

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email):
Project executed in house.

Total investment, Rs.: 9675.00 + Rs.45478.00 = Rs.55153.00	Year of implementation: 2007–08

First year energy cost savings, Rs.: 10941.00 + Rs.41933.00 = 52874.00

First year other savings, Rs.: Rs.1500.00 toward replacement cost of 40 W Tube lights and chokes

On annual basis	kWh	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	21263				Rs.1500.00
Energy consumption after	11211				--
Energy tariff, Rs/ kWh	5.26				--

Company complete address: Contact person who could be contacted for more information:	We authorise Bureau to use this information for dissemination Signature Date: 06.10.2008

Note: Please submit this sheet separately for each Energy Conservation Measure implemented in 2007-2008 and a CD containing the above information may be please be enclosed.

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure: **(2) Converted 100 W HPSV Post top Lantern Luminaries in to 23 W CFL for Pathway Lighting. (2007-08)**	Sector: Office Buildings
Year to be filled by BEE		Technology: Lighting Renovation

Description of the energy conservation measure:

Cost Analysis		
Description	**HPSV (Before)**	**CFL (After)**
Wattage with choke	120 watts	23 watts
Qty	30	30
Operating Hours	4000	4000
KWH/Year	14400	2760
Yearly Savings	11640	
Savings in Rs. @ 5.26	Rs.61,226.00	
Total cost of the project	Rs.5400.00	
Simple Pay back period	0.09 years	

Picture/ sketch/ drawing before modification (if available) **100 W HPSV Lamp**	**Picture/ sketch/ drawing after modification 23 W CFL**
	

Agency that executed the project (with complete address and email): **Project executed in house.**					
Total investment, Rs. 5400.00		Year of implementation: 2007-08			
First year energy cost savings, Rs.: 61226.00					
First year other savings, Rs.: 1600.00 toward replacement cost of 100 W HPSV lamps, ballast and ignitors.					
On annual basis	KWh	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	14400				Rs.1600.00
Energy consumption after	2760				
Energy tariff, Rs/ kWh	5.26				
Company complete address: Contact person who could be contacted for more information:				We authorise Bureau to use this information for dissemination Signature Date- 06.10.2008	

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Annexure 'A'

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure : **(3)** **Replacement of GLS Lamps by CFL**	Sector: Office Buildings
Year to be filled by BEE		Technology: Energy Efficient Lighting

Description of the energy conservation measure:

Replacement of GLS Lamps by CFL. (2007-08)

	
GLS Lamp	**CFL**

- **60 Watts GLS to 11 Watts CFL**

Cost Analysis		
Description	**GLS (Before)**	**CFL (After)**
Wattage	60 watts	11 watts
Qty	400	400
Operating Hours	2190	2190
KWH/Year	52560	9636
Yearly Savings	42924	
Savings in Rs. @ 5.61	Rs. 240803.00	
Total cost of the project	Rs.36000.00	
Simple Pay back period	0.15 years	

- **40 Watts GLS by 5 Watts CFL**

Cost Analysis		
Description	**GLS (Before)**	**CFL (After)**
Wattage	40 watts	5 watts
Qty	187	187
Operating Hours	2190	2190
KWH/Year	16381	2047
Yearly Savings	14333	
Savings in Rs. @ 5.61	Rs. 80410.00	
Total cost of the project	Rs.16830.00	
Simple Pay back period	0.20 years	

Agency that executed the project (with complete address and email): **Project executed in house.**					
Total investment, Rs. 36,000.00 + Rs.16830.00 = Rs.52830.00			Year of implementation: 2007-08		
First year energy cost savings, Rs.: 240803.00 + Rs.80410.00 = Rs. 3,21,213.00					
First year other savings, Rs.: 450.00 towards replacement cost of GLS lamps.					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	52560 + 16381 = 68941				Rs.450.00
Energy consumption after	9636 + 2047 = 11683				
Energy tariff, Rs/ kWh	Rs.5.61				
Company complete address: Contact person who could be contacted for more information:				We authorise Bureau to use this information for dissemination Signature Date: 06.10.2008	

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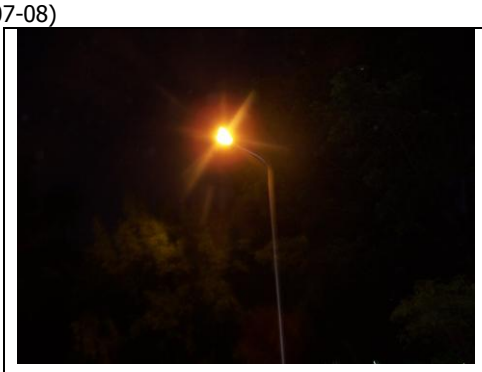
Annexure 'A'

Energy Conservation Measure implemented in 2007-2008

ID to be filled by BEE	Title of the measure : **(4)** **Installation of 2 x 23 Watt CFL by 100W HPSV lamps**	Sector : Office Buildings
Year to be filled by BEE		Technology: Energy Efficient Lighting

Description of the energy conservation measure:

Installation of 60 Nos. of 2 x 23 Watt Wipro Fantasy Poles by disconnecting 48 Nos. of 100 W HPSV Boundary light fixtures. (2007-08)



Installed 60 Nos. of Fantasy Heritage poles with 2 x 23 Watts clear glass luminaries by disconnecting 48 Nos. of existing 100 W HPSV street lights on peripheral pathway of the campus.

Replacement of 100 Watts HPSV by 23 Watts CFL (Spiral)					
EXISTING			**NEW**		
100WATTS HPSV X 48 NOS.			**23 WATTS CFL X 120 NOS**		
PARTICULARS			**PARTICULARS**		
Lamp and Ballast Load Watts	120		Lamp and Ballast Load Watts	23	
Existing Qty Nos	48		New Qty Nos	120	
Operating Hours	4000		Operating Hours	4000	
Total KWH		23040	Total KWH		11040
Average Cost / KWH	5.61		Average Cost / KWH	5.61	
Energy Cost		129254.40	Energy Cost		61934.40
Maintenance Cost Rs.		5000.00	Maintenance Cost Rs.		750.00
Failure of 4 Lamps @Rs.600.00	2400.00		Failure of 5 CFL @Rs.150.00	750.00	
Ballast 2 Nos. @Rs.1100.00	2200.00			0.00	
Ignitor – 4 Nos. @ Rs.100.00	400.00			0.00	
Maintenance and Operating Cost Per year		**134254.4**	**Maintenance and Operating Cost Per year**		**62684.40**
Cost of the project executed					
Fantasy FPP 74220 Poles	60	4225.38	253522.80		
Cost of 23 W CFL	120	150	18000.00		
Cost of cables, pipes, earthing etc			43264.00		
Labour			36000.00		
Total Initial Cost Rs.			**350786.80**		
Yearly Savings Rs.			**71570.00**		
Simple Pay Back period			**4.9 Years**		

Agency that executed the project (with complete address and email): **Project executed in house.**					
Total investment, Rs.3,50,786.80		Year of implementation: 2007-08			
First year energy cost savings, Rs.:67320.00					
First year other savings, Rs.: 4250.00 toward maintenance cost.					
On annual basis	kWh	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	23040				Rs.4250.00
Energy consumption after	11040				
Energy tariff, Rs/ kWh	5.61				
Company complete address: Contact person who could be contacted for more information:				We authorise Bureau to use this information for dissemination Signature Date 06.10.2008	

Note: Please submit this sheet separately for each Energy Conservation Measure implemented in 2007-2008 and a CD containing the above information may be please be enclosed.

Annexure 'A'

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure : **(5)** **Replacement of AC plant by packaged AC**	Sector : Office Buildings
Year to be filled by BEE		Technology: Energy Efficient Air-conditioning

Description of the energy conservation measure:

Replacement of existing 60 TR Centralized Air-conditioning plant for Library Block by 4 Nos. of 16.5 TR Packaged Air- conditioners. (2007-08)

In the year 1989, M/s. KPCL had installed 60 TR Centralised Air-conditioning plant for Library Block. The central AC plant was designed and installed to provide year round thermal environmental control for the Library building for its ground and first floor areas. The plant was consisting of 2 Nos. of 30 TR reciprocating Compressors, water-cooled condensing units, condenser water pumps, spray pond, air-handling units etc.

The annual expenditure on operation and maintenance of AC plant was **Rs.17,73,000.00,** as under:

1.	Comprehensive AMC – Operation and maintenance	Rs. 1,20,000.00
2.	Water charges considering evaporation losses, pilferage due to wind, Spray pond filling etc. 1695CuM @Rs.12.00.	Rs. 21,000.00
3.	Energy cost for running AC Plant. 272000 KWH @ Rs.6.00	Rs. 16,32,000.00

2 x 30 TR Reciprocating Compressors

Air Handling Unit (before)

16.5 TR Packaged Air Conditioner

(After)

As an energy conservation measure, we replaced the entire plant by 4 Nos. of 16.5TR Packaged Air Conditioners, in January 2008. The cost economics worked out are as under:

1. No AMC cost during warranty period.
2. No water charges as the Packaged Air conditioners are of air- cooled type.
3. Power cost for running packaged AC, with 10 hours operation and 320 days in a year.
   179200KWH @ Rs. 6.00 : Rs.10,75,000.00

Annual expenditure on operation and maintenance : Rs. 10,75,000.00 (New ACs)

Savings in annual cost : Rs. 6,98,000.00

Agency that executed the project (with complete address and email):
Project executed in house.

Total investment, Rs.	Year of implementation: 2007-08

First year energy cost savings, Rs.:5,56,800.00

First year other savings, Rs.: 1,41,000.00 towards maintenance cost.

On annual basis	kWh	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	272000				Rs.1,41,000
Energy consumption after	179200				
Energy tariff, Rs/ kWh	6.00				

Company complete address:
M/s. Blue Star Limited,
201/A, Nityanand Complex, First Floor,
247/A, Bund Garden Road,
Pune - 411001

Mr. Vivek Attarde

Contact person who could be contacted for more information:

We authorise Bureau to use this information for dissemination

Signature

Date: 06.10.2008

Note: Please submit this sheet separately for each Energy Conservation Measure implemented in 2007-2008 and a CD containing the above information may be please be enclosed.

Annexure 'A'

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure: **(6)** **Installation of Solar Hot Water Systems**	Sector : Office Buildings
Year to be filled by BEE		Technology: Renewable energy system.

Description of the energy conservation measure:

Installed Solar Hot Water Systems for Hostel No.1, 2, 3, 4 and Gymkhana - 5 Nos. @ 300 LPD

	Daily Hot water requirement 300 Litres x 5 Nos	1500 Litres
	Cost of Solar system including piping Rs.70000.00 x 5 Nos	Rs.3,50,000.00
	Energy Required to heat the water	
	Hot Water Requirement	1500 Litres
	Temperature required	From 20^0 C to 60^0 C
	Inlet water temperature T1	20^0 C
	Temperature Difference T2 – T1	60^0 C
	Electricity – Kcal - 860 = 1 KWH	
	Energy Consumption = m x Cp x (T2 – T1) / 860 x efficiency	1500 Ltrs x 1 x (60 –20) / 860 x 0.85
		= 82 units per day
	Electricity Cost	Rs.5.26 per KWH
	Total Electricity Cost = 82 x Rs.5.26	Rs. 431.00
	Considering 320 clear sunny days, total electricity cost saved = 320 x 431	Rs. 1,37,920.00
	Pay Back Period = Rs.3,50,000 / Rs.1,37920.00 =	2.53 Years i.e. 30 Months

Agency that executed the project (with complete address and email):

Total investment, Rs.: 3,50,000.00	Year of implementation: 2007-08

First year energy cost savings, Rs.: 1,37,920.00

First year other savings, Rs.: Nil

On annual basis	kWh	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	N.A.				
Energy consumption after	N.A.				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …					

Company complete address: M/s. Jain Irrigation Systems Pvt.Ltd. Contact person who could be contacted for more information:	We authorise Bureau to use this information for dissemination Signature Date : 06.10.2008

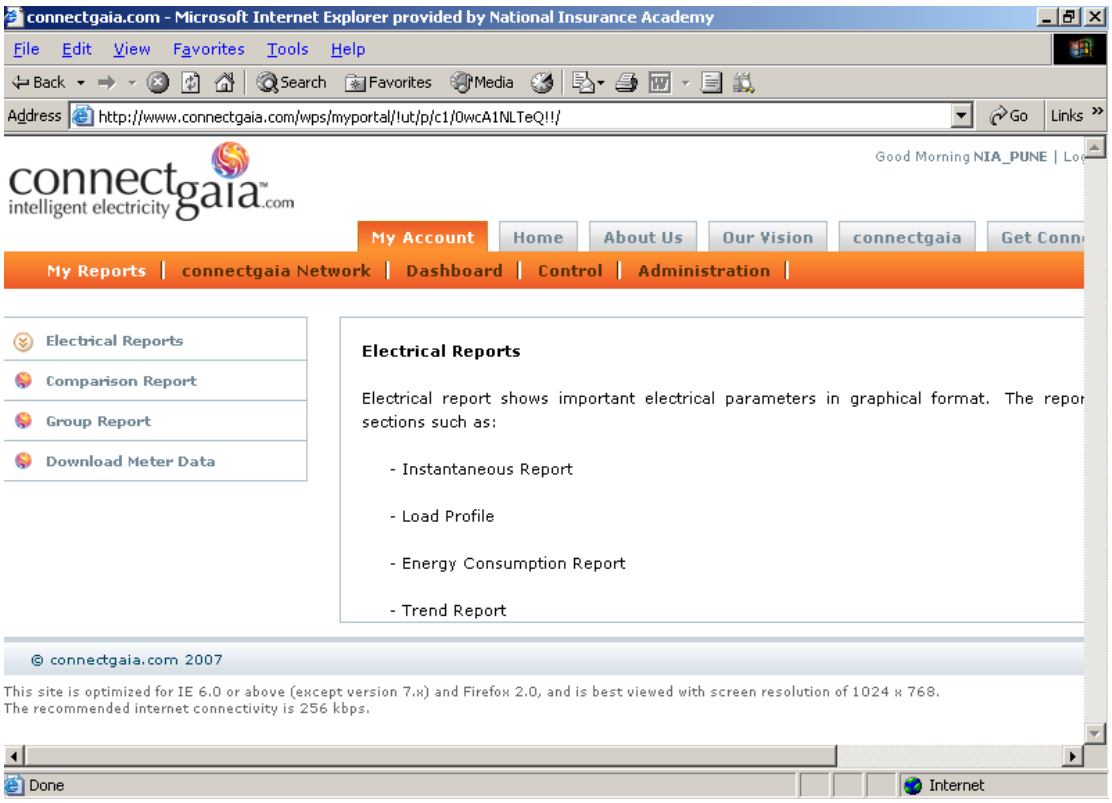
Note: Please submit this sheet separately for each Energy Conservation Measure implemented in 2007-2008 and a CD containing the above information may be please be enclosed.

7. Installation of 28 W T5 fixtures at the new projects lighting.

Installed 102 nos. of 1 X 28 Watts Asian Lumini make T5 FTL for All ongoing infrastructural projects.

8. Installation of Connect Gaia Controlling and Measuring Unit at Conference Hall Feeder Pillar on demonstration basis.

In process of installation of Connect Gaia unit for real time data monitoring, monitoring and analysis of the historical consumption of connected load ports and remote management to give operational commands to the load from anywhere, any time.



Organizational set up for Energy Conservation Cell

a) NIA has established Energy Conservation Cell.

b) Information Officer cum Associate Professor heads the EC Cell. Executive Engineer, Systems Administrator (Energy Manager) and Electrical Engineer together implement the Energy Conservation Measures and they are reporting to the Information Officer who further reports to the Director.

c)

Designation
Information Officer cum Associate Professor
Executive Engineer
Systems Administrator – Energy Manager (EM – 1178)
Electrical Engineer- Appearing Certification Examination for EM - BEE
Electrical Supervisor / Electricians / A.C. Mechanics / House Keeping Staff.

d) EC Cell members have attended following seminars, conferences, training programs and workshops on energy conservation.

Details are as under:

Sr No	Program Name and details	Organized By	No of Participants	Duration
1	Energy Efficiency in Buildings	Maharashtra Industrial and Technical Consultancy Organisation Ltd.	Executive Engineer	**3 Days (1996)**
2	Energy Efficiency and Capacity Building Programme for Various Stake Holders	Winrock International India	Systems Administrator & Electrical Engineer	**3 Days (2006)**
3	Diploma in Energy Efficiency & Conservation	Mitcon Consultancy Services Ltd	Systems Administrator & Electrical Engineer	**3 Months (2006)**


NIA AT A GLANCE
YOU ARE HERE
NATIONAL INSURANCE ACADEMY
1 - ADMINISTRATION
2 - TEACHING BLOCK
3 - FAIR IT PARK
4 - LLOYD'S CAFÉ
5 - STORE
6 - LIBRARY
7 - COMM. FACILITY
8 - DINING & RECEPTION
9 - SAROJINI (HOSTEL NO. 1)
10 - SARASWATI (HOSTEL NO. 2)
11 - SOLOMON (HOSTEL NO. 3)
12 - SANDIPANI (HOSTEL NO. 4)
13 - SARVAPALLI (HOSTEL NO. 5)
14 - JUBILEE PARK (MULTI-PURPOSE HALL)
15 - PARAMVIRCHAKRA MANOJ PANDEY GYM
16 - MANASAROVAR SWIMMING POOL
17 - SIXTH SLAM TENNIS COURT
18 - LURAY CAVERNS AUDITORIUM
19 - KALPANA CHAWALA CHILDRENS PARK
29 - STP
30 - ELECT. SUB STATION
31 - PROPOSED MULTISTORIED (HOSTEL NO. 6)
32 - PROPOSED RESIDENTIAL QUARTERS
34 - OPEN AIR THEATER NO. 1
35 - OPEN AIR THEATER NO. 2
36 - GIC GOLF COURSE (PUTTING)
37 - NIRANJANA MEDITATION HALL
38 - DR. KOTNIS CLINIC