



PIX10702, Credit: William Wallace

**A solar-powered yurt at the Renewable Energy Experiment and Demonstration Center in Hohhot, Inner Mongolia, China.**

# Renewable Energy in China

## Brightness Rural Electrification Program

The Brightness Program is an international effort designed to bring electricity to rural areas. Since the Brightness Program was introduced during the 1996 World Solar Peak Conference in Zimbabwe, China has played an active role in the program. China established its Brightness Project Implementation Planning in 1998 and the project has been progressing in stages.

China's State Council has allocated about 50 million U.S. Dollars (USD), or 400 million Chinese Yuan (CNY), to support the Brightness Program during the Tenth Five-Year Plan period (2001-2005). The program will provide electricity using both household and village systems and will focus on Gansu, Qinghai, Inner Mongolia, Tibet, and Xinjiang provinces. Costs are expected to be covered by users, local government grants, central government grants, and foreign grants.

China's Brightness Project Implementation Planning is a national program funded by the central government that develops financing options, solar applications, and wind generation, in order to provide electricity in remote areas. It is a sustainable project for poverty alleviation, and is an environmentally friendly, wide-reaching program with a high return on investment.

### Targets

The overall target of China's Brightness Program is to provide electricity for 23 million people in remote areas by 2010 using renewable energy technologies. The goal is to eventually provide 100 watts of capacity per person. The targets for the first stage of the program are to:

- Establish stable financing schemes, markets, industries, technical capacity, and training systems
- Provide electricity access for eight million people who do not currently have electricity, including about 2000 non-electrified villages, 100 non-electrified sentries and 100 non-electrified wireless message stations.

**China's Brightness Program will provide electricity for 23 million people in remote areas in China by making use of renewable resources like solar PV and wind generation.**

### Results

The following results were achieved as part of the first stage of the Brightness Program.

- Installed 1,780,000 household systems, 2000 village systems, and 200 station systems
- Established national and local government bureau financing approaches and practical financing mechanisms
- Established industrialized production enterprises which can fulfill the demand of the market
- Set up a distribution and service network and marketing mechanism
- Installed a technical training system providing different levels of training for local technicians and engineers.

### Progress

Progress toward reaching the goals of China's Brightness Program include:

- Signing of a project agreement between three provincial planning committees and the National Development and Reform Commission (NDRC—formerly the State Development and Planning Commission) /Chinese Academy of Science (CAS)
- Publication of project scale and requirements in the three provinces including:
  - ❖ At least 4000 wind/PV (W/PV) hybrid home systems; 1 wind/diesel/battery (W/D/B) village system will be installed in Inner Mongolia
  - ❖ At least 12,000 PV home systems will be installed in Gansu
  - ❖ At least five PV village systems averaging six Kilowatts (kW) will be installed in Tibet

# Brightness Rural Electrification Program

## Estimated Daily Energy Consumption of Rural Villages

Appliance	Number	Power (watts)	Time (hours)	Simultaneous Factor	Peak Power (watts)	Consumption (kWh)
E. S. Bulb	600	11	5	0.6	3,960	19.8
Television	80	70	4	0.8	4,480	17.9
Tape Player/ Radio	100	15	2	0.6	900	1.8
Washing Machine	20	280	1	0.3	1,680	1.7
Deep Freezer	15	120	8	1.0	1,800	14.4
Drilling Machine	1	800	1	1.0	800	0.8
Welder	1	1,000	1	1.0	1,000	1.0
Others	1	3,000	2	0.8	2,400	4.8
<b>Total</b>					<b>17,020</b>	<b>62.2</b>

The Brightness Program targeted the following regions:

**Inner Mongolia:** 518 sets of W/PV home systems and 1 W/D/B village system were installed, totaling 165 kW wind and 63 kW PV.

**Tibet:** Four sets of 6 kW village PV stations were installed, and two local technicians were trained for each station. In the Tenth Five-Year Plan period, 100,000 PV home systems producing about 7.7 MW and 400 PV village stations producing about 2.4 MW as well as 1 training/service/dissemination center in Lhasa, and 50 service stations were installed.

**Gansu:** 5,515 small PV home systems were installed with a total capacity of 124.7 kW.

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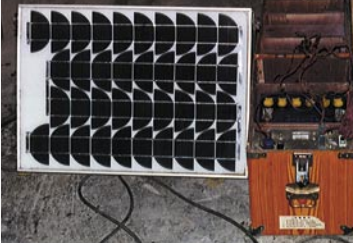
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The following fact sheets on renewable energy in China are available on the National Renewable Energy Laboratory's China Web site ([www.nrel.gov/china](http://www.nrel.gov/china)).

- WB/GEF Renewable Energy Development Project
- Grid Connected Wind Power in China
- Renewable Energy Policy in China: Overview
- Renewable Energy Policy in China: Financial Incentives
- Township Electrification Program
- China's Plan for Renewable Energy
- Brightness Rural Electrification Program
- Renewable Energy Business Partnerships in China

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PIX05401, Credit: William Wallace



**Typical PV-powered lighting system used in western China .**

## National Renewable Energy Laboratory

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