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Government of India
Ministry of New & Renewable Energy
(Urban, Industrial and Commercial Applications Group)

**Block NO. 14, CGO Complex,
Lodi Road, New Delhi-110 003**

Dated: 28th February, 2008

To

Heads of State Nodal Agencies,
State Urban Development Departments

**Subject: Implementation of the programme on “ Development of Solar Cities”
during 11th Plan period**

Sir,

I am directed to convey the sanction of the Government of India for implementation of the programme on “ Development of Solar Cities” during the 11th Plan period as per the details given below:

2.0 Goals and Objectives

The Goal of the program is to promote the use of Renewable Energy in Urban Areas by providing support to the Municipal Corporations for preparation and implementation of a Road Map to develop their cities as Solar Cities. The objectives of the programme are given below:

- to enable/empower Urban Local Governments to address energy challenges at City - level.
- to provide a framework and support to prepare a Master Plan including assessment of current energy situation, future demand and action plans
- to build capacity in the Urban Local Bodies and create awareness among all sections of civil society.
- to involve various stakeholders in the planning process
- to oversee the implementation of sustainable energy options through public - private partnerships.

2.0 Physical Targets

An indicative target of 60 cities/towns with atleast one in each State has been set for the 11th Plan period. The targets will be achieved by providing support for preparation of a Master Plan for their city; setting up of a ‘Solar City Cell’ in the Council/Administration, organizing training programmes/ workshops/ business meets for various stakeholders such as elected representatives of the municipal bodies, municipal officials, architects/engineers, builders and developers, financial institutions, NGOs, technical institutions, manufactures and suppliers, RWAs etc. and on creation of public information and awareness.

3.0 Implementation Arrangements

The programme will be implemented through the Urban Local Bodies of respective cities. The Guidelines for implementation of the scheme and financial provisions for various activities are given in the **Enclosure**. An independent panel will be constituted for advice & guidance on implementation of the scheme

4.0 Monitoring Mechanism

The Municipal Corporations will set up arrangements to closely monitor the implementation of their projects covered under the scheme. They will furnish progress reports and other information to MNRE and SNAs on a regular basis. In addition, Regional Offices of MNRE will be involved in monitoring the implementation and performance of the systems. The progress of the scheme will also be monitored by the Ministry independently, including third party inspection and reporting

5.0 Expenditure

An expenditure of Rs. 30.00 Crore is expected to be incurred under the Programme on "Development of Solar Cities" during the 11th Plan Period. The budget will be met from the allocated budget for Solar Thermal Energy Programme under the Demands-for-Grants of the Ministry.

6.0 This sanction issues in exercise of delegated powers to this Ministry and with concurrence of IFD vide their sanction no. IFD/SAN/..... /.... /2007-2008 dated

Yours faithfully,

(B. Trikha)

Under Secretary to Government of India

Phone: 011-24360707, Extn. 234

Copy for information and necessary action to:

1. Director of Audit, Scientific Audit-II, DACR Building. I.P. Estate, Delhi-110002
2. PPS to Secretary, MNRE & Ps to MOS
3. Adviser(UICA) / Dir (AKS) / PSO(DN)
4. All Group Heads / MD, IREDA/ Solar Energy Centre
5. SS & FA / Dir (F) / US (F) /AO(F)
6. Regional Offices of MNES
7. Cash Section
8. Pay & Account Officer, MNRE
9. Sanction folder
10. Director(TIFAD), MNRE
11. Director General, Bureau of Indian Standards, Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi-11002

Enclosure

Guidelines for implementation of the programme on “Development of Solar Cities”

1.0 Background

About 30% (285.35 million people, 2001 census) of the Indian population resides in urban areas. In post-independence era while population of India has grown three times, the urban population has grown five times. Urban areas are heavily dependant on fossil fuels (often imported), for the maintenance of essential public services, for powering homes, transport systems, infrastructure, industry and commerce. The fossil fuels are increasingly becoming more expensive due to scarcity of fuel and increase in demand. In addition to this, the environmental and social impacts of the consumption of fossil fuels are increasingly becoming a concern. These impacts include air pollution, global warming, waste disposal problems, land degradation and the depletion of natural resources.

Urbanization and economic development are leading to a rapid rise in energy demand in urban areas. Urban areas have emerged as one of the biggest sources of Green House Gas (GHG) emissions, with buildings alone contributing to around 40% of the total GHG emissions. As per latest UN report one million people are moving to urban areas each week. It is estimated that around two-thirds of the world population will be living in cities in 2050. This requires a tremendous shift in energy resources in urban areas. In recognition of this, various cities around the world are setting targets and introducing polices for promoting renewable energy and reducing GHG emissions. London has announced 20% Carbon emission reduction by 2010; New York and 200 other U.S. cities have set a similar target. Tokyo has announced 20% share of renewables in total consumption by 2020 and Australian government has initiated a Solar Cities programme.

Several Indian cities and towns are experiencing 15% growth in the peak electricity demand. The local governments and the electricity utilities are finding it difficult to cope with this rapid rise in demand and as a result most of the cities/towns are facing severe electricity shortages. There is a need to develop a framework that will encourage and assist cities in assessing their present energy consumption status, setting clear targets for and preparing action plans for generating energy through renewable energy sources and in conserving energy utilized in conducting urban services.

The Ministry has already initiated various programmes in the Urban Sector for promoting solar water heating systems in homes, hotels, hostels, hospitals and industry; deployment of SPV systems/devices in urban areas for demonstration and awareness creation; establishment of ‘Akshya Urja Shops’; design of Solar Buildings and promoting energy recovery from urban and industrial waste/ biomass to energy projects. A National Rating System has also been developed in association with The Energy Resources Institute (TERI) for raising awareness and promotion of energy efficient Solar/Green Buildings. The system is suitable for all types of buildings in different climatic zones of the country. The programme aims to consolidate all the efforts of the Ministry in the Urban Sector and address the energy problem of the urban areas in a holistic manner. Apart from the Programme of this Ministry, Bureau

of Energy Efficiency under Ministry of Power have also launched Energy Conservation Building Code (ECBC) which is aimed at energy efficiency measures and installation of renewable energy systems/devices in buildings including solar water heating systems. The programme on “Development of Solar Cities” would support/encourage Urban Local Bodies to prepare a Road Map to guide their cities in becoming ‘renewable energy cities’ or ‘solar cities’ or ‘eco/green cities’.

2.0 Major activities to be conducted in the Programme

The Programme has been designed to address challenges in delivering sustainable energy at city level through:

- Preparation of a Master Plan within a period of one year from the date of sanctioning by the Ministry. The Master Plan prepared as per the indicative guidelines given in **Annexure-I** would provide total and sector-wise projections for energy demand and supply for next 10 years. Further, it would provide a complete sector-wise base-line on energy utilization and GHG emissions in the city. Year-wise targets for energy conservation, renewable energy addition and GHG abatement along with the action plan for implementation will be clearly brought out in the Master Plan. Potential sources of funding from respective organizations (both public and private) for providing financial support will be identified. Before finalization, the draft Master Plan would be discussed in a Stakeholders Consultation Workshop having representation from elected representatives, local research and academic institutions, resident welfare associations, industries and corporate organizations, NGOs, SNA, etc. **The Master Plan will set a goal of minimum 10% reduction in projected total demand of conventional energy at the end of five years to be achieved through energy saving from energy efficiency measures and generation from renewable energy installations.**
- Setting up of “Solar City Cell” in the City Council including Senior Administrator and City Engineers for planning and implementation. A “Solar City Stakeholders Committee” will be set up for advisory support involving representation from elected representatives in the municipal bodies, local research and academic institutions, resident welfare associations, industries and corporate organizations, NGOs, State Nodal Agencies and other relevant stakeholder.
- Organizing training programmes/ workshops/ business meets/ awareness camps etc. for various stakeholders such as elected representatives of the municipal bodies, municipal officials, architects/engineers, builders and developers, financial institutions, NGOs, technical institutions, manufactures and suppliers, RWAs etc. and visits/ study tours within India.
- Preparation of proposals for carbon financing
- Organizing publicity and awareness campaign through print & electronic media

3.0 Financial Provisions

- A. Up to Rs. 50.00 Lakhs per city/ town as given below depending upon population and initiatives decided to be taken by the City Council/Administration:
- Up to Rs 10.00 lakhs for preparation of a Master Plan within a year
 - Up to Rs. 10.00 lakhs for oversight of implementation during five years
 - Up to Rs. 10.00 lakhs for setting up of Solar Cell and its functioning for a period of five years.
 - Remaining amount of Rs. 20 lakhs to be utilized in five years for other promotional activities.

Indicative measures and the list of energy conservation and renewable energy devices/systems that could help in preparing the Master Plan & developing cities as Solar Cities are given in **Annexure-II & III**.

- B. Financial assistance for installation of various renewable energy devices and systems can be availed as per the provisions of various schemes of the Ministry. Support for various other activities will also be provided as per the scheme provisions. Priority for support will be given to cities identified as potential Solar Cities. These cities will be considered as priority cities by the Ministry, IREDA and other implementing institutions for promoting the use of renewable energy devices/systems. SNAs may also request the Ministry to allocate higher targets for installation of various renewable energy devices/systems in these cities under its different schemes through subsidies. Ministry of Urban Development would also be approached for assistance under their schemes e.g., JNNURM, etc., as well as the Bureau of Energy Efficiency.

4.0 Cities to be supported

A total of 60 cities/towns are proposed to be developed as “Solar Cities” during the 11th Plan period. At least one city in each State to a maximum of five cities in a State will be supported by the Ministry. The cities included in the program will have more than 0.5 Million and less than 5 Million population. Relaxation could be considered in the case of special category state including North-Eastern States.

5.0 Criteria for selection of cities

The program encourages cities with high level of commitment and leadership quality. MNRE will consider the following while selection of cities:

- City Population, regional setting and prominence in region.
- Political and administrative commitment towards adoption of sustainable energies (Resolution to be passed by the City Council/Administration for implementing all the activities specified in the ‘Solar cities’ programme).
- Potential for adoption of energy conservation and renewable energy in the city activities
- Regulatory measures taken on adoption of energy conservation measures including promotion of energy efficient solar buildings and deployment of renewable energy technologies.

- Initiatives already taken by City Council/Administration/ Private Developers/ Industry/ General Public in promoting energy conservation and renewable energy.
- Urban Local Bodies' previous experience in involving public participation and working with all stakeholders.
- Willingness to provide resources and sustenance of activities initiated under the program.

6.0 Submission of Proposals & Release of Funds

Proposals as per the prescribed format (**Annexure IV**) will be submitted by the City Council/ Administration through the State Nodal Agency. The proposals will be examined in terms of the provisions of the schemes. Upto 50% of the CFA will be released for the approved proposals along-with the sanction letters, with the rest of the CFA being released on progressive achievements and utilization of funds released.

7.0 Institution of Awards

Annual awards to identified Solar Cities will be given away by the Ministry in the form of Shields/ Certificates based on the information provided by City Council/Administration in regard to initiatives taken on developing their city as Solar City.

8.0 Performance Evaluation

Sanctioned cities will be required to submit reports on half yearly basis as per the details given in their Master Plan. Energy saved and energy generated through energy conservation and renewable energy devices/systems will be clearly indicated in the report along with the promotional and policy measures taken by them in achieving the targets.

An evaluation of the experience of implementation of the program would be undertaken at the end of Eleventh Five Year Plan and further extension and inclusion/calibration of program activities will be decided.

Indicative guidelines for preparing Master Plan & organizing other activities for City to be developed as a ‘Solar City’

A. Master Plan

1. Projection for energy demand and supply for 10 years
 - i) Sector wise
 - ii) Total
2. Base line of energy utilization & GHG emissions
 - i) Residential
 - ii) Commercial/ Industrial
 - iii) Institutional
 - iv) Municipal Services
 - v) GHG emission
3. Energy Planning (Sector-wise)
 - i) Resources
 - ii) Options for energy savings & demand reduction
 - iii) Supply side option based on renewables
 - iv) Techno-economic of energy conservation & measures
4. Year-wise goals of savings in conservation energy through demand side management & supply side measures based on renewables
5. Action Plan for achieving the set goals & expected GHG abatements. This will include capacity building and awareness generation.
6. Budget estimates and potential sources of funding from respective sources (both public and private)

Note: Before finalization, the Master Plan would be discussed in a Stakeholders Consultation Workshop having representation from elected representatives, local research and academic institutions, resident welfare associations, industries and corporate organizations, NGOs, SNA, etc. The Master Plan will set a goal of minimum 10% reduction in projected total demand of conventional energy at the end of five years to be achieved through energy saving from energy efficiency measures and generation from renewable energy installations.

B. Other activities

1. Details to be provided on ‘Solar City Cell’ and ‘Solar City Stakeholder Committee’ to be set up for implementation of the Master Plan
2. Details of training programmes/ workshops/ business meets etc. to be provided which will be organized for implementation of the Master Plan
3. Details of publicity & awareness campaign to be provided

Indicative measures to be taken by City Council/Administration for developing their city/town as 'Solar City'

1. To create a "Solar City Cell" with in the City Administration/ Council which will be fully responsible for city planning and implementation of projects towards making it a "Solar City".
2. To conduct energy auditing of Govt./Public sector buildings, water pumping and street lightings in the city at regular interval and take necessary steps towards conservation of electricity. Other establishments also to be encouraged for the same.
3. To reduce electricity consumption in street light/garden lights, traffic lights, blinkers, hoardings etc. by using energy conservation & renewable energy devices.
4. To promote National Rating System for construction of energy efficient Green Buildings in particular to commercial and institutional buildings
5. To amend building bye-laws for making the use of solar water heating systems mandatory in certain category of buildings.
6. To provide rebate in property tax through Municipal Corporations/ Municipalities & in electricity tariff through Utilities/ Electricity Boards to the users of solar water heaters especially in domestic sector.
7. To issue G.O as regards to construction of energy efficient solar buildings at least in Govt. /Public sectors in accordance with ECBC :2006 and follow up its implementation rigorously.
8. To comply to MSW Rules 2000 notified by the MoEF and set up projects of suitable capacity for generating energy from the waste collected from the city/town.
9. To organize rigorous publicity, and also the training programmes/ business meets for various stake holders e.g. architects, engineers, builders & developers, financial institutions, NGOs, technical institutions, manufactures/suppliers, RWAs etc. so as to involve them actively in meeting the objective of solar city.
10. To generate necessary funds from State Govt. and other funding organizations for achieving the objective of making the city as "Solar City". Benefits of the schemes of Govt. of India will also be taken in meeting the objectives.
11. To achieve targets set by the City Council/Administration for reducing consumption of electricity through renewable energy and energy conservation devices during five years of implementations for developing their city as Solar City.

Renewable energy devices/systems/ projects & energy conservation measures that can help to bring about reduction in consumption of conventional energy

Renewable energy devices/systems/ projects

- ii) Solar water heating systems
- iii) Solar cookers (Box and dish type)
- iv) Scheffler cookers for indoor cooking
- v) Solar steam generating systems
- vi) Solar drying/air heating systems
- vii) Solar refrigeration and air conditioning plants
- viii) Solar concentrators for process heat applications
- ix) Solar lanterns
- x) Solar home lighting systems
- xi) Solar generators
- xii) Street light solar control systems
- xiii) Solar hoardings
- xiv) Solar street light/garden lights
- xv) Solar traffic lights
- xvi) Solar blinkers
- xvii) Road studs
- xviii) Solar power packs
- xix) Building integrated photovoltaic
- xx) SPV power plants for decentralization applications
- xxi) Power projects based on Municipal and Urban Waste and also on industrial waste through combustion/bio-methanation technologies.
- xxii) Power projects based on methane available from STPs
- xxiii) Bio-mass gasification and co-generation projects in industries
- xxiv) Biomass gasifiers based crematoriums
- xxv) Projects on methane utilization for thermal & electrical applications in industries
- xxvi) Wind turbines for power generation

Energy conservation/measures

- i) LEDs/ CFLs instead of incandescent bulbs
- ii) LED traffic lights
- iii) Electronics chokes and fan regulators
- iv) Sensors for automatic on/off of street lights
- v) Automatic speed regulating fans/motors
- vi) Plugging of leakages in the water supply system and use of efficient pumps and motors
- vii) Energy efficient electrical appliances such as fans, refrigerators, air conditioners, coolers, room heaters, water pumps etc.
- viii) Use of insulating materials and low-energy/energy-efficient building materials e.g. fly ash bricks, hollow bricks, stabilized mud blocks, etc. in building construction

Solar passive architecture in buildings/housing complexes

Major components of solar passive architecture are orientation of building, sun shades, double glazed windows, smart glazing window overhangs, thermal storage wall/roof, roof painting, ventilation, evaporative cooling, day lighting, wind towers, earth air tunneling, construction materials etc. Incorporation of specific components will depend in which climatic zone the building is being constructed.

Format for submission of proposals for Solar Cities

1. City Information

City Name	
City Population (2001 Census)	
Present Population (2007) estimated	
Area (Sq Km)	
No of Wards	
Regional setting and connectivity (Air, Rail and Road)	
Economic Base of City	

2. Implementing agency/organization

Name of Local Body	
Organization (Please mention) Municipal Corporation/ Municipal Council / Municipality	
Contact Person	
Complete Address	
Telephone:	
Fax:	
Email Address and Website:	

3. City Leadership and Commitment

Please describe briefly enclose separate sheet for details	
Details of initiatives already taken by City Council/Administration in promoting energy conservation and renewable energy devices	
Any regulatory measures taken on adoption of energy conservation and renewable energy devices	
Exemplary initiatives taken in energy conservation /renewable energy by the private sector	
Local/State Institutions (academic/	

research institutions), corporate organizations, architects, NGOs, energy auditors, consultants etc. who can contribute in the initiative	
Commitment of the State Govt. to the project	
Can city establish and support a local expert group including administrators (state/local) relevant organizations/ institutions, politicians, consultants, utilities, information centers etc.	Yes/ No

4. Activity Plan and Budget

Please describe briefly enclose separate sheet for details	
Amount sought from MNRE as per the provisions of the scheme.	
Action Plan for utilization of funds	
Time period for preparation and submission of Master Plan to the Ministry after sanctioning of the proposal	

Expression of Interest

On behalf of we confirm our interest in joining the Solar Cities Program of Ministry of New and Renewable Energy, Govt of India

Signature with Official Stamp
(Head of City Council/ Administration)

