

# Tamil Nadu Energy Development Agency

## CITIZEN'S CHARTER

March 2008

### **INTRODUCTION**

The changing climate is one of the major challenges we face today. Rise in Global average temperatures, increase in sea levels and melting of glaciers and ice sheets have underlined the immediate need to address this issue. Developing countries are more vulnerable to the impacts of climate change. Natural climates induced by climate change will have significant impact on economy and development. Essentially, we need to tackle the problem of increasing concentration of green house gas (Carbon) emissions. To reduce carbon emission we need to promote clean and efficient technologies, harness renewable energy sources and to adopt better waste management technologies etc.

2. In order to overcome the above problems, the Central and State Governments are making concerted efforts to identify alternatives to the fossil fuels which pollute the atmosphere and cause global warming. These alternative renewable energy sources require very low operating cost and also easier to handle by the user.

3. The renewable energy sources offer scope for power generation in dispersed mode and at the load points, thereby eliminating line loss. Moreover, they are eco-friendly and do not pollute the environment. Considering these merits in renewable energy sources, the Government of Tamil Nadu has given special emphasis to the development of renewable energy sources offering incentives and support for the implementation of renewable energy projects.

4. The various schemes implemented by Tamil Nadu Energy Development Agency are as follows:

# **1. WIND ENERGY**

## **1.1 WIND ELECTRIC GENERATORS:**

A Wind Electric Generator is a mini power plant which generates electricity from wind energy. It consists of a 30 M high tall steel tower with the wind turbine mounted on top. The wind turbine has 3 main components.

(i) rotor blades      (ii) gear box      and      (iii) generator.      The wind force striking on the blades is initially converted into mechanical energy and this mechanical energy operates the Wind Electric Generator to produce AC. electricity. The Wind Electric Generator has no battery bank and the power produced is directly fed into the grid of Electricity Board. The entire operation of power generation is controlled automatically by means of electronic control system mounted at the bottom of the tower.

### **Special features:**

- (i) Wind Electric Generators can be installed only at specific locations with adequate wind potential as notified by the Government based on studies. The list of locations are given in Annexure-I.
- (ii) Available in various capacity ranges from 225 KW to 750 KW (now upto 2.0 MW).
- (iii) Tower height can be in the range of 30M to 50 M to tap wind energy more effectively.
- (iv) Wind Electric Generator of 250 KW can generate 4 lakhs to 6 lakhs units of electricity per annum depending upon the wind potential of the area.

### **Cost of Wind mill:**

The cost of a single 225 KW or 250 KW which is widely preferred is about Rs.1 Crore. The total project cost of a one MW wind farm will be about Rs.5 Crores including charges payable to TNEB.

### **Incentives / facilities offered by Government of India.**

- (i) Accelerated depreciation on Wind Electric Generator is permissible upto 80% of the cost for Income Tax calculations subject to minimum utilisation for six months in the year in which the deduction is claimed.
- (ii) Import of Wind Electric Generators is permitted under Open General Licence.
- (iii) Customs duty concessions are available for the import of Wind Electric Generators and certain essential spares.
- (iv) Tax holiday granted for ten years in respect of profits and gains from the investments in Wind Electric Generators.

### **Incentives / facilities offered by Government of Tamil Nadu**

- (i) TNEB buys surplus energy at the rate of Rs.2.75 per unit from the existing wind mills commissioned before 15.5.2006 from the date of renegotiation of the existing agreement and Rs.2.90 per unit from the Wind Mills Commissioned after 15.5.2006 as per the new tariff order issued by the Tamil Nadu Electricity Regulatory Commission.
- (ii) Concessional wheeling charge is levied at 5% for captive use of power under which industries can draw the power produced anywhere in the state at the point of consumption.
- (iii) Banking facilities within the same financial year are allowed subject to 5% charges.
- (iv) Providing wind data and power potential at potential sites based on the study conducted by TEDA, details of which are given in Annexure I & II.

### **Who can set up wind farm?**

- ❖ Power utilities like State Electricity Boards and Private power generation companies, industries, industrial investors etc can install wind farms.
- ❖ Profit making industries can install wind farm to produce power for their captive consumption as well as to avail income tax benefits for the investment in such renewable energy projects.
- ❖ Profit making companies like financial institutions coming under non-industrial categories can also set up wind farms to sell the power to Tamil Nadu Electricity Board as well as to avail the income tax benefits.

### **How to set up of wind farm?**

- (i) Prospective investors may consult Tamil Nadu Energy Development Agency (TEDA) or Tamil Nadu Electricity Board (TNEB) or other Consultancy Agencies and plan for early Wind Energy Generation.
- (ii) Select suitable land in a wind potential area and purchase the same based on the wind potential.
- (iii) Apply for consent letter for wind power generation with the following details to the TNEB directly or through TEDA.
  - a) Topo sketch of the land marking the proposed location of Wind Electric Generator (taking into consideration of the nearby WEG area i.e. leave reasonable space from the border area for your neighbor).
  - b) Village Map.
  - c) Ownership records for the land.
- (iv) Apply for tie up arrangement with TNEB grid and execute the interfacing work as per TNEB norms. 11% charges towards supervision of the interfacing line works has to be paid to TNEB before taking up the interfacing work.
- (v) Arrange for erection of Wind Electric Generators from approved manufacturers
- (vi) Remit the prescribed development charges towards infrastructural facilities for evacuation of wind power to TNEB.
- (vii) Arrange for inspection by Chief Electrical Inspector to Government and obtain Safety Certificate simultaneously from the Chief Electrical Inspector of Government of Tamil Nadu.
- (viii) Commission the Wind Electric Generator and get it tied up with the Board's grid.
- (ix) Arrange to commission the Wind Electric Generator before 30<sup>th</sup> September 31<sup>st</sup> or March to avail depreciation allowance and other tax benefits.  
(The list of manufacturers of WEGs is given in Annexure-III)

## **1.2 WIND MILL WATER PUMPS**

A windmill for water pumping consists of 12 M high steel structure with 12 to 18 blades mounted on the top and with pumping device. The wind force striking at the blades is converted into mechanical energy and this energy is used to operate a pumping rod, as in the case of a hand pump, to pump out water from open or bore well.

**Special Features:**

- (i) The windmill can be installed in any well which has no obstruction in the form of tall trees or building around the site.
- (ii) It can operate in places where the wind speed is about 18 kmph. Gear type wind mills are available which can operate at a speed of 9 kmph.
- (iii) The height of structure can be increased at the time of erection based on site requirements.
- (iv) There are only a few moving parts which if maintained properly will render long service.

**Main types of windmills and structure**

**Gear type**

Tower : 30' height  
 10' Dia 18 blades  
 Pump : 2" to 4"  
 Wind Speed : 9 KM / hr  
 Water output : 1000 liters / hour  
 Depth : 20 metres  
 Approx. cost : Rs.82,000/-  
 GOI Subsidy: Rs.30,000/- each  
 available for all users

**AV 55 Type**

Tower : 13.5 to 19.5 metre height  
 5.5 M dia 24 blades  
 Pump : 3" to 5"  
 Wind speed : 18 KM / hr  
 Water output : 4000 liters / hour  
 Depth : 15 metres  
 Rs.1,45,000/-  
 Rs.45,000/- each

Note: The cost and subsidy are indicative and are subject to change without notice.

**1.3 SMALL AERO GENERATOR / HYBRID SYSTEM**

Aero generator is a stand-alone type generator which uses wind energy for producing electricity, which is stored in a battery set for use of the power conveniently for feeding small loads upto 30 KW. In the case of hybrid systems, the generator will be run using both wind and solar energy so that the availability of power is increased during the day and at night.

Cost Rs.2.5 lakhs / KW (approx)

Subsidy from Government of India.

Community applications Direct use by Central and State Government	75% of Exworks cost subject to a maximum of Rs.2 lakhs / KW.
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Individuals, Industrial Users, R&D and Academic institutions	50% of Ex works cost subject to a maximum of Rs.1.25 lakhs / KW.
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Procedure involved in setting up a windmill / Small Aero generator

The applicant has to hand over the application given in Annexure-V duly filled in and signed to TEDA along with Demand Draft for Rs.5000/- in favour of TEDA towards Caution Deposit. The list of approved manufacturers by MNRE is furnished in Annexure-IV. The applicant may choose one of the manufacturers and indicate the name of the manufacturer in the application.

On receipt of the application, the manufacturer will inspect the site and give suitability report to TEDA. Based on the suitability report, TEDA will forward the application to MNRE, GOI for the sanction of subsidy. On receipt of sanction order, the applicant will be informed of the allotment of windmill with a request to place supply order on the manufacturer. Simultaneously the manufacturer will also be directed by Tamil Nadu Energy Development Agency to install and commission the windmill at the applicant's site. On payment of balance cost of windmill to the supplier by the applicant, the manufacturer will install and commission the wind mill at the beneficiary site. Then the TEDA Engineer will inspect the working of the windmill and on satisfactory functioning of the windmill, TEDA will release Government of India subsidy directly to the supplier.

## **2. SOLAR ENERGY**

### **2.1 SOLAR (THERMAL)**

### **2.1.1 SOLAR WATER HEATING SYSTEMS (SWHS)**

#### **Description of Solar Water Heating Systems**

Solar Water Heater is a device which converts cold water into hot water (80° C) making use of solar thermal energy. It has three main components. viz., (I) Solar collector (ii) Insulated hot water storage tank (iii) cold water tank and insulated hot water pipelines and accessories.

#### **Solar Collector :**

It is basically a device which converts the cold water into hot water by absorbing the heat from solar energy. The solar collector with copper riser, header tubes along with copper absorber sheet gains more heat from the sun and converts cold water into hot water.

#### **Insulated Hot water storage tank :**

The hot water is transferred from the collector to the storage tank by thermosyphon system because of its density being less than that of cold water. The hot water thus obtained could be maintained for 30 hours irrespective of outside climatic conditions. Generally the storage tank is made of stainless steel in order to provide good water to the inmates of hostel, hospitals, etc.

#### **Coldwater & Hot Water pipelines :**

SWHS shall essentially has a regular cold water input and for this, a permanent source of soft water shall be guaranteed. The hot water from the insulated storage tank would be transferred to different hot water utility points through the insulated hot water pipelines. The success of the system shall be depending on the availability of shadowless place, the insulations of good quality and proper maintenance of the system.

#### **MAIN USES :**

**Domestic Solar Water Heating Systems (DSWHS) (Upto 300 LPD)**

**Industrial Solar Water Heating Systems (ISWHS) (Above 300 LPD)**

- |                   |  |
|-------------------|--|
| 1 For Bathing     | 1 As input to boiler feed water                                    |
| 2 Dish washing    | 2 Milk cane washing in dairies                                     |
| 3 Tea preparation | 3 Surgical clinics for sterilisation, etc.                         |
|                   | 4 Industrial canteen for cooking, tea preparation and dish washing |
|                   | 5 Used in bleaching and dyeing units                               |

### **Cost**

The cost of one 100 LPD system will be around Rs.20,000/- and the cost varies depending upon the additional features like space heaters, puf coating models, etc. The cost of one 1000 LPD also works out to about Rs.2.00 lakhs.

### **Incentives and Subsidies:**

Profit making companies can avail depreciation at the rate notified by the Government of India for installation of SWHS in the first year itself.

Soft loan @ 2% to domestic users, 3% to institutions not availing accelerated depreciation through IREDA and Public / Private sector banks etc. Capital subsidy equivalent to upfront interest subsidy @ Rs.1100/- per Sq. m Collector area to registered institutions and RS.825/- per Sq.m Collector area to registered commercial establishments not availing soft loan is also available on reimbursement basis.

### **Mandatory provisions :**

Government of Tamil Nadu has issued the following G.O's amending the building Rules to make the use of Solar Water Heating Systems mandatory in new buildings.

- (a) G.O. Ms.No.112, Municipal Administration and Water Supply (MAI) Department, dt.16.8.2002
- (b) G.O. Ms. No. 277, Housing and Urban Development (UDI) Dept, dt.14.11.2002

### **CATEGORIES OF BUILDINGS COVERED**

#### **Chennai Metropolitan areas :**

- (i) Nursing Home / Hospitals exceeding 500 sq.m in floor area
- (ii) Hotels, lodges exceeding 500 sq.m in floor area

- (iii) Hostels exceeding 50 rooms
- (iv) Kalyanamandapams exceeding 500 sq.m in floor area

**Other areas (all districts & Municipal Corporations) :**

- (i) Hospital and Nursing Homes
- (ii) Hotels, lodges and Guest Houses
- (iii) Hostels, Schools, Colleges and Training Centres
- (iv) Barracks of armed forces para-military forces and police
- (v) Individual residential buildings with more than 150 sq.m plinth area
- (vi) Functional buildings of railway stations, airports etc
- (vii) Community centers, Kalyanamandapams etc.

**How to install a SWHS?**

Institutions who are interested to install a SWHS may contact any one of the manufacturers/suppliers, given in annexure VI and get the system installed. For any guidance, they may contract TEDA and get the details.

**2.1.2 SOLAR AIR HEATING SYSTEMS (SAHS)**

The SAHS raises the ambient air temperature by 30° C to 40° C and provides preheated air as input to the conventional heaters thereby saving fuel like firewood, coal, etc. including the conventional electricity to the extent of 25%.

The Solar Air heating Systems are currently used in processing of tea leaves, fruits, vegetables and drying of grains etc. Tamil Nadu is leading in their successful use. 46 such systems have been successfully commissioned in Tamil Nadu so far. The use of SAHS has now been extended to fish drying, dhall, spices, leather and other industrial products.

**Salient features :**

- ❖ Since these systems are erected on the roof of the factory itself, it does not require any extra space.
- ❖ The moisture content on tea leaves / fruits that are to be dried through SAHS, is reduced to 5% level from 40%
- ❖ The uniform heating through SAHS improves the quality of "to be dried products"

❖ There is an estimated fuel savings of about 25%.

### **Cost and subsidy details**

The cost of SAHS is approximately Rs.8000/- per sq.m. area which includes cost of Aluminum extrusion, Glass and absorber materials, Insulation, Blower and other accessories including labour charges. MNRE subsidy will be paid 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 / organisation and 35% of the cost subject to a maximum of Rs.1750/- per sq.m. of collector area of commercial and industrial users.

### **Details of SAHS manufacturer :**

Those who want to install the system may contact the manufacturers whose details are furnished in Annexure VII.

### **2.1.3. SOLAR COOKER**

Solar Cooker is similar to conventional cooker used in a kitchen to cook food, but the former does not require any cooking gas or kerosene, neither any coal nor any wood as fuel. There is no need for electricity to run it. Solar Cooker works only on solar energy. It gives no smoke. No soot spoils the cooking utensils. It keeps the environment clean and causes no health or fire hazards to the personnel who do the cooking.

There are different types of solar cookers according to the no. of persons for whom the cooking is required to be done.

#### **i) Box type Solar Cooker**

It consists of a well insulated box, the inside of which is painted full black and is covered by one or more transparent covers, to trap inside the solar cooker but not to allow the heat to come out of the box. The temperature inside can go upto 140° which is adequate for cooking.

A normal box cooker of 0.6 m x 0.6 m in size with a weight of around 12 kgs is capable of cooking 2 kgs of food and will save around 3 to 4 LPG cylinders per year. The cooker is also available with electrical back up so that it can cook food during non-shine hours with nominal consumption of electricity.

Its approximate cost is Rs.5000/- (with electrical backup) and Rs.4000/- (without electrical backup).

There is no Government subsidy for this type of Solar Cookers. However under arrangements made by MNRE, interest free loan is available for the users and individuals through IREDA and some of the banks.

## **ii) Dish Solar Cookers**

It is a concentrating type parabolic dish cooker made of reflecting aluminium sheets and can cook food for 10 to 15 person. Approx. cost Rs.7000/-. Useful for individuals as well as roadside shops. MNRE subsidy of 30% cost subject to a maximum of Rs.1500/- per cooker is available for rural areas.

## **iii) Community Solar Cooker**

It can be used for cooking food inside a Kitchen, for 35 to 40 persons. Aprox. Cost is Rs,50,000/-. Useful for religious places, ashrams, messes, boarding school etc. MNRE subsidy of 30% cost subject to a maximum of Rs.15,000/- per cooker is available for rural areas.

## **iv) Solar Steam Cooker**

One Cooker of this type is installed by Brahmakumaris Organisation at Talatt, Mount Abu. It can cook twice a day for 10,000 persons. Approx. cost is Rs.55 lakhs. It is a hybrid system with back up oil fired boiler. A smaller system to cater for 1000 persons is also available. MNRE provides subsidy of 50% of ex-works cost of the system. The list of manufacturers of solar cookers are given in Annexure-VIII.

## **2.2 SOLAR (Photovoltaic)**

### **2.2.1 Solar Photovoltaic (SPV) Systems**

SPV systems consist of the following components :

- (i) SPV modules
- (ii) Battery Bank
- (iii) Electronic circuits (Inverter and charge controller)
- (iv) Load (i.e.) devices to be energized viz, lamp, fans, pumps etc.

#### **How does the system work :**

SPV modules consist of silicon cells. The sunlight falls on silicon cells is converted into D.C. electricity. Standard sizes modules are 37 watt or

74 watt and several modules can be connected together, to get the required wattage. D.C. electricity produced by the SPV modules can be used straightaway for running D.C. motor pump sets for lifting water.

Alternatively DC electricity produced by the SPV modules is stored in a battery and converted into AC electricity by using electronic circuits, viz., Inverter and charge controller. AC electricity thus produced can be used to operate lights, fans, or can be fed into Tamil Nadu Electricity Board grid in case of large scale power generation.

SPV systems commercially available now are following:

- SPV Lanterns
- SPV Home Lights
- SPV Street Lights
- SPV Water Pumps
- SPV Power Plants – standalone, grid connected

### **2.2.2 SPV Lantern**

#### **How does it work?**

SPV lantern is a lighting device. It consists of 10 watt. SPV module, rechargeable battery, 5 W / 7 W CFL Lamp and electronics (i.e., inverter & Charge Controller). When sun light falls on the SPV module, it is converted into DC Electricity. This DC Electricity is stored in a battery and is converted into AC electricity by the Electronics and used for supplying power to the CFL Lamp.

#### **Sailent features:**

- ◆ It is portable
- ◆ It can be used for domestic lighting
- ◆ It is capable of giving illumination for 4 hours / day.
- ◆ Being portable, this can be utilised for both indoor and outdoor purposes.

#### **Advantages :**

- ◆ In remote hilly areas, where there is no conventional electricity, SPV Lantern is a boon.
- ◆ SPV Lantern may be used as standby lighting source in houses or in commercial buildings. It is useful for students during examination time.  
Cost: Approx cost of one lantern is Rs.4,000/-.

#### **Subsidies and Incentives :**

Capital subsidy is not available at present.

### **How to purchase a solar lantern?**

The list of manufacturers is given in Annexure-VI. They may be contacted and the lantern purchased directly from them.

### **2.2.3 SPV Street Lights :**

#### **How does it work ?**

SPV Street lighting system is stand alone street light. It consists of 2 Nos. 37 Watts modules / 1 No. 74 Watts module rechargeable battery, 11 W. CFL Lamp Electronics (Inverter & Charge controller) mounted on a GI or MS pole. When sunlight falls on the SPV module, it is converted into D.C. electricity. This D.C. electricity is stored in the battery and is converted into AC electricity by the electronics and used for energizing the CFL Lamp.

#### **Salient features :**

- It is a standalone system for street lighting
- Can be installed anywhere – even in remote areas
- It provides lighting for 10-12 hours a day

#### **Advantages**

- In areas where there is no electricity and where electricity supply could not be extended, SPV street light will be very useful
- No need for manual operation; it will switch on during dusk and switch off during dawn automatically.

#### **Cost**

The cost of one set of SPV Street Light is around Rs.30,000/-

#### **Incentives / subsidy :**

- MNRE, Government of India subsidy for Street lighting system is 50% of the actual cost or a maximum of Rs.9600/- (whichever is less) is applicable for non profit organisations in rural areas (Subsidy pattern will change year to year). Minimum of 5 Nos. SPV Street lights will have to be installed to avail the Central Financial Assistance.

## How to install a SPV Street Light

Organisations willing to bear the balance cost after subsidy and to install the SPV Street lights may contact the District Rural Development Agency in their District or the Municipal Corporation of the area who will procure the systems based on the allotment given by TEDA and in accordance with MNRE guideline. Sanction of subsidy will be made subject to the allotment made by MNRE year to year.

### 2.2.4 SPV Home Lights

This is a fixed indoor lighting system available in five configurations under MNRE subsidy scheme. The lights used in the above systems are Compact Fluorescent Lamps (CFL) of 7/9/11 W, consuming less energy but equivalent to 25/40/60 W of conventional lamp. The fan is DC with less than 20 W. One battery capacity 12V, 40 / 75 AH is also provided with SPV Modules of 37 Wp or 74 Wp as required. The system will work generally for 2 to 4 hrs daily depending upon the configuration used.

The various models and specifications are as follows:

	Approx Cost / each
Model 1 (18 W module, 1 light)	Rs.8000/-
Model 2 (37 W module, 2 lights)	Rs.14000/-
Model 3 (37 W module, 1 light, 1 fan)	Rs.16000/-
Model 4 (74 W module, 2 lights 1 fan)	Rs.30000/-
Model 5 (74 W module, 4 lights)	Rs.30000/-

Central Subsidy for rural areas : 50% of actual cost or Rs.2500 for Model-1 and Rs.4800 for Model 2 to 5 Whichever is less.

Eligible beneficiaries : Individuals, Non-profit institutions,  
: Organisations. No individual would be given more than one system.

To install these Home Lights, some procedure as applicable for the Street lights may be followed:

### 2.2.5 SPV (Solar Photovoltaic) Water Pumps

SPV Water Pump consists of SPV modules and DC/AC motor pump set. SPV modules convert the solar radiation falling on them, into DC Electricity. The DC electricity operates a DC motor pump or AC motor pump through an inverter to lift the water from the well for irrigation and drinking purposes.

**Salient features :**

- Available in different capacity ranges right from 600 watts to 3000 watts.
- Available in different types, floating type, ground-mounted, submersible type, etc.
- Lifts water to a total head of 30 feet (suction and Delivery)
- A standalone system, producing and consuming energy on the same spot, thus totally avoiding loss of energy in transmission.

**Cost**

- One 900 watt SPV Pump (DC surface) suitable for 10 m depth of water will cost Rs.1.70 lakhs (approx)
- One 1800 W SPV pump (AC submersible, suitable for 30 m depth of water will cost Rs.4.10 lakhs (approx)

**Incentives**

- IREDA will provide loan upto 90% of cost to the eligible users and intermediaries / manufacturers at the rate of 5% per annum and 2.5% per annum respectively Rs.30 / Wp of P.V. array used in the SPV Water Pumping system subject to a maximum of Rs.50,000/- per system is being provided as CFA by MNRE, Government of India.

**How to get an SPV Water Pump?**

As per existing guidelines of MNRE, Government of India, for installing a SPV pump, beneficiary can contact any of the empanelled list of suppliers of SPV Pump who will inspect the site for suitability of the well and arrange to send their application to IREDA. Further details may be obtained from TEDA.

**2.2.6 SPV Power Plants - Standalone**

**How does it work?**

A small SPV Power Plant consists of SPV modules (total wattage being 1 KW or more) Re-chargeable battery bank. Power conditioning unit (Inverter and charge controller) etc.

When sun's rays fall on the SPV module. DC electricity is produced. This DC Electricity is stored in the battery and the power conditioning unit converts the DC electricity from the battery into AC electricity. This AC electricity is used to energize the load, viz., lights, fans, etc. in a building.

**Salient features :**

- The Power Plant is normally designed for providing emergency supply for 4 hours per day (Higher operational hours are also possible)
- It has no moving parts.

**Cost :**

The approximate cost of the SPV Power Plant will be Rs.3.5 lakhs / Kw

**Subsidy / Incentives**

- MNRE Government of India subsidy is 50% of the actual cost or Rs.1.25 lakhs / KWp for upto 10 KWp plant and Rs.1.50 lakhs / KWp for more than 10 KWp plant with distribution line or 50% of the actual Cost whichever is less. Subsidy is available to non profit organisations and non commercial organisations in rural areas only. For availing MNRE, subsidy each proposal is to be sent to MNRE and specific sanction should be obtained.

**How to get power plant sanctioned?**

- People interested in installing SPV Power Plant can consult anyone of the manufacturers (given in Annexure-VI) and assess the suitability of the site and then apply to TEDA through manufacturers in the format given in Annexure-X.

**2.3 AKSHAY URJA SHOPS**

MNRE, Government of India is providing assistance, as given below for establishment of Akshya Urja shop in the District in Tamil Nadu with necessary facilities for sale and servicing of various renewable energy devices.

- i) Soft loan @ 7% to a maximum of 85% of the cost of establishment of the shop subject to a maximum of Rs.10.00 lakhs will be provided through Banks repayable over a period of 5 years.
- ii) Monthly recurring grant of Rs.5000/- per month.
- iii) An incentive of Rs.5000/- per month based on minimum turnover of Rs.50000/- per month during 1<sup>st</sup> year and Rs.1.00 lakh per month during 2<sup>nd</sup> year.

The list of Akshya shops established in Tamil Nadu is given in Annexure-VI.

**2.4 Schemes for Urban areas****1. Solar Street / Public garden lights**

Dusk to dawn system 74/75 wp SPV modules and 11 W / 18 CFLs – 50% of the cost or Rs.10,000/- for 11 w CFL / Rs.12,000/- for 18 W CFL which ever is less.

## **2. Street light solar control systems**

Dusk to dawn systems of 5 wp SPV module capacity 25% cost or Rs.5,000/- which ever is less (100 lights per system)

## **3. Illuminated Hoardings**

Minimum of 2 sq.m. hoarding are atleast for 6 hours. 50% of the cost or Rs.15,000/- per 100 wp hoarding which ever is less.

**4. Solar road studs:** 50% of the cost or Rs.1,000/- (for each stud) which ever is less.

**5. Solar blinkers:** Systems with minimum 37 wp module capacity and 24 hours operation 50% of the cost or Rs.7,500/- which ever is less.

**6. Solar Traffic Signals:** Systems with minimum of 500 wp SPV modules for four road junctions – 50% of the cost of Rs.2.5 lakhs which ever is less.

## **OTHERS**

- i) BIPV systems: Systems upto a module capacity of 5 KWp converting minimum roof / wall paved area of 10 sq.m. per wp. 50% of the cost or Rs.2.00 lakhs per kwp whichever is less for 2 demonstration solar buildings programme of MNRE.
- ii) Solar Power Pack : Systems upto a module capacity 1 KWp for minimum 6 hours back up for installation in public sector banks, Govt. clinics, Government shops etc. for computer / emergency back up. 50% cost or Rs.1.00 lakh / KWp whichever is less.

## **3. BIO ENERGY**

### **The following are the various ways of using Bio energy:**

Bio energy refers to energy derived from all land and water based vegetation as well as other organic wastes. Biomass is produced by green plants through photo synthesis using sunlight. Biomass is burnt to get thermal energy, which is used to produce steam and then electricity.

### **3.1 BIOGAS PLANTS :**

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.

**Feed stock :**

Animal dung agro waste residues, kitchen wastes, sugarcane press mud, Paper wastes, forest wastes, garbage, etc.

**Biogas Generation**

Biogas, a mixture containing 55-66% of methane, 30-40% carbon dioxide and the rest being impurities, can be produced from the decomposition of animal, plant and human wastes, organic matters, etc. It is also possible to generate biogas from crop residues, forest waste, Municipal garbage, Kitchen wastes, Paper wastes, waste from sugarcane refinery, etc. It is very unfortunate that more than 50% of these raw materials are thrown out without proper use or burnt uneconomically.

**USES :**

- ❖ It can be used directly in cooking stoves or for burning lamps for illumination.
- ❖ It can replace firewood, oil, gas etc.
- ❖ The material from which biogas is produced retain its value as a fertilizer
- ❖ Conservation of biogas as electricity is possible
- ❖ The production of biogas creates improved sanitation, etc.
- ❖ It creates improved environment.

**Implementation by TEDA**

TEDA is implementing the installation of Institutional and Night soil based biogas plants through the Government approved agencies under KVIC models. This programme has been transferred from Central Government to State Government and hence there is no subsidy from Central Government. State Government had provided subsidy at 1/3<sup>rd</sup> cost of limited quantities for installation of Toilet linked (night soil based) biogas plants in the State for 2003-04 and 2004-05.

**Cost :** Rs. 5.5 lakhs (approx) for 25 cum capacity.

**Eligibility**

Institutions of Government, Private, Society, Trust, School, Hostel, etc.

**Installation.**

The list of contractors for installation of Biogas plants is given in Annexure-XI.

### **3.2 BIOMASS BASED POWER PROJECTS :**

Biomass is stored energy of solar. Biomass based power generation is being accorded importance all over the world. It is possible to generate power from biomass. As this is an agricultural based country, the availability of biomass will not be a problem normally. Hence with surplus biomass available, power can be generated and thereby reducing our requirement of power. The present Biomass generation potential is 17,000 MW in India.

#### **Fuel used :**

The required biomass can be obtained from energy plantations grown on waste lands. Further various type of agricultural wastes viz., rice husk, coconut shells, briquettes of various agricultural residues, maize cobs, branches and twigs of plants, etc, can be used as fuel for the biomass based power generation.

#### **Technologies :**

The regular combustion based technologies used for steam generation in a thermal plant are used in the biomass power plant as well.

#### **Biomass potential - assessment studies :**

To help the entrepreneurs, TEDA has completed Biomass Resource Assessment Studies in 49 taluks which assessed the potential of surplus biomass waste/materials to serve as a guide to private entrepreneurs willing to set up biomass based power projects, biomass gasifiers etc. Proposals were sent to MNRE, Government of India for sanction of financial assistance to conduct Biomass assessment studies in all the Districts of Tamil Nadu. The MNRE had entrusted District Level biomass study to the Institute of Energy Studies, Anna University, Chennai who have completed the study and submitted the draft report. As per draft report the surplus biomass potential in

all districts is estimated as 487 MW. The draft report after finalisation by IISC, Bangalore has been sent to MNRE.

Further to assist the entrepreneurs, TEDA forwards their application received after necessary scrutiny to MNRE, Government of India for the sanction and release of Government of India's financial assistance. The present installed Capacity of Biomass based Power Projects (8 Nos.) in Tamil Nadu is 99 MW.

**Eligible Beneficiaries :**

Individuals / Institutions / Business developers / NGO's Co-operative bodies etc.

**Government Assistance :**

Fiscal incentive in terms of excise duty concession and 80% accelerated depreciation for income - tax purposes in the first year of installation are provided to industries. Capital subsidy @ Rs.20.00 lakhs / MW would be provided to promoters subject to a maximum capacity of 5 MW by MNRE, Government of India.

TNEB buys surplus power at the rate of Rs.3.15 per unit concessional wheeling charges of 3% for distance upto 25 km and 6% for distance beyond 25 Km for captive use of power.

**3.3 BAGASSE BASED CO-GENERATION PROJECTS**

Generation of steam at high pressure and its use for generation of power and subsequent use of same steam at lower pressure for process applications in industries is called 'co-generation'. Co-generation in sugar mills was started in Tamil Nadu in 1997. In a co-generation plant, the bagasse produced from the sugar mill is used as a fuel for the boilers during crushing season and coal or other biomass is used during non-crushing season. A co-generation plant of 15 MW can be set up in a sugar mill of 2500 TCD capacity. 3 Nos. co-operative sugar mills and 16 private sugar mills in Tamil Nadu have set up co-generation plants with total exportable capacity of 213 MW.

**Application / Use**

The surplus power after meeting in house consumption is exported to TNEB which brings additional income for the sugar mills.

TNEB buys surplus power at the rate of Rs.3.15 per unit concessional wheeling charges of 3% for distance upto 25 Km and 6% for distance beyond 25 Km.

### **Preparation of DPR**

A Detailed Project Report (DPR) is required for availing loan from financial institutions, for obtaining statutory clearances and for claiming incentives from MNRE, Government of India. A list of consultants, who can be contacted for assistance in preparation of DPR is given in Annexure-XII.

### **3.4 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. Gasification can be utilised for thermal and electrical purposes.

#### **Fuel :**

The required biomass yield can be obtained from energy plantations grown on wastelands. Further all types of agricultural wastes viz., Rice Husk, Coconut shells, Briquettes of various agricultural residues, maize cobs branches and twigs of plants, can be possible feed stocks for the gasifier.

#### **Applications :**

Thermal / Mechanical / Electrical  
Village electrification

#### **Technologies :**

Indigenous as well as foreign collaboration based technologies through manufacturers in India are available.

#### **Advantages :**

- High efficiency
- Fuel flexibility
- Low maintenance

- It can be utilised for cooking purposes as well as generation of electricity
- Low cost comparing with other technologies
- Less space utilisation

### **Implementation by TEDA**

TEDA is implementing the installation of gasifier system and arranging for the Government grants for the systems installed.

### **Eligible beneficiaries :**

Institutions, school hostels, Kalyana Mandapams, Hotels, Canteens, Industrial units, etc.

### **Assistance from Government of India**

Government of India is giving subsidy to a tune of Rs.2.00 lakhs / 300 KWe thermal applications, Rs.2.5 lakhs / 100 KWe for electrical applications dual fuel engines, as Rs.10.00 lakhs / 100 KWe for 100% producer gas engines with gasifier systems Rs.8.00 lakhs / 100 KWe for 100% producers gas engine alone for private entrepreneurs and Rs.15.00 lakhs / 100 KWe for 100% producer gas engine coupled with gasifier system, and Rs.10.00 lakhs / 100 KWe for 100% producer gas engine alone for institutions, charitable institutions working purely on non-profit basis. The cost of thermal gasifier system is Rs.10.00 lakhs / 100 KWe and for electrical system it will be Rs,45.00 lakhs / KW (compulsory / optional add on will be extra).

### **Installation :**

The list of manufacturers of gasifiers and consultants are given in Annexure-XIII.

## **3.5 WASTE TO ENERGY PROJECTS :**

### **I. Industrial and Commercial Wastes**

Methane (CH<sub>4</sub>) gas can be generated from the industrial and urban waste using anaerobic digester. The methane gas can be used for heating in Thermal application and also for power generation after cleaning the gas through filters. There are about 50 Nos. Sago industries in and around Salem generating liquid and solid waste, from which methane gas can be generated.

After generation of methane gas, the waste water becomes colour less, i.e. pollution free.

**Feed stock :**

Solid and Liquid waste of Sago industries, distilleries, paper mills, etc, Sugar industries and also Municipal Solid Waste and also Poultry Waste.

**Technologies used :**

Technologies such as Bio-methanation, Pelletization, Gasification, Pyrolysis, Incineration, Combustion etc are used for recovering energy from Wastes depending upon their composition.

**Assistance from Government of India :**

As per MNRE guidelines applicable for 2006-07 capital subsidy eligible as given below :

<b>Wastes / Processes / Technologies</b>	<b>Capital Subsidy</b>
1. Industrial waste to Biogas	
i) Biomethanation of low energy density and difficult industrial wastes (i.e. dairy, tannery, slaughter house, sugar (liquid), paper (liquid) and pharmaceutical industry)	Rs.1.0 crore / MW eq. (12000 cum biogas per day)
ii) Biomethanation of other industrial wastes.	Rs. 0.50 Crore / MW eq. (12000 cum biogas per day)
2. Power Generation from Biogas	
i) Boiler + Steam Turbine Configuration	Rs.0.80 crore / MW
ii) Biogas Engine / Turbine Configuration	Rs.1.00 crore / MW
3. Power Generation from Solid Industrial Waste (Boiler + Steam Turbine Configuration)	Rs.0.80 crore / MW

The total capital subsidy would be limited to Rs.5.00 lakhs per project and 20% of the project cost.

The list of consultant / contractor is given in Annexure-XIV.

## **II Urban Wastes**

This MNRE programme can be implemented by Municipal Corporation, other urban local bodies, Government Institutions and Private developers.

### **Commercial projects for MSW**

Projects for Power generation from MSW through a two stage process involving production of RDF by processing MSW and its combustion for generation of power. The projects will be considered for specific cities and the developers will be selected on the basis of competitive bidding for a minimum amount of financial assistance within an overall ceiling of Rs.1.50 crore / MW.

### **Project based on high rate biomethanation technology**

Financial assistance of Rs.2.00 crores / MW will be provided for projects based on power generation from MSW through high rate biomethanation technology.

### **Demonstration projects for power generation from MSW through new Technology**

Financial assistance will be provided to the extent of 50% of the project cost subject to a maximum of Rs.3.00 cores / MW for demonstration projects based on gasification / pyrolysis and plasma arc technologies.

### **Power generation at sewage treatment plants**

Financial assistance @ 40% of the project cost subject to a maximum of Rs.2.00 crores / MW will be provided for projects for generation of power from biogas being produced at Sewage Treatment plants. Project cost will include the cost of engine genset. H<sub>2</sub>S removal plant and other related equipment.

### **Power generation from other Urban Wastes**

50% of the project cost subject to upper limit of Rs.3 crores / MW for projects based on biomethanation technology for power generation from cattle dung, vegetable market, slaughter house wastes, night soil and any other urban wastes. For cattle dung eligible project capacity would be 250 Kw and above, In case of only biogas for thermal application, it will be limited to Rs.1 crore / MWe (i.e. biogas production of 12000 cum / day)

### **3.6 Biogas based Distributed / Grid power generation**

Financial assistance will be provided for the projects to be taken up by any village level organization, institution, private entrepreneurs etc in rural areas for sale of electricity to individual / community / grid etc. on mutually agreeable terms, subject to a maximum of Rs.30000 to Rs.40000 per KW depending upon capacity of the power generating projects in the range of 3 KW to 250 KW of different rating limited to 40% of plant cost.

### **4.1 Promotion of Grid interactive Power Generation Projects**

MNRE provides subsidy to grid interactive Power Generation based on various renewable energy sources, to projects in Government / Private / Jointing Co-operative / NGO sector, as detailed below:

	<b>Resource</b>	<b>Subsidy</b>
i)	Small Hydro (upto 25 MW)	: Rs.1.50 Crore (Capacity in MW) ^ 0.646
ii)	Biomass Power	: Rs.20.00 lakhs (Capacity in MW) ^ 0.646
iii)	Bagass Co-generation	: Rs.15.00 lakhs (Capacity in MW) ^ 0.646
iv)	Bagasse Co-generation by Co-operative / Public / Joint Sector	: Rs.40.00 lakhs to 60 lakhs / MW (Max. 0.8 crore per project)
v)	Biomass Power using advanced Technology	: Rs.1.00 Crore (Capacity in MW) ^ 0.646
vi)	Wind Power (only of State Govt.)	: Rs.2.50 Crore (Capacity in MW) ^ 0.646

The subsidy for the projects of private sector, joint sector, Co-operative sector etc. will be released after successful commissioning and commencement of commercial generation and testing of the project, except in the case of Co-operative / public and joint sector bagasse Co-generation projects. For Government projects only, subsidy would be released linked to physical progress.

#### 4.2 Remote Village Electrification Programme

For the electrification through Renewable energy sources of the unelectrified remote census villages and remote unelectrified hamlets of electrified census villages where grid connection is either not feasible or not cost effective, MNRE provides Central Financial Assistance of upto 90% of the cost of the Renewable energy generation systems (including the cost of AMC if any for 5 years) subject to the maximum amounts given below :

##### a) Electrification through SPV systems

	<b>MNRE assistance</b>
Home lighting Model-1	- Rs.5,895/-
Home lighting Model – 2 to 5	- Rs.11,250/-
Street lighting system	- Rs.19,602/-
Power Plant	- Rs.3,15,000/- per KW plus Rs.3,150/- per household towards cost of distribution lines etc.

##### b) Electrification through Small Hydro Projects

	<b>MNRE assistance</b>
Capacity	Maximum CFA / KW
upto 10 KW	- Rs.98,100
Above 10 KW and upto 100 KW	- Rs.92,700
Above 100 KW and upto 1000 KW	- Rs.68,400

##### c) Electrification through Biomass Gasifier projects

<b>Gasifier rating</b>	<b>MNRE assistance</b>	
	<b>Maximum CFA / KW (Rs.)</b>	
	<b>100% producer gas</b>	<b>Duel fuel</b>
	Rs.	Rs.
upto 10 KWe	68,040	60,466 (63,000)

10 KWe upto 20 KWe	48,528	40,500
20 KWe upto 50 KWe	49,500	36,000
Above 50 KWe	43,726	31,500

Note : Figures in bracket include increases in cost on account of oil ghani

## **5.0 OTHER PROGRAMMES**

### **5.1 Energy Parks :**

Government of India has encouraged the setting up Energy Parks containing devices of Renewable Energy Sources, by educational institutions, registered consumer forums well established NGOs, for demonstration to public.

MNRE, Government of India provides financial assistance for setting up of 2 renewable energy parks in each district to demonstrate the benefits and functioning of various renewable energy devices and for creation of awareness among the public. The maximum possible cost of each park is Rs.10.00 lakhs including 20% for maintenance of devices for 10 years. The CFA for the first E.P is 75% while CFA for the 2<sup>nd</sup> E.P in a District is 50% of the cost of the project. The balance of 25% for first park and 50% of the cost for 2<sup>nd</sup> park has to be borne by the beneficiary institution concerned.

The list of Energy parks established is given in Annexure XV.

### **5.2 Battery Operated Vehicles :**

To obviate the difficulty in scarcity of petroleum products, MNRE is providing a subsidy of upto 33% of the cost of Vehicle exclusive of Excise duty, Sales tax etc, subject to a maximum amount indicated below. These vehicles run without petrol, make no noise and are pollution free. They are ideally suited as public transport in congested areas, hospitals, factories and wild like sanctuaries, airports, schools, and places of historic importance.

Subsidy is applicable only for the purchase of new, indigenously manufactured 4/8/10 seater passenger vehicles powered by batteries. They should have a range of 70 KM to 90 KM per charge and a speed of 40-50 KM / hr.

**Eligible beneficiaries**

Government organisations, undertakings, autonomous bodies, Public/Private limited companies, Registered Voluntary Institutions and Professional associations of Repute under Societies Registration Act.

<b>Type of Vehicle</b>	<b>Cost (Rs. in lakhs)</b>	<b>Max. subsidy per vehicle (Rs. in lakhs)</b>
10 seater and above	10.50	3.50
8 seater and above (3 wheelers)	2.40	0.80
4 seater car	2.25	0.75

The list of manufacturers of BOVs is given in Annexure XVI.

**General :** The cost of various devices given above and the subsidy/incentives are provisional and are subject to variation without notice.

**CONTACT OFFICERS :**

Tamil Nadu Energy Development Agency	:	General Manager Tamil Nadu Energy Development Agency V <sup>th</sup> Floor, E.V.K. Sampath Maaligai College Road, Chennai-600 006 Phone 28224830
Tamil Nadu Electricity Board	:	Chief Engineer (Non-conventional Energy Sources) Tamil Nadu Electricity Board, 800, Anna salai, Chennai-600 002. Phone : 2852 0167

List of Potential sites for Wind power projects in the Tamil Nadu (WPD>200 w/m<sup>2</sup> at 50m)

Sl. No.	Station	Latitude		Longitude		Elevation	Annual Mean Annual Wind speed (kmph)		Annual mean Wind power density w/m <sup>2</sup>	
		District Wise	Deg.	Min.	Deg.		Min.	Measured at 20/25m	Measured at 20/25m	Extrapolated at 50m
<b>Potential Exploited areas</b>										
<b>COIMBATORE</b>										
1	Andiyur	10	36	77	11	380	19.10	177	271	
2	Arasambalayam	10	51	77	3	370	20.50	195	291	
3	Edayarpalayam	10	55	77	7	445	22.40	273	398	
4	Kethanur	10	54	77	13	403	21.10	250	376	
5	Poolavadi	10	44	77	17	321	21.20	283	445	
6	Mywadu	10	36	77	19	341	19.60	231	376	
7	Pongalur	10	58	77	21	388	19.10	213	309	
8	Poosaripatti	10	40	77	7	380	19.30	168	254	
9	Sultanpet	10	52	77	11	380	19.00	203	206	
<b>ERODE</b>										
10	Mettukadai	10	52	77	23	348	18.00	184		
<b>TIRUNELVELI</b>										
11	Kumarapuram	8	16	77	35	80	22.00	288	408	
12	Mangalapuram	9	3	77	22	190	22.30	312	423	
13	Nettur	8	54	77	33	100	19.90	338	419	
14	Panakudi	8	19	77	53	140	22.90	366	469	
15	Sankaneri	8	12	77	40	28	22.60	258	388	
16	Alagiyapandiya-puram	8	56	77	39	85	20.90	301	487	
17	Ayikudi	9	0	77	21	182	21.40	305	536	
18	Achankuttam	8	57	77	28	120	18.60	270	437	
19	Puliyankulam	8	19	77	44	40	18.90	188	343	
<b>TUTICORIN</b>										
20	Kayathar – I	8	58	77	44	94	22.30	294	413	
21	Kayathar – II	8	57	77	48	105	20.50	285	356	
<b>KANYAKUMARI</b>										
22	Muppandal	8	16	77	33	100	25.50	406	712	
23	Kattadimalai	8	14	77	33	90	23.70	312	488	
24	Kannakulam	8	12	77	35	20	21.30	238	375	
25	Sembagarman-pudur	8	16	77	31	40	21.70	300	476	
<b>RAMANATHAPURAM</b>										
26	Rameswaram	9	17	79	20	4	23.90	290	604	
<b>Potential but Unexploited areas</b>										
<b>COIMBATORE</b>										
1	Thannirpandal	10	57	77	19	400	18.20	216	>330	
<b>TIRUNELVELI</b>										
2	Gangaikondan	8	51	77	35	60	18.40	246	338	
3	Naduvakkurichi	9	7	77	30	160	16.80	157	244	
4	Ovari	8	18	77	53	39	18.20	160	378	
5	Servallar Hills	8	42	77	21	312	17.80	207	313	
6	Talayuthu	8	48	77	40	105	20.50	324	422	
<b>KANYAKUMARI</b>										
7	Muttam	8	8	77	19	70	17:10	116	234	
<b>TOOTHUKUDI</b>										
8	Onamkulam	8	57	77	51	100	19.90	247	292	
9	Ottapidaram	8	54	78	1	40	18.50	221	292	
10	Tuticorin	8	50	78	8	3	17.60	148	245	
11	Vakaikulam	8	45	78	0	39	16.60	167	256	
<b>THENI</b>										
12	Andipatti	10	0	77	33	320	19.00	266	346	
13	Meenakshipuram	9	52	77	18	290	16.40	224	334	
<b>TIRUVALLUR</b>										
14	Ennore	13	16	80	19	6	19.30	139	243	
<b>DINDIGUL</b>										
15	Pushpathur-2	10	33	77	25	340	16.09	128	254	
<b>Total potential sites : 41 Exploited areas 26 &amp; Unexploited areas 15</b>										

**WIND ENERGY ESTIMATED POTENTIAL BASED ON  
MICRO SURVEY BY C-WET (WPD Range 200 W/m<sup>2</sup>)**

<b>Districts</b>	<b>Sl. No.</b>	<b>State &amp; Station</b>	<b>No. of sites</b>	<b>30 m level MW</b>	<b>40 m level MW</b>	<b>50 m level MW</b>	<b>70 m level Mw</b>	<b>100 m level MW</b>
I. Tirunelveli	1	Achankulam	3	47.2	147.2	147.2	-	-
	2	Alagiyapandipuram	9	386.8	386.7	386.7	-	-
	3	Ayikudi	3	205.3	205.5	205.4	-	-
	4	Naduvakkurichi	3	77.9	77.9	77.9	-	-
	5	Ovari	1	-	1.1	1.1	-	-
	6	Puliyamkulam	3	573.7	573.7	573.7	-	-
	7	Sankaneri	3	172.2	172.2	172.2	-	-
	8	Mangalapuram	14	440.83	446.42	446.42	-	-
	9	Gangaikondan	4	-	-	230	230	230
	10	Thalaisyuthu	2	-	-	208	208	208
II. Thoothukudi	11	Onamkulam	3	464.2	464.2	464.2	-	-
	12	Ottapidaram	8	168.2	168.1	168.2	-	-
	13	Vakaikulam	13	434.5	452.67	484.5	-	-
III. Coimbatore	14	Edayarpalayam	10	185.1	187.6	187.5	-	-
	15	Myvadi	5	237.3	237.3	237.2	-	-
	16	Pongalur	6	156.7	156.7	156.7	-	-
	17	Poolavadi	6	296.5	296.5	296.5	-	-
	18	Poosaripatti	3	66.9	314.3	314.3	-	-
	19	Mettukadai	15	309.2	309.2	309.2	-	-
	20	Andhiyur	4			312	312	312
	21	Thannirpandhal	3			336	336	336
IV. Theni District	22	Andipatti	6	323.7	349	350.7	-	-
	23	T.Meenakshipuram	3	-	-	132.0	-	-
V. Tiruvallur	24	Ennore	1	-	59.1	59.1	-	-
VI. Ramanathapuram	25	Rameswaram	3	-	-	44.0	-	-
VII. Dindigul	26	Pushpathur	2	-	-	85	120	120
VIII. Kanyakumari	27	Muttom	1	-	-	-	-	5
<b>TOTAL</b>			<b>137</b>	<b>4646.23</b>	<b>5005.39</b>	<b>6385.72</b>	<b>1206</b>	<b>1211</b>

## MANUFACTURERS OF WIND ELECTRIC GENERATOR

No	Manufacturer / Supplier		Capacity ranges kW
	Indian Company	Foreign Collaborater	
1	Enercon ( India ) Ltd Kolsite House, Plot No. 31, Shah Industrial Estate Veera Desai Road, Andheri ( West ) Mumbai – 400 053	Enercon, Germany	600,800
2	Vestas Wind Technology India Pvt. Ltd 298, Old Mahabalipuram Road Sholinganallur, Chennai – 600 119 (Formus NEG Micon)	Vestas, Denmark	750, 950, 1650
3	Pioneer Wincon Ltd ( Pioneer Asia Wind Turbine ) 16 – SP Developed Plot, Industrial Estate Guindy, Chennai – 600 032		250
4	Suzlon Energy Ltd 5 <sup>th</sup> Floor Godrej Millenium 9, Koregaon, Pune – 411 011	-	350, 1000, 1250, 2000
5	Vestas RRB India Ltd 17, Vembuliamman Koil Street, K.K. Nagar, West, Chennai-600 078.	Vestas, Denmark	600, 500
6.	Shriram EOC Ltd., 9, Venagaram Road, Ayanambakkam, Chennai-600 095	Under license agreement with TTG industries Ltd.,	250
7.	Southern Wind Farms Ltd., 15, Sundara Pandian Salai, Ashok Nagar, Chennai-600 083.	--	225

**List of Manufacturers of Aerogenerators & Wind mill water pumps**

**AEROGENERATOR**

1	Auroville Wind Systems Aurosarjan Complex Auroshilpam, CSR Auroville – 605 101	6	Lotus Solar Solutions Pvt. Ltd C 366 – C, Sushant Lok I Gurgoan – 122 001, Hariyana
2	Auto Spares Industries Wind Machine Division No. 4, Kalathiswaran Koil Street Pondicherry – 605 101	7	Machinocraft 15 / 4 A, Vasudeo Estate Opp. Shankar Maharaj Temple Pune – Satara Road Pune – 411 043
3	Bharat Heavy Electricals Ltd Corporate Research and Development Vikas Nagar, Hyderabad – 500 593	8	Marut Energy Equipments Pvt. Ltd D 1 / 18, MIDC Ambad Nasik – 422 010
4	Exide Industries Ltd Exide House, 59, E, Chowringhee Road, Kolkata – 700 020	9	Unitron Energy Systems Pvt. Ltd Plot No. 25, Sanjay Park Airport Road, Pune – 411 032
5	Jindesh International 6 / 8 Shanti Niketan, New Delhi – 110 021	10	Vistar Electronics ( P ) Ltd 42 A / 1 B, Erandawana Nilgiri Apartment ( Opp. S N D T College ) Karve Road, Pune – 411 038

**WIND MILL WATER PUMP**

- |   |   |   |   |
|---|---|---|---|
| 1 | M /s Auto Spare Industries<br>4, Kalathiswaran Koil St<br>Pondicherry – 605 001 | 2 | M / s Aureka Aspiration<br>Auroville, Tamilnadu – 605 101 |
|---|---|---|---|

**WIND SOLAR HYBRID SYSTEMS**

1	Auroville Wind Systems Aurosarjan Complex Auroshilpam, CSR Auroville – 605 101	6	Tata BP Solar India Ltd Plot No. 78, Electronic City\ Hosur Road, Bangalore – 561 229
2	Auto Spares Industries Wind Machine Division No. 4, Kalathiswaran Koil Street Pondicherry – 605 101	7	Machinocraft 15 / 4 A, Vasudeo Estate Opp. Shankar Maharaj Temple Pune – Satara Road Pune – 411 043
3	Bharat Heavy Electricals Ltd Corporate Research and Development Vikas Nagar, Hyderabad – 500 593	8	Rajasthan Electronics & Instruments Ltd 2, Kanakpura Industrial Area Sirsi Road, Jaipur – 302 012
4	Exide Industries Ltd Exide House, 59, E, Chowringhee Road, Kolkata – 700 020	9	Unitron Energy Systems Pvt. Ltd Plot No. 25, Sanjay Park Airport Road, Pune – 411 032
5	Lotus Solar Solutions Pvt. Ltd C 366 – C, Sushant Lok I Gurgoan – 122 001, Hariyana	10	Vistar Electronics ( P ) Ltd 42 A / 1 B, Erandawana Nilgiri Apartment, ( Opp. S N D T College ) Karve Road, Pune – 411 038

**Application form for Windmill and site suitability report**

- 1 Applicant/Institution Name :
- 2 Full Address :
- Place :
- Taluk :
- Town :
- P.C. No.:
- Post Office:
- District:

3. Does the applicant belong to SC/ST?
4. Where is the water pumping windmill to be installed?

(Extent of land survey No. and details of place should be furnished)

(Photo copy of the document to prove the ownership of the land should also be enclosed)

- Survey No. :  
Place :  
Taluk :

5. Purpose for which the windmill has to be installed ?

- a) Minor irrigation/ drinking water/ other reasons
- b) Extent of area used for minor irrigation (in acres)
- c) To feed electric loads

6. Is there good wind speed during the major period of year?

7. a) Details of availability of water resources (for water pumping)

- |                                       |                                    |
|---------------------------------------|------------------------------------|
| Dugwell                               | Borewell                           |
| Diameter of the well<br>and its depth | Borewell diameter<br>and its depth |

- b) Tank/River-Details of  
Availability of water :

- c) Depth of water level from ground level  
In winter.....ft/meter  
In summer.....ft/meter

- 8) Details of electric loads required to be fed (for small aerogenerators)

- | Type of Load              | Number | Total Watts | No.of hours to be used |
|---------------------------|--------|-------------|------------------------|
| 1. Lights                 |        |             |                        |
| 2. Fans                   |        |             |                        |
| 3. Any other<br>equipment |        |             |                        |

- 9) Is there any obstruction in and around the place where the windmill has to be installed?  
(Tall buildings, telephone/electricity posts and tall trees around 100 metres)

- 10) a) Will you take full responsibility after the installation of windmill? Yes / No  
b) Will you bear the expenditure on operation and maintenance of windmill? Yes /No
- 11) Do you agree to depute any of your representatives to TEDA for training on the operation and maintenance of the windmill? Yes / No
- 12) Will you undertake to insure the wind mill Yes/No
- 13) a) Do you agree to bear the balance cost of the windmill after subsidy? Yes/ No  
b) Will you pay Rs.5000/- towards Caution Deposit of our application?

(If yes enclose a DD in favour of TEDA furnish details)

Number :  
Date :  
Value of DD :

- 14) You have to bear the expenditure on civil foundation, iron bridge to hold the iron pillars of the windmill, additional pipelines, additional pump rods etc.

We agree to pay the DD in favour of TEDA and also agree to complete the work.

- 15) On receipt of the application, it will be sent to the MNES for sanction. If it is not sanctioned by the MNES, the caution deposit amount will be refunded. After receipt of the final allotment order the windmill has to be installed by the beneficiary immediately. If not the caution deposit amount will not be refunded.

After installation of the windmill the caution deposit amount will be directly released to the supplier who collects his charges from beneficiary after deducting subsidy and caution deposit.

Will you agree to this? Yes/No

- 16) If necessary will you construct storage tank at you cost? Yes/No

Address for correspondence:

Place :  
Post Office:  
Taluk :  
District:  
Telephone No.:  
Pincode No.:



**LIST OF MANUFACTURERES / SUPPLIERS  
SOLAR PHOTOVOLTAIC SYSTEMS / SOLAR THERMAL SYSTEMS  
(as maintained by TEDA)**

**Subject to possessing test certificate issued in or after 1.4.2005**

<b>Sl. No.</b>	<b>Name of the company</b>	<b>Telephone Number &amp; Fax Number</b>	<b>Products</b>
<b>1.</b>	M/s. Sun Technics Energy System Pvt Ltd., 660/1 100 Feet Road, Indira Nagar, Bangalore-560 038 <a href="http://www.suntechnics.com">www.suntechnics.com</a>	Ph:080-41880900 Fax:080-41261932	SPV Home lighting Model 1 to 5  SPV Lantern Model IIA & IIB  SPV Street Lighting System
<b>2.</b>	M/s. Omega Electronics Industrial Estate, Pappanamcode, Trivandrum – 695 105, Kerala. Email:omega@ammini.com Website: <a href="http://www.ammini.com">www.ammini.com</a>	Ph:+91-471-2490508 Fax:+91-471-2490832	SPV Home Lighting system Model 2  SPV Lantern Model II A  SPV Street Lighting System  SPV Home Lighting Model 1,3,4 & 5  SPV Lantern II B
<b>3.</b>	M/s. KCP Sixvell Power Systems 23, Muniyappan Koil street, Nethimedu, Salem-636 002. Tamil Nadu. <a href="http://www.kcpsixvell.com">www.kcpsixvell.com</a> Email: <a href="mailto:sixvellpowersystem@rediffmail.com">sixvellpowersystem@rediffmail.com</a>	Cell: 98427 12409 94433 12409  Ph: 0427-2270170  Fax: 0427-2270279	SPV Home Lighting systems Model 1,2 & 3  SPV Street Lighting system
<b>4.</b>	M/s. Vellore Agro Tech's Old 38, New 210, 4 <sup>th</sup> shop, Arcot Road, (opp:Daily Thanthi) Vellore – 632 004. Email:vellore_agrotechs@yahoo.co.in <a href="http://www.velloreagrotechs.in">www.velloreagrotechs.in</a>	Cell:94432 66189 93451 36131  Ph: 0416-2216232 0416-2212008	SPV Home Lighting systems Model- 1 to 5  SPV Street Lighting system  SPV Lantern Model - IIA  Solar Water Heating System  Solar Air Drying System
<b>5.</b>	M/s. Bharat Electronic Ltd., 'Fathima Akthar Court' 453, Anna Salai, Teyanampet, Chennai – 18. email:roch@bel.co.in <a href="http://www.bel-india.com">www.bel-india.com</a>	Ph: 2435 4135 2434 4703 2434 1680 Fax: 2434 1695	SPV Street Lighting System  SPV Home Lighting System Model 1 to 5  SPV Modules 37Wp & 74 Wp
<b>6.</b>	M/s. Bhagawathi Electricals, 25/30, Town Extension Road, Mayiladuthurai – 609 001.	Ph: 04364 223785	SPV Street Lighting Systems Solar Water Heating System  <b>dt.14.06.2008</b>
<b>7.</b>	M/s. Saravana Energy Systems, 6, Five Star Complex, (opp. Senthil Paper Store) Bus stand. N.T. Cuddalore – 607 002.	Ph: 04142 642763  Cell: 9842380877 9894074408	SPV Street Lighting systems  <b>dt.14.06.2008</b>

<b>8</b>	M/s. Alter Energy systems, A-A, New Natham Road, Madurai – 625 002.	Cell: +919344118252 +919344122592	SPV Street Lighting systems  <b>dt.8.07.2008</b>
<b>9.</b>	M/s. Win Solar Industry, 3/18, Siddhar Kovil Main Road, Near Muthu Kalyanamandapam, Sivadhapuram, Salem – 636 307	Ph: 0427-2480934  Cell: 94434 11904	SPV Street Lighting Systems SPV Home Lighting Systems Model 1 to 5  SPV Lantern IIA Solar Water Heating System <b>dt.12.07.2008</b>
<b>10.</b>	M/s. Aditya Power Industries, 6335/5, Poonamalli High Road, Aminjikarai, Chennai – 29.	Ph: 044-2621 4875 2621 3955 2628 6740 Fax: 2628 6740  Mobile : 98427 63470	SPV Lantern IIA SPV Home Lighting systems Model 2 & 3  Solar Water Heating System SPV Street Lighting System System with Tata make SPV Modules. <b>dt.11.07.2008</b>
<b>11.</b>	M/s. Rashmi Industries No.142, Mettur Road, Erode – 638 011, India Email: <a href="mailto:sales@rashmisolar.in">sales@rashmisolar.in</a>	Ph: 0424-2256304 2225373  Fax: 0424-2251426	SPV Home Lighting Systems Model 1,2 & 5 Rashmi make PV Modules and Batteries: SPV Street Lighting system SPV Lantern IIA Solar Water Heating Systems <b>dt.31.7.2008.</b>
<b>12.</b>	M/s. Sree Nandhee's Technologies Pvt Ltd, 17/1, Velayadam Street, Nungambakkam, Chennai – 600 034. Email: <a href="mailto:sntech@vsnl.com">sntech@vsnl.com</a> Email:sntech@airtelbroadband.in	Ph: 28216749(Chennai)  Fax: 28216910	SPV Home Lighting Systems Model 1 to 5  SPV Street Lighting Systems SPV Lantern IIA & IIB Solar Water Heating Systems <b>dt.22.8.2008</b>
<b>13.</b>	M/s. Prolight Systems, #22, 6 <sup>th</sup> , Cross, 8 <sup>th</sup> Main, Genesha Block, Mahalaxmi Layout, Bangalore – 560 096.  Email: <a href="mailto:prolightsystems@sify.com">prolightsystems@sify.com</a>	Ph: 080-23493757	SPV Home Lighting Systems Model 1,2 & 5  SPV Street Lighting Systems  SPV Lantern IIA <b>dt.6.9.2008</b>
<b>14.</b>	M/s. Sathiyam Sun Power Systems, #66, Chittu Kovil Street, Jayaraj Traders upstairs, Opp. Senthil Plastics New Buildings, Salem – 636 001.	Ph: 0427-4051662  Cell: 9443244674	SPV Street Lighting System  Solar Water Heating Systems <b>dt.10.9.2008</b>
<b>15.</b>	M/s. Win Power System, C/89, Tamil Nadu Housing Board, Maniyanoor Post, Salem.	Cell: 94422-11842 Cell: 94423-33108  Tele Fax:0427-4051662	SPV Street Lighting Systems  <b>dt. 25.9.2008</b>

<b>16.</b>	M/s. Emmvee Solar System Pvt Ltd. "Solar Tower" # 55, 6 <sup>th</sup> Main, 11 <sup>th</sup> Cross, Lakshmaiah Block, Ganganagar, Bangalore – 560 025.  Email: <a href="mailto:info@emmvee.in">info@emmvee.in</a>	Ph: +91-80- 23337427/28  23638380, 23638381  Fax: 91-80-23332060	Solar Water Heating System  <b>dt.26.9.2008</b>
<b>17.</b>	M/s. KCP Solar Industry, 37, Trichy Main Road, Gugai, Salem – 636 066. Email:kcpashok@yahoo.co.in <a href="mailto:kcpashok@hotmail.com">kcpashok@hotmail.com</a> <a href="http://www.kcpsolar.com">www.kcpsolar.com</a>	Ph: 0427-2212359  Cell: 9942935599 9443310409  Fax: 0427-2212409	SPV Street Lighting System  SPV Home Lighting Systems Model 1,2 & 5  <b>dt. 8.10.2008</b>
<b>18.</b>	M/s. Mercury Solar Sequence, #5, Vivekananda Nagar (South), Dindigul – 624 011.  Email : <a href="mailto:mercurysolarsequence@zapak.com">mercurysolarsequence@zapak.com</a>	Cell: 98426 49825 99947 52153	SPV Street Lighting Systems  <b>dt.17.10.2008</b>
<b>19.</b>	Sai Sustainable Energy Equipment Device Pvt. Ltd., 8/ 1658, 21 <sup>st</sup> Main Road, Anna Nagar (West), Chennai – 600 040.	Ph: 044-26180948  <a href="mailto:sseeds.sai@email.com">email- sseeds.sai@email.com</a>	SPV Home light Model – 2 Lantern Model II A SPV Street lights system
<b>20.</b>	Solson Solar Equipment Device Pvt Ltd., 42-E, Corporation complex, TPK Road, Madurai – 625 001.	Ph: +91-452-4379234 4377193  Fax: +91-452-4379234 email-solsen <a href="mailto:rec@yahoo.co.in">rec@yahoo.co.is</a> <a href="http://WWW.solsen solar.com">WWW.solsen solar.com</a>	SPV Home light Model – 2 Lantern Model II A SPV Street lights system

#### LIST OF AKSHYA SHOPS

<b>S.No.</b>	<b>Name &amp; Address of Manufacturer</b>	<b>Telephone / Fax</b>
1.	M/s. Akshya Neema Solar Shop, No. 36, Walaja Road, Chennai – 600 002.	Tel: 044 – 2855 5713
2.	M/s. Suras-Akshya Shop, No.111B – Sivalingam Complex, Bye-pass Road, Bethaniapuram, Madurai – 625 016.	Tel: 0452 – 238440 / 2423960  Fax: 0452 – 2429574
3.	M/s Akshya Shop, No.15, Guruswamy Pillai Lane, North Car Street, Dindigul – 624 001.	Tel: 0451 – 2423960  Fax: 0451 – 242974
4.	M/s. VGS Enterprises Akshya Urja Shop, NMC No.1517/21, Mudaliar Sannathi Street, Ranbay Road, Nagercoil – 629 002 Kanniyakumari District.	Tel: 94444 00044

**LIST OF MANUFACTURERS / SUPPLIERS / INSTITUTIONS / INVOLVED IN  
INSTALLATION OF FLAT PLATE COLLECTOR BASED SOLAR DRIERS /  
AIR HEATING SYSTEMS**

(as per MNRE List)

S.No.	Name & Address of Manufacturer	Telephone
1.	M/s. Planters Energy Network (PEN) No.5, Powerhouse Street, N.R.T. Nagar, Theni-625 531 Tamil Nadu	Phone: 04546-255272 Fax: 04546-255271 Email:pen01@sify.commdu pen01@sanchame
2.	M/s. NRG Technologies 989/6 GIDC Estate, Makarpura, Vadodara – 390 010.	Phone & Fax:0265-264 Email:nrgtechnologists.in
3.	M/s. Kotak Urja Pvt. Ltd., No.378, 10 <sup>th</sup> Cross, 4 <sup>th</sup> Phase, Peenya Industrial Estate, Bangalore – 560 058.	Tel:(080) 23560456-7 Fax: 02692-37982 Email:urja@mcdecom.in
4.	Director Sardar Patel Renewable Energy Research Institute Post Box No.2 Vallabh Vidyanagar 388 120 Gujarat	Ph: 02692 231332/ 35011 Fax:02692-37982 <b>E Mail:</b> <a href="mailto:director@spereri.org">director@spereri.org</a>
5.	<b>Director</b> Northern India Textile Research Association Sector 23, Raj Nagar Ghaziabad 201 002.	Ph: 91-4783586 / 4783592 Fax: 4783596

**LIST OF MANUFACTURERS / SUPPLIERS/ INSTITUTIONS INVOLVED IN INSTALLATIO OF  
SOLAR STEAM GENERATING SYSTEMS  
(as per MNRE List)**

<b>S.No.</b>	<b>Name &amp; Address of Manufacturer</b>	<b>Telephone</b>
1.	M/s. Gadhia Solar Energy Systems (P) Ltd., Plot No.86, OLD GIDC Gundlav, Valsad 396 035 Gujarat	Tele Fax:02632-236703 E Mail: <a href="mailto:gadhiasolar@yahoo.co.in">gadhiasolar@yahoo.co.in</a> <a href="mailto:gadhia_ad1@sancharnet.in">gadhia_ad1@sancharnet.in</a>
2.	Project Coordinator Solar Steam cooking system Brahmakumari Ashram Mount Aby Rajasthan	Phone :02974 237049 (direct) 238788 (general) Fax: 02974 238951 @238952 E Mail: <a href="mailto:bkgolo@sancharnet.in">bkgolo@sancharnet.in/</a> <a href="mailto:globhai@gmx.net">globhai@gmx.net</a>
3.	M/s. Solar Alternatives St. Mary's Church Compound Phulwari Sharif Paptna 801 505	Tel 0612-254487 Fax: 227903 E Mail: <a href="mailto:solarpatna@yahoo.com">solarpatna@yahoo.com</a> <a href="mailto:sjphulco@dte.vsnl.net.in">sjphulco@dte.vsnl.net.in</a>
4.	M/s. Sharada Investions 94/1 MIDC Satpur Nashik 422 007	Ph: 0253-2352444/2353844 Fax:0253-2353853 E Mail: <a href="mailto:sharadainv@satyam.net.in">sharadainv@satyam.net.in</a>
5.	Solar Thermal Appliances Plot No.45, Rajpur Extn. Colony Khasra No.III, Maidan Garhi New Delhi 110 068	Ph:011-23631010 E Mail: <a href="mailto:sharadainv@satyam.net.in">sharadainv@satyam.net.in</a>
6.	M/s. Supreme Rays solar systems 8, Kumbhar Building, Behind Tekwade Petrol Pump Opp. Akashwani Hadapsar, Pune 411 028.	Ph:020-26995588, 26996688 Fax: 020-26980155 E Mail: <a href="mailto:supremerays@yahoo.com">supremerays@yahoo.com</a>

## LIST OF MANUFACTURERS OF SOLAR COOKERS

(as per MNRE List)

S.No.	Name & Address of Manufacturer	Telephone
1.	M/s Bharat Engineering Co. WZ – 1, Phool Bagh, Rampura, Delhi – 110 035	Tel : 011 – 5102573 Fax : 011 – 5119155
2.	M/s J.N Enterprises F-12, Navin Shahdara, Delhi.	Tel : 011 – 2278870
3.	M/s Energy & Environment System A-1 / 1, Vijay Enclave, Dabri Palam Road New Delhi – 110045.	Tel : 011 – 5032019 Fax : 011 – 5036000
4.	M/s. Vishvakarma Solar Energy Co. G.T. Road, Phillour, Distt. Jalandhar, Punjab	Tel : 01826 – 22523 – 22217
5.	M/s Suntron Energy 11, Industrial Area, Kangra, H.P	Tel : 01892 – 64034
6.	M/s INKAS India E / 14, Zinnia Block, Ashiana Gardens, Sonari Jamshadpur – 831 001	Tel : 0657 – 421334 / 223708 Fax : 0657 – 421334
7.	M/s Fair Fabricators 142, Tilak Nagar, Indore – 452 001	Tel : 0731 – 491488 / 721472 Fax : 0731 – 490368
8.	M/s Sun-N-Shade 14 / 1, G.N.T. Market, Dhar Road, Indore – 452 001	Tel : 0731 – 480930 0731 – 480931
9.	M/s Classic Solar Devices C/o Shri N.C. Gupta, Near Shambu Talkies Nai Basti, katni – 483 501	Tel : 07622 – 52525 – 54848 ®
10.	M/s Cosmo Products Ashoka Complex, Pachpedhi Naka Dhamatari Road, Raipur – 492 001	Tel : 0771 – 422323 Fax : 0771 – 422323
11.	M/s Sharda Inventions 94 / 1, MIDC, Satpur, Nashik – 422 007	Tel : 0254 – 352444 Fax : 0254 – 353853
12.	M/s Ghagare Engg. (P) Ltd 105 / 30, “ Matru Krupa”, 2 <sup>nd</sup> Lane, Behind Gogate Petrol Pump, Off. Karve Road, Pune – 411 004	Tel : 0212 – 5448880 – 543311 Fax : 0212 – 5433123
13.	M/s FRP Point G-3, Sarojini Nagar, Industrial Area, Lucknow – 226 008	Tel : 0522 – 440004-8 Extn. 2607 Fax : 0522 – 440299
14.	M/s Universal Engineers Enterprises Garg Bhavan, Prince Road, Gandhi Nagar, Moradabad	Tel : 0591 – 493619 Fax : 0591 – 499768
15.	M/s Ideal Solar Energy Centre 568, kha / 504, Rajini Complex, Geeta Palli, Alambagh, Lucknow	Tel : 0522 – 460946 Fax : 0522 – 457390

16.	M/s Rohtas Electronics 15/268-B, Civil lines, Kanpur – 208 001	Tel : 0512 – 305564 Fax : 0512 – 305390
17.	M/s J.K Constructions Shop No. 3, Talwar Market, Near Transfarmer, Shivpuri Road, Jhansi	Tel : 0517 – 480519
18.	M/s Solar Equipment Mfg. Co., C-3, Sector – 6, Noida – 201 302	Tel : 8557126
19.	M/s Yantra Vidyalaya Post Box No. 4, Suruchi Vasahat, Bardoli – 394 601, Surat Dt.	Tel : 02622 – 20258 – 20095 Fax : 02622 – 23434
20.	M/s Gita Furniture A / 105, B.G. Towers (Ground Floor), Delhi Darwaja, Sashibaug Road, Ahmedabad – 380004	Tel : 079 – 5631604 – 5626686 Fax : 079 – 5626471
21.	M/s Piniball Mfg. Co, 147, G.I.D.C. Estate, Makarpura, Vadodara – 390010	Tel : 0265 – 642747 – 333629 Fax : 0265 – 336 287
22.	M/s Rural Engineering School Rojmal, Tal : Gadhada ( SN ), Bhavnagar Dt. – 364 750	Telefax : 02847 – 53104
23.	M/s Surya International “ SURYA”, 159, Kenya Nagar, New Sama Road Vadodara – 390 008	Tel : 0265 – 781427 – 781428 Fax : 0265 – 781221
24.	M/s Solar Energy Service 21-B, Jalaram Nagar, B/h, Mother School Near ISKON Temple, Gotri Road, Vadodara – 390 015	Tel : 0265 – 337674
25.	Khadi Gramodhyog Prayog Samiti Gandhi Ashram, Ahmedapad – 27	Tel : 079 – 7559382
26.	M/s Usha Engineering Works Trunk Road, Madanur – 635 804, Vellore Dt.	Tel : 04174 – 73613
27.	M/s Geetanjali Solar Enterprises P / 14, Kasba Industrial Estate, Phase –I, E.M. Bye Pass, Kolkatta – 700078	Tel : 033 – 4420773 – 4424027 Fax : 033 – 4420773 Email : <a href="mailto:gse@cal.vsnl.net.in">gse@cal.vsnl.net.in</a>
28.	M/s Surya Enterprises 6/80/4, Bijoygarh, Kolkatta – 700 032	
29.	M/s Partha Associates 305, Jessore Road, Kolkatta – 700 048	Tel : 033 – 5215476

S.No.	Name & Address of Manufacturer	Telephone
1.	M/s Gadhia Solar Energy Systems (P) Ltd Plot No. 86, OLD GIDC, Gundlav, Valsad – 396 035, Gujarat - <b>For all types of concentrating type solar cookers including Scheffler &amp; solar steam cooking systems</b>	Telefax : 02632 – 36703 Email : <a href="mailto:deepak_gadhia@yahoo.com">deepak_gadhia@yahoo.com</a> <a href="mailto:gadhiasolar@vsnl.com">gadhiasolar@vsnl.com</a>
2.	M/s Solar Alternatves St. Mary's Church Compound, Phulwari Sharif, Patna – 801 505 - <b>For Scheffler &amp; Dish solar cookers</b>	Tel : 0612 – 254487 Fax : 0612 – 227903 Email : <a href="mailto:solarpatna@yahoo.com">solarpatna@yahoo.com</a> <a href="mailto:siphulco@dte.vsnl.net.in">siphulco@dte.vsnl.net.in</a>
3.	Sustainable Development Agency (SDA) Regional Office ( North ), C / 114, Panchavati Apartments, Vikas Puri, New Delhi – 110 018 - <b>For Dish solar cooker only</b>	Tel : 5593449 Fax : 5617894
	Sustainable Development Agency (SDA) Parathodu, P.O. Kanjirapally, Kottayam District, Kerala-686 512	Telefax:0482-890646 email: <a href="mailto:soakply@sancharnet.in">soakply@sancharnet.in</a>
4.	M/s Eco Solar Systems ( India ) Ltd 2035 / 2 Sadashiv peth, Tilak Road, Pune – 411 030 - <b>For Dish solar cooker only</b>	Tel : 020 – 4336999 / 4330442 Fax : 020 – 4336412 Email : <a href="mailto:ccosolar@ecosolar.com">ccosolar@ecosolar.com</a>
5.	M/s. Veeraja Industries 117/A/2, Pune Sinhagad Road Parvati Pune 411 030 - <b>For Dish solar cooker only</b>	
6.	M/s Multi Crafts India 6-1-101/3, Padmarao Nagar, Secunderabad – 500025 - <b>For Dish solar cooker only</b>	Tel : 040 – 7505107 / 6212641 Fax : 040 – 7504321
7.	M/s Tata BP Solar India Ltd Plot No. 78, Electronics City, Hosur Road, Bangalore – 561 229 - <b>For Dish solar cooker only</b>	Tel : 080 – 8521016 ( 4 lines ) Fax : 080 – 8520116 / 972 Email : <a href="mailto:tatabp@solar.ind.bp.com">tatabp@solar.ind.bp.com</a>

**PROJECT PROPOSAL FOR INSTALLATION OF SPV STREET LIGHTS/  
HOME LIGHTS**

1	Name of the State implementing Agency	:	Tamil Nadu Energy Development Agency, EVK Sampath Maaligai, 5 <sup>th</sup> Floor, College Road, Chennai 600 006
2	Place of installation of SPV Street Lights	:	
	Campus or building in which the SPV lights to be installed	:	
	a. Street	:	
	b. Village	:	
	c. Taluk	:	
	d. District (individual beneficiary and non profit making organisations are eligible for subsidy, commercial organisations are not eligible for subsidy)	:	
3	Whether plains or hill areas	:	
4	Distance from nearest town	:	
5	Owner of the building (or) official in charge of the above building and his complete postal address	:	
6	Reasons for going in for SPV street light such as unelectrified area/E.B. supply available but frequent power cuts and low voltage problems specify	:	
7	No. of SPV street lights proposed	:	
8	Map showing the exact location of SPV street lights proposed, to be enclosed.	:	
9	Total cost of the project with cost break up.	:	

### **Undertaking from the Beneficiary**

I/We hereby agree to bear the balance cost of the project (i.e. total cost-MNRE subsidy of about Rs. \_\_\_\_\_ per street light) and undertake to maintain the SPV street lights and send performance report at least for 5 years. I shall enter into Annual Maintenance Contract with the supplier for a period of 3 years after the 2 years guarantee period is over :

Name:  
Signature :  
Designation :  
Seal :  
Date :

Above proposal was canvassed by us, the supplier M/s. \_\_\_\_\_ we assure that we will install SPV Street lights as per MNRE Specifications Specifications of proposed SPV Street lights is enclosed. We will also maintain the system for a period of 3 years after the 2 years guarantee period is over by entering into Annual Maintenance Contract with the beneficiary.

Signature  
Name  
Designation  
Company seal

**PROJECT PROPOSAL FOR INSTALLATION OF SMALL SIZE SPV POWER PLANT FOR BUILDINGS AS A STAND BY SUPPLY**

1	Name of the State implementing Agency	:	Tamil Nadu Energy Development Agency, EVK Sampath Maaligai, 5 <sup>th</sup> Floor, College Road, Chennai 600 006
2	Type of Building/(Residential Office, Hospital, Computer room, etc)	:	
3	Building Location	:	
	Door No. Street	:	
	Village / Town	:	
	Taluk	:	
	District	:	
	Pincode	:	
4	Whether plains or hilly area	:	
5	Distance from nearest town	:	
6	Owner of the building (or) Official in-charge of the above building and his complete postal address	:	
7	Whether the building is electrified or not	:	
8	If not, reasons for not electrifying	:	
9	If the building is electrified reasons for going in for SPV power plant such as low voltage, frequent power failure, etc.	:	
10	Loads proposed to be fed from SPV power plant	:	Nos. Wattage Total Hours of Wattage operation
	Fans	:	
	Lights	:	
	Other Loads viz.,	:	
	TOTAL	:	

11	Specification of proposed SPV Power Plant such as make and capacity of SPV panels, make and capacity of Battery Bank (sealed maintenance free batteries, to be used to avoid trouble free operation) PUC, change over switch, etc. Life of battery should not be less than 1200 cycles at 80% DOD (Details should be furnished in separate sheet)	:	
12	Total cost of project with cost break up (Details should be furnished in a separate sheet)		

**Undertaking from the beneficiary :**

I/We hereby agree to bear the balance cost of the project (i.e. total cost-MNES subsidy of about Rs. \_\_\_\_\_ lakhs per KWP and undertake to maintain the power plant and send quarterly performance report at least for 5 years. I shall enter into Annual Maintenance Contract with the supplier for a period of 3 years after the 2 years guarantee period is over :

Name:  
Signature :  
Designation :  
Seal :  
Date :

## TAMIL NADU ENERGY DEVELOPMENT AGENCY

## LIST OF CONTRACTORS FOR INSTALLATION OF BIOGAS PLANTS

S.No.	Name & Address of Manufacturer	Telephone / Fax
1.	M/s NERD Society 78 A, Siddhi Vinayakar Colony, Vadavalli, Coimbatore – 641 041	Tel : 0422 – 2422689 Fax : 0422 – 2425926
2.	Thiru S. Velumani M/s Karumalaian Engineering Industry 1 / 379 – 1, KV Layout, Vidhya Nagar, Thindal ( PO) Erode – 638 009	Tel : 0424 – 239053, 239444
3.	M/s Sundaram Fabricators Tiruchengode Main Road, 5 / 174, Andalore Gate, Rasipuram Taluk, Salem – 637 401	04287 - 231576
4.	M/s Jayasree Industries Needamangalam Road, Kumbakonam – 612 001	Tel : 0435 – 241 4687, 241 4135
5.	Thiru V R Rajendran M/s Nirmal Biogen Agencies Chakku Pallam ( PO ), Kumili, Idukki Dt., Kerala – 685 509	Tel : 04868 – 282866 Cell : 094470 50117
6.	Thiru V Manoharan Bio Consultant 17, Ahimshapuram 1st Street (New extension) Ayyappan Street Sellur Madurai 625 002	Tel : 0452-2525067 Cell : 094431 86572

**LIST OF CONSULTANTS FOR  
BIOMASS BASED POWER GENERATION INCLUDING  
BAGASSE BASED COGENERATION PROJECTS**

No	Name of Institution
1	M/s Aquatherm Engineering Consultants (India ) Pvt. Ltd., 2 <sup>nd</sup> Floor, St. Thomas Building, # 68 ( Old 150 ) Luz Church Road, Mylapore Chennai – 600 004 Tel : 044 – 24970832, 24660462, 24660464 Fax : 044 – 24996085
2	M/s Avant – Grade Engineers and Consultants ( P ) Ltd., 63 A, Porur Kundrathur High Road, Porur Chennai – 600 116 Tel : 044 – 24827843, 24828532, 24825717 – 20 Fax : 044 – 24828531
3	M. N Dasthur & Co. (P) Ltd., Consulting Engineers, Engg. Centre, 480, Anna Salai, Nandanam Chennai – 600 035 Tel : 044 – 24342206, 24342303, 24342340, 24342348 Fax : 044 – 24343712
4	M/s Industrial and Technical Consultancy Organisation of Tamil Nadu Limited, ( ITCOT ) 50 A, Greem Road, Chennai – 600 006 Tel : 044 – 28290324, 28294365, 28295484, 28293986 Fax : 044 – 28298613

## LIST OF MANUFACTURERS OF GASIFIERS

No	Name of the Company
1	M/s Energreen Power Ltd., 1, 2 <sup>nd</sup> street, 1 <sup>st</sup> Floor, Nandanam Extension, Chennai – 600 035 Tel : 044 – 24322499, 24321339 Fax : 044 – 24321339
2	M/s Netpro Renewable Energy India Ltd 139 / B, 10 <sup>th</sup> main Rajamahal Vilas Extension, Bangalore – 560 080 Tel : 080 – 3613585, 3613457 Fax : 080 – 3611564
3	M/s Ankur Scientific Energy Technologies P. Ltd Near Old Sama Jakat Naka, Vadodara – 390 008, Baroda Tel : 0265 – 793098, 794021 Fax : 0265 – 794042
4	M/s Associated Engineering Works P.B. No 17, Chivatam Road, tanuku – 53424 ( A.P ) Tel : 08819 – 22950, 24801
5	M/s Cosmo Products Devpuri (Off) Jain Public School, Dhamtari Road, Raipur – 492 015 Tel : 0771 – 226927
6	M/s Grain processing Industris (I) Pvt. Ltd 29, Strand Road, Kolkata – 700 001 Tel : 033 – 2431639 Fax : 033 – 2204508

## CONSULTANTS

No	Name of the Company
1	Acclaim Technology Services Sri Ramu Enclave, 61. 3 <sup>rd</sup> Main Road, RA Puram, Chennai – 28 Tel : 044 – 52030966, 967 Fax : 044 – 52169190
2	Venus Engineers 1 <sup>st</sup> Floor, No. 1, Ashroff, 2 <sup>nd</sup> St, Nandanam Extension, Chennai Tel : 044 – 24321339, 24322499 Fax : 044 – 24321339
3	M/s Ankur Scientific Energy Technologies P. Ltd Near Old Sama Jakat Naka, Vadodara – 390 008, Baroda Tel : 04265 – 793098 Fax : 04265 – 794042
4	Advanced Bio Energy Technology Society Combustion Gasification and Propulsion Dept. of Aerospace Engg. IISc, Bangalore Tel : 033 – 24725289 Fax : 033 – 28370743
5	Bio Energy Technology Services 4 /c, Avenue South, Santoshpur, Kolkata - 700075

**LIST OF CONSULTANT/CONTRACTOR FOR WASTE TO  
ENERGY PROJECTS**

<b>No</b>	<b>Name of Institution</b>
1	Central Leather Research Institute Sardar Patel Road, Adyar, Chennai – 600 020 Tel : 044 – 24910846, 24910897 Fax : 044 – 24912150, 24911589
2	M/s EN KEM Engineerings ( P ) Ltd., 824, Periyar E.V.R. Road, Kilpauk, Chennai – 600 010 Tel : 044 – 26414705 – 08 Fax : 044 – 284411788

## TAMIL NADU ENERGY DEVELOPMENT AGENCY

LIST OF ENERGY PARKS COMPLETED AND  
UNDER IMPLEMENTATION

## List of Energy Parks completed

No	Name of the Institution	Name of District
1	Institute for Energy Studies Anna University, Chennai- 600 025	Chennai
2	Dailt Liberation Education Trust, The Delta Training Center Campus, Kadalure village, East court road, Cheyyur Taluk, Kancheepuram District - 603 305	Kancheepuram
3	RMK Engineering College, RSM Nagar, Kavaraipetta- 601 206 Tiruvallur District	Tiruvallur
4	Vellore Engineering College, Vellore Institute of Technology, Vellore - 632 014	Vellore
5	Tamil Nadu Science and Technology Centre Gandhi Mandapam road, Chennai - 600 025 located on Tiruchirapalli	Tiruchirapalli
6	Gandhigram Rural Institute, Rural Energy Center, Gandhigram - 624 302	Dindigul
7	Madurai Kamaraj University, School of Energy Sciences, Madurai - 625 021	Madurai
8	Periyar Maniammai College of Technology for Women, Periyar Nagar, Vallam, Thanjavur - 613 403	Thanjavur
9	Annamalai University, Annamalai Nagar- 608 002 Chidambaram District	Cuddalore
10	MEPCO Schlenk Engineering College, Mepco Engineering College (PO) - 626 005 Virudhunagar	Virudhunagar
11	Vivekananda Kendra, Vivekanadapuram, Kanyakumari- 629 702	Kanyakumari

12	Mahendra Engineering College, Mahendrapuri, Malleswaram Tiruchengode (TK), Namakkal - 637 503	Namakkal
13	Kongu Polytechnic college, Perundurai, Erode District	Erode
14	PSG College of Technology, Peelamedu, Coimbatore - 641 004	Coimbatore
15	National Engineering College K.R.Nagar, Kovilpatty 628 503	Thoothukudi
16	PSN College of Engineering and Technology Melatheriyur, Palayamkottai, Tirunelveli - 627 152	Tirunelveli
17	Sethu Institute of Technology Virudhunagar District	Virudhunagar
18	Jayaraj Annapackiam College for Women Mount street, Anne Thamaraikulam Periyakulam post - 625 601, Theni District	Theni
19	Sudharsan Engineering College Satyamangalam village, Kulathur taluk Pudukottai - 622 501	Pudukottai

## ANNEXURE - XVI

### LIST OF MANUFACTURERS OF BOV

- |  | Phone   |
|--|---|
| 1. Thiru G. Anand Kumar<br>Manager ( market Development )<br>M/s. Mahindra Eco Mobile Limited<br>259 & 261 Maraimalai Adigal Salai<br>Nellithope, Pondicherry – 605 005                        | Mobile : 9840187049,<br>09443256061 and<br>09443434087                    |
| 2. Reva Electric Car Company<br>The Marketing Office<br>6 <sup>th</sup> Floor, Devatha Plaza<br>No. 131, residency Road<br>Bangalore – 560 025   | Tel : 080 – 22212143 / 22212492<br><br>Fax : 080 – 22270634               |
| 3. Thiru A.S. Nagaraj<br>Senior Deputy General Manager, Commerical<br>Bharat Heavy Electricals Limited ( BHEL )<br>6 <sup>th</sup> Floor, EVR Building<br>474, Anna Salai<br>Chennai – 600 035 | Tel : 044 – 2431100, 24341751<br>and 24330931<br><br>Fax : 044 – 24346166 |