



# ***Energy***

## ***Navsari Municipality***



**Year: 2005-06 to 2007-08**



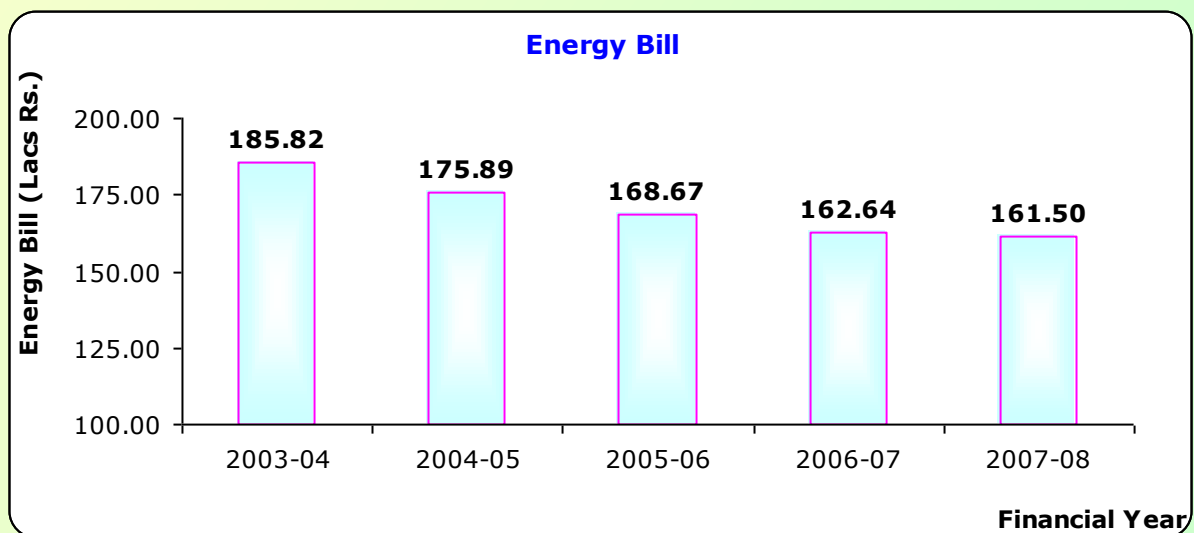
# Navsari Municipality

## Introduction:

Navsari Municipality is one of the oldest Municipality in Gujarat established in 1924 AD located on the bank of river Purna. Navsari is birth place of Dadabhai Navarajji & Jamshedji Tata located 15 kms away from historical place Dandi and 35 kms away from Surat City. At the formation times, municipality has installed castor oil bases lamps for street lighting and water supply service was run by diesel operated engine. Further, in 1959, private supply agency name Modi Agency had supplied electric power and introduction of Gujarat Electricity Board in 1976 in Navsari municipality. After de-merger of GEB in seven companies in 2006-07, electricity is now supplied by DGVCL in entire Navsari city.

Navsari is one of the leading municipality has recipient of various prestigious awards like "Best Municipality" for the year 2005 and received price money of Rs. 1.27 crore, Crisil award for first in Public-private partnership for the year 2005, Best practice award by CMAG for the slum re-habitation and lake beautification in year 2005 and second prize in e-governance for e-nagar yojana in 2006 by Government of Gujarat.

Navsari municipality has taken several path-breaking steps in energy conservation in municipal services since 1999. In year 1999, 36 MLD water treatment plant was commissioned and consequently use of 10 bore wells having capacity ranging from 35-75 HP were completely closed, which had resulted in considerable saving of Rs. 24.00 lacs/ annum. Major steps are being started in 2004-05. As part of energy conservation, total 4,075 nos. of 1 x 40 W conventional fluorescent luminaires by 1 x 24 W fluorescent luminaires with hi-frequency (electronic) ballast and T-5 lumen lamp during 2005-06 & 2006-07. Moreover, 150 nos. of 150 W HPSV & 140 nos. of 125 W HPMV conventional luminaires were replaced by 4 x 24 W T-5 and 4 x 14 W T-5 fluorescent luminaires respectively. Power factor improvement was done through installation of APFC panel at only one HT service of Dudhia Talao Water Works in 2005-06. Effect of these ongoing energy conservation activities can be observed from following graph: -

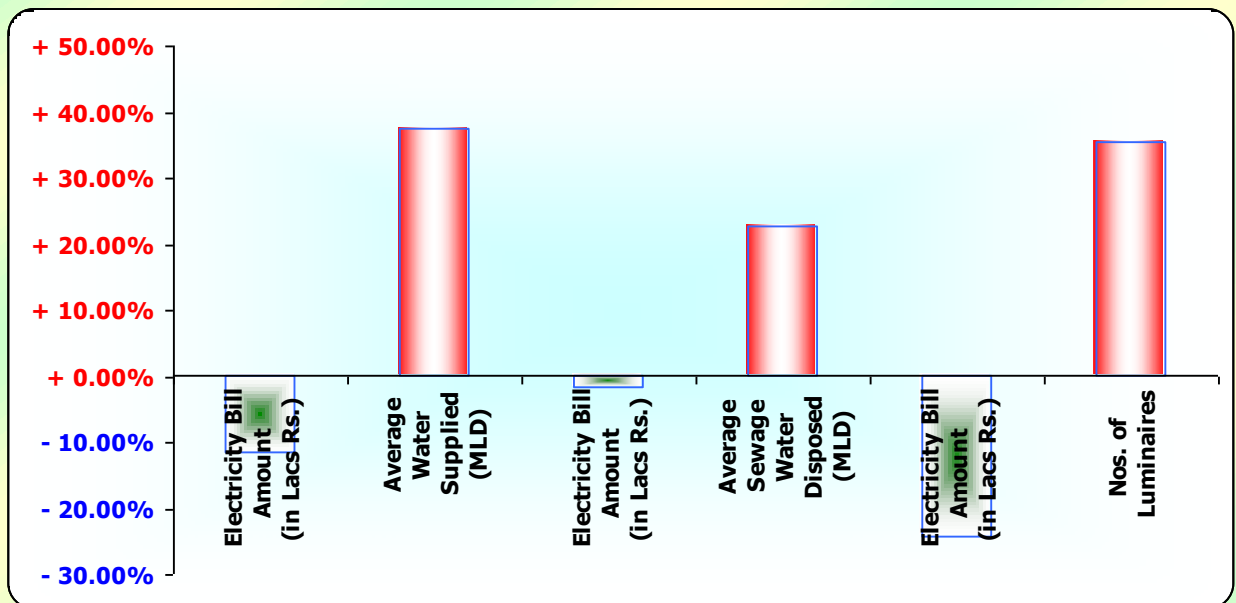




Navsari municipality is catering the basic needs of water supply through 2 water treatment plants, 5 nos. of water distribution stations and 12 nos. of bore wells. Street lighting facility is catered through 6,500 nos. of streetlight luminaires whereas sewage disposal is done through 6 nos. of sewage pumping stations. Besides these there are 44 electrical services to run its administration, gardens, schools etc. Total 98 electrical connections are taken to run all services including 1 HT connection.

The variation in the electricity bill is compared below in the context of increase in the volume of services provide by the municipality: -

Sr. No.	Year	Total	Water Supply		Sewage Disposal		Streetlight	
			Electricity Bill Amount (in Lacs Rs.)	Average Water Supplied (MLD)	Electricity Bill Amount (in Lacs Rs.)	Average Sewage Water Disposed (MLD)	Electricity Bill Amount (in Lacs Rs.)	Nos. of Luminaires
1	2003-04	185.82	132.03	19.72	7.87	2.16	41.23	4,800
2	2007-08	161.50	116.90	27.10	7.73	2.65	31.26	6,500
**	% Diff.	-13.09%	-11.46%	+37.42%	-1.70%	+22.65%	-24.20%	+35.42%





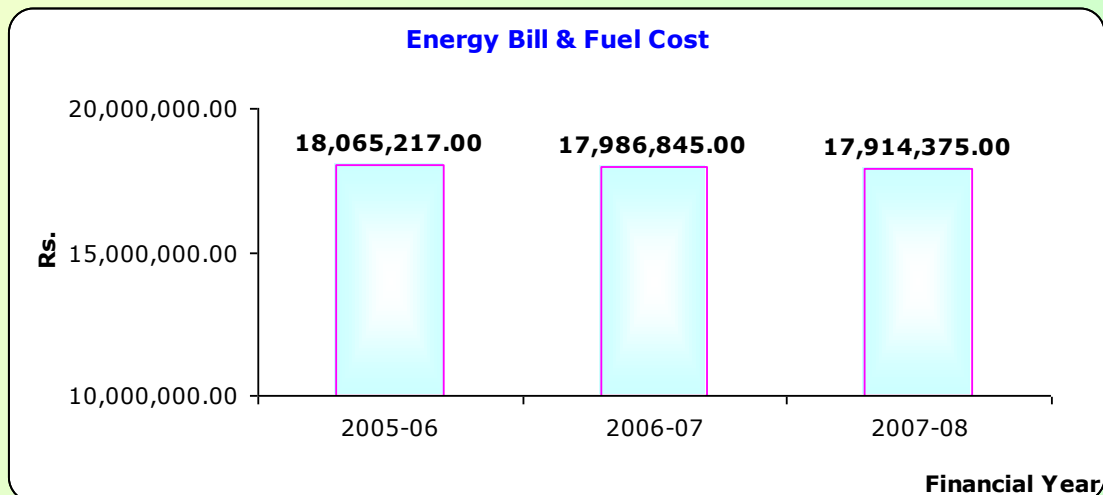
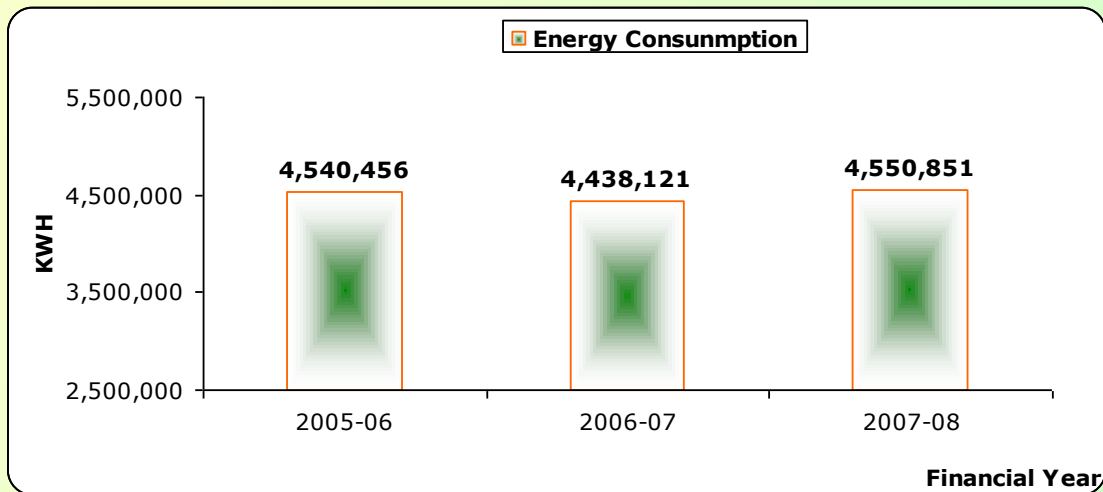
## Details of Energy Consumption & Bill:

### Energy & Fuel Consumption Details

Sr. No.	Financial Year	Energy Consumption (KWH) & Fuel (Litres)					Total (KWH)
		Water Supply	Sewage Disposal	Street Lighting	Buildings	Diesel (Litres)	
1	2005-06	3,166,267	249,372	1,049,620	75,197	36,622	<b>4,540,456</b>
2	2006-07	3,161,357	245,856	948,558	82,350	48,562	<b>4,438,121</b>
3	2007-08	3,329,330	228,799	899,176	93,546	48,120	<b>4,550,851</b>
**	<b>Total</b>	<b>9,656,954</b>	<b>724,027</b>	<b>2,897,354</b>	<b>251,093</b>	<b>133,304</b>	<b>13,529,428</b>

### Energy Bill Details

Sr. No.	Financial Year	Energy Bill & Fuel Cost (Rs.)					Total
		Water Supply	Sewage Disposal	Street Lighting	Buildings	Diesel	
1	2005-06	12,146,039.00	835,397.00	3,356,112.00	529,000.00	1,198,669.00	<b>18,065,217.00</b>
2	2006-07	11,710,011.00	712,983.00	3,231,583.00	609,772.00	1,722,496.00	<b>17,986,845.00</b>
3	2007-08	11,689,688.00	773,342.00	3,125,509.00	561,276.00	1,764,560.00	<b>17,914,375.00</b>
**	<b>Total</b>	<b>35,545,738.00</b>	<b>2,321,722.00</b>	<b>9,713,204.00</b>	<b>1,700,048.00</b>	<b>4,685,725.00</b>	<b>53,966,437.00</b>





## Energy Conservation Steps Taken During Year 2007-08:

- ✚ *Replacement of conventional fluorescent luminaires by energy efficient fluorescent luminaires with hi-frequency (electronic) ballast & 1 x 24 W T-5 fl lamp:*

Navsari Municipality has converted most of its conventional fluorescent, HPSV & HPMV streetlight luminaires by replacing it with energy efficient fluorescent luminaires with hi-frequency (electronic) ballasts and T-5 fluorescent luminaires earlier. Out of 6,500 streetlight luminaires, 1050 streetlight luminaires are still having conventional copper/ aluminium wound ballast and 40 W capacity, T-12 type fluorescent lamps consuming 55 W power.

Hence, it is decided to improve its efficiency by replacing conventional copper/ aluminium wound ballast with hi-frequency (electronic) ballast and conventional 40 W T-12 type fluorescent lamp having 2450 lumen output with 24 W T-5 fluorescent 2,400 lumen output. Further, the luminaires are having anodised aluminium reflectors with much better light output ratio.



Fig: 1 (Old 1 x 40 W T-12 luminaire)



Fig: 2 (New 1 x 24 W T-5 luminaire)

**Investment made**

**: Rs. 4.93 lacs**

**Energy Saving Realised**

**: Rs. 3.48 lacs/ annum**

**: 1.02 lacs KWH/ annum**



✚ *Catering the need of water supply through WTP instead of bore wells:*

City's ward-1, 10 & 11 and Jalalpor area on west side of railway tracks is fed through 6 bore wells. As deteriorating quality of distributed water, it was planned to commission 10 MLD water treatment plant at Ghelkhadi area. Commissioning of 10 MLD WTP is done in Jul-2007 and consequently 2 bore wells in surrounding areas were closed and operating 1 bore well was reduced. Further, it is planned to close remaining 3 bore well in year 2008-09, which will expected to save around Rs. 6.00 lacs/ annum.

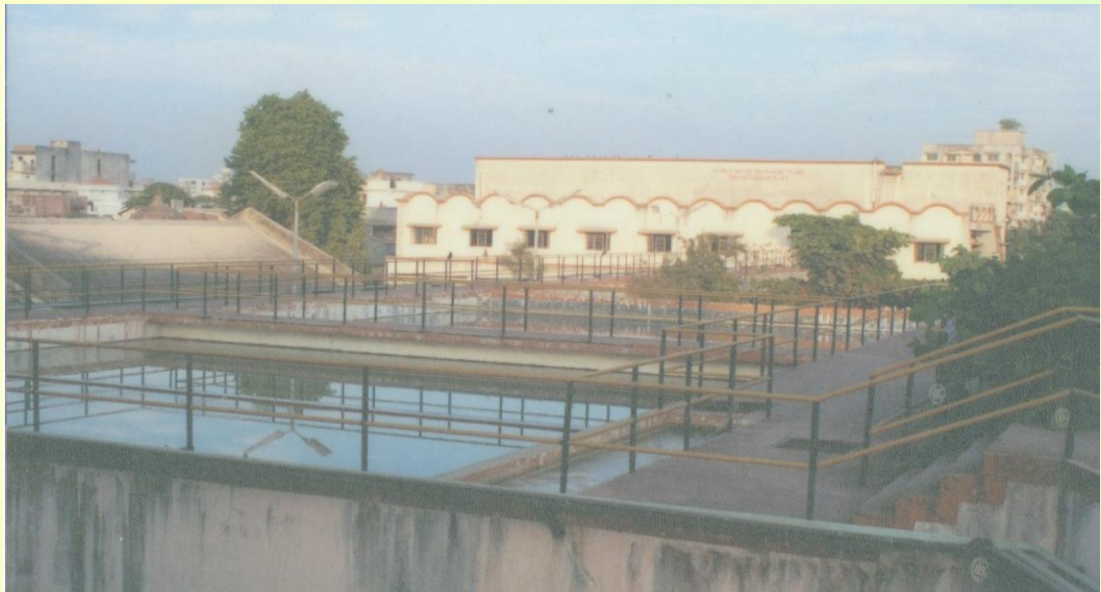


Fig: 3 (New 10 MLD WTP at Ghelakhadi Water Works)

**Investment made** : **Rs. 14.50 lacs (electrical machineries)**

**Energy Saving Realised** : **Rs. 1.78 lacs/ annum**

: **0.54 lacs KWH/ annum**



## Installation of Solar Street Light :

Gujarat energy Development Agency (GEDA) has supplied 60 Nos of solar photovoltaic street light (SPV) with 90 % subsidy. In year 2007 – 08 we replaced 60 Nos of 40w x 4FTL and Installed SPV type Solar Street light System with 74w SPV Panel , 12 V 75AH rechargeable battery in Bajpayee garden & Vegetable market pond. As a result We save RS. 42000 Per Annum.



**Investment made : Rs. 2.87 lacs**

**Energy Saving Realised : Rs. 0.42 lacs/ annum**

**: 0.12 lacs KWH/ annum**

### **Summary of Energy Conservation Activities during last three years:**

Sr. No.	Year	No.of measures implemented	Investment made (Rs. Lakhs)	Savings achieved per annum	
				Lacs KWH	Lacs Rs.
1	2005-2006	2	21.25	3.31	11.60
2	2006-2007	1	5.20	1.47	4.84
3	2007-2008	3	22.31	1.68	5.68
**	<b>Total</b>	<b>6</b>	<b>48.76</b>	<b>6.46</b>	<b>22.12</b>

**CHIEF OFFICER  
NAVSARI NAGARPALIKA**

**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: <b>Replacement of conventional fluorescent luminaires by energy efficient fluorescent luminaires with hi-frequency (electronic) ballast &amp; 1 x 24 W T-5 fl lamp</b>	Sector: <b>Municipality</b>
Year to be filled by BEE		Technology: .....

Description of the energy conservation measure:

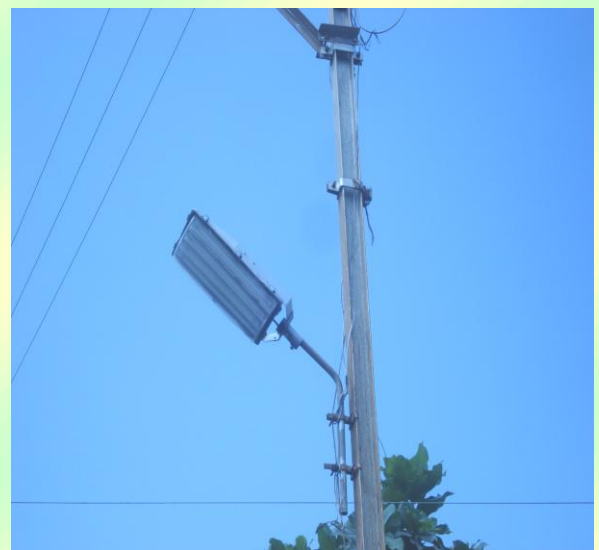
Navsari Municipality has converted most of its conventional fluorescent, HPSV & HPMV streetlight luminaires by replacing it with energy efficient fluorescent luminaires with hi-frequency (electronic) ballasts and T-5 fluorescent luminaires earlier. Out of 6,500 streetlight luminaires, 1050 streetlight luminaires are still having conventional copper/ aluminium wound ballast and 40 W capacity, T-12 type fluorescent lamps consuming 55 W power.

Hence, it is decided to improve its efficiency by replacing conventional copper/ aluminium wound ballast with hi-frequency (electronic) ballast and conventional 40 W T-12 type fluorescent lamp having 2450 lumen output with 24 W T-5 fluorescent 2,400 lumen output. Further, the luminaires are having anodised aluminium reflectors with much better light output ratio.

The work is completed recently.

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

**Picture/ sketch/ drawing after modification**



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

Asian Electronics Pvt. Ltd.  
Ahmedabad



Phone: 079-26560691					
Fax: 079-26564673					
E-mail: aelahdad1@sancharnet.in					
Total investment, Rs.: 4,93,500.00			Year of implementation: 2007-08		
First year energy cost savings at prevailing energy rate, Rs: 1,36,600.00					
First year other savings, Rs.: 84,000.00 (towards replacement of fluorescent lamps) and Rs. 18,000.00 (towards replacement of starters)					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	230.02				
Energy consumption after	190.08				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	3.42 Rs./ KWH				
Company complete address: <b>Navsari Municipality Sardar Patel Bhavan, B/h Dudhia Talao, Navsari- 396 445.</b>				We authorise Bureau to use this information for dissemination	
Contact person who could be contacted for more information:  <b>Mr. R. J. Patel Hydraulic Engineer</b>				Signature	
				Date	

**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: <b>Catering the need of water supply through WTP instead of bore wells</b>	Sector: <b>Municipality</b>
Year to be filled by BEE		Technology: .....

Description of the energy conservation measure:

City's ward-1, 10 & 11 and Jalalpor area on west side of railway tracks is fed through 6 bore wells. As deteriorating quality of distributed water, it was planned to commission 10 MLD water treatment plant at Ghelkhadi area. Commissioning of 10 MLD WTP is done in Jul-2007 and consequently 2 bore wells in surrounding areas were closed and operating 1 bore well was reduced. Further, it is planned to close remaining 3 bore well in year 2008-09, which will expected to save around Rs. 6.00 lacs/ annum.

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

**Picture/ sketch/ drawing after modification**



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

Enviro Control Associates,  
"Enviro House", Opp: Bank of Maharashtra,  
Ghod Dod Road, Surat- 395 001.  
Phone: 0261-2231484  
Fax: 0261-2232288  
E-mail: enviro@satyam.net.in

Total investment, Rs.: 14,50,000.00

Year of implementation: 2007-08



First year energy cost savings at prevailing energy rate, Rs: 1,33,646.00

First year other savings,

On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	663.60				
Energy consumption after	609.60				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	3.30 Rs./ KWH				
Company complete address: <b>Navsari Municipality Sardar Patel Bhavan, B/h Dudhia Talao, Navsari- 396 445.</b>				We authorise Bureau to use this information for dissemination	
Contact person who could be contacted for more information:  <b>Mr. R. J. Patel Hydraulic Engineer</b>				Signature  Date	



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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: <b>Replacement of 40w x 4FTL street light &amp; Installed solar photovoltaic street light</b>	Sector: <b>Municipality</b>
Year to be filled by BEE		Technology: .....
<p>Description of the energy conservation measure:</p> <p>Gujarat energy Development Agency (GEDA) has supplied 60 Nos of solar photovoltaic street light (SPV) with 90 % subsidy. In year 2007 – 08 we replaced 60 Nos of 40w x 4FTL and Installed SPV type Solar Street light System with 74w SPV Panel , 12 V 75AH rechargeable battery in Bajpayee garden &amp; Vegetable market pond. As a result We save RS. 42000 Per Annum.</p>		
<p><b>Picture/ sketch/ drawing before modification</b> (if available)</p>	<p><b>Picture/ sketch/ drawing after modification</b></p>	
		
<p>Agency that executed the project (with complete address and email):</p>		
<p>Sonki Solar India. A/38-1, First Floor G.I.D.C. Electronic Zone, Sector – 26 , Gandhinagar – 382 028 Phone: 079-23246054 Fax: 079 - 23246054</p>		
<p>Total investment, Rs.: 2,86,800.00</p>	<p>Year of implementation: 2007-08</p>	
<p> </p>		



First year energy cost savings at prevailing energy rate, Rs: 42,000.00					
First year other savings, Rs.: 4,800.00 (towards replacement of fluorescent lamps)					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	12000.00				
Energy consumption after	0.00				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	3.42 Rs./ KWH				
Company complete address: <b>Navsari Municipality Sardar Patel Bhavan, B/h Dudhia Talao, Navsari- 396 445.</b>				We authorise Bureau to use this information for dissemination	
Contact person who could be contacted for more information:  <b>Mr. R. J. Patel Hydraulic Engineer</b>				Signature  Date	

**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.**