



## Solar Roof Initiative - Berlin

### Senatsverwaltung für Stadtentwicklung Berlin, Germany

#### Summary

The climate protection unit of the Senatsverwaltung für Stadtentwicklung has created a Solar Roof Initiative to force the construction of solar power plants (by private investors) onto municipal buildings. The goal of this initiative is to decrease CO<sub>2</sub>, emitted by the city of Berlin, establish a solar power friendly community, and to educate students. At this time, about 80 municipal buildings (schools, administrative buildings, sport complexes) are included in the Solardachbörse (Solar Roof Initiative). All buildings are published on a web site, with photos and a short expose including necessary data (type of roof, area, contact person, and location) to give private investors an outlook about these buildings.

#### End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

#### Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

#### Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

#### Context

As many cities in the world, Berlin has a precarious financial situation. Nevertheless the climate protection unit is well aware of the fact that a reduction of greenhouse gases is indispensable. Berlin is a city state and has no possibilities to generate electricity by the means of wind- or water power plants. On the other hand, Berlin has enough idle municipal roof area (about 6.000 municipal buildings) to harvest solar energy, and is willing to give these roofs to private investors and let them construct solar power plants. Since 1 January 2004 Germany has raised feed-in tariffs for renewable energies. Electricity generated by Solar power plants will earn 57.4/54,6/54,0 cent/kWh. These high feed-in tariffs make solar power economical advantageous. Berlin's Government Coalition made an agreement in 2002 to offer roofs of public buildings to install solar power plants. To fulfill the agreement the Solar Roof Initiative was created.

#### Objectives

Public authorities should play a model role to the public in reducing greenhouse gases and in saving of natural resources. A welcome side effect of the project could be a raise in R&D for solar power. An obligation for the investor is that on schools a display with the generated electricity and a black-board with an explanation should be erected in the main hall of the designated school.



## Process

In the year 2002, the climate protection unit launched the program "Solar Roof Initiative". All city districts were asked to list useable buildings. Together with the local authorities, the climate protection unit set up 17 pools, representing the city districts and other municipal building owners. Integrated in these 17 pools were 86 buildings with more than 144.000m<sup>2</sup> roof area. Published were those roofs via announcements. Many private investors have shown interest, but no real contract was made. A possible reason for this could be the lower feed-in tariffs at that time and/or the high module costs. In 2003, when it became clear that the feed-in tariffs would raise, the climate protection unit made the second attempt and constructed a web site with the Solar Roof Initiative. The web site now, on the contrary to the announcements in 2002, is open 24h/7d, and it gives a quick overlook of the offered buildings. Furthermore, this time an appraiser was send to all buildings in order to check the feasibility of solar power at these buildings. Afterwards all buildings were photographed and cataloged into the web site, where the buildings are published for the potential investors. The web site works as a "first sight" for the investor, where he/she can choose due to the anticipated area, location and/or roof type. If the investor has short-listed their favorites, they can contact the contact person for the building direct at the web site via email or they can phone and make an appointment to view the building by themself.

## Financial resources and partners

The project was financed by the Senatsverwaltung für Stadtentwicklung/Berlin. The costs amount to 4.500 Euro for the appraiser and the web site developer. The following table shows the feed-in tariff for solar power plants (01.01.2004).

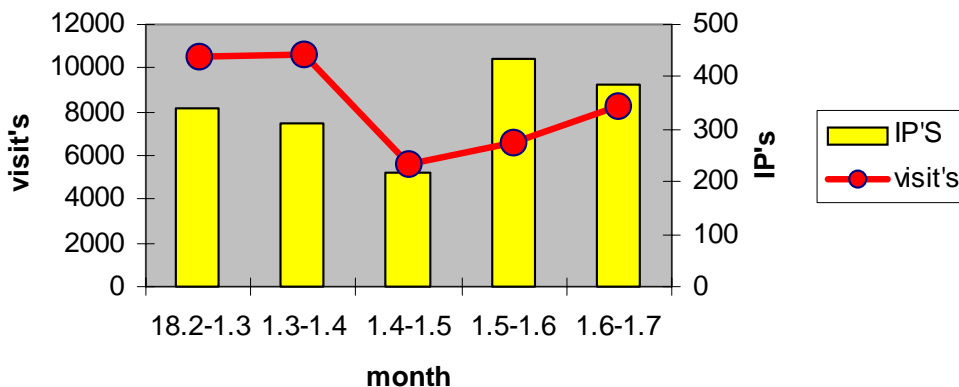
**Table 1:** Feed-in tariffs for solar electricity installed on roofs and buildings

PV - Performance	Feed-in tariff
< 30 kW <sub>p</sub>	57,4 ct/kWh
> 30 kW <sub>p</sub> < 100 kW <sub>p</sub>	54,6 ct/kWh
> 100 kW <sub>p</sub>	54,0 ct/kWh
Facade integrated	+ 5 ct/kWh to the feed-in tariff above

## Results

At this time about 25 private investors have shown interest and negotiations are still in progress. We expect that during mid-2005 the first plants will be installed. The following chart shows the number of visits since publication of the web site. As one can see in the chart, the interest in visiting the web site was decreasing until the month May, in May we were releasing additional city districts. After that the visits were increasing again.

**Trend Solardachboerse**



**Chart 1:** Number of visits (monthly) at the "Solardachbörse" – web site (2004)



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A most welcome side effect is the education of the employees. Most employees had their first encounter with solar power related problems during the development of the solar power roof initiative, in order to work efficiently at the project these employees had to make themselves familiar with solar power technology.

### Lessons learned and repeatability

Some steps should be done before going into the public. First it is necessary that building data (static) is available. Second contracts between the building owner and the investor should be carefully worded in advance and should be juristic flawless. If these two steps are made, negotiations will work out much more smoothly.

At the moment we have to face a new situation: after the raising of feed-in tariff for solar power, modules are short on the German market. So, even when the interest in constructing solar power plants is high, the limitations from the module producer in offering modules slow down construction of new solar power plants.

We think that every medium-sized city/community in Europe could easily adopt the "Solar Roof Initiative". We would be glad to assist other cities by opening their "Solar Roof Initiative".

### Contact for more information:

Project Web Site: <http://www.stadtentwicklung.berlin.de/umwelt/klimaschutz/solardachboerse/>  
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