



Figure 22.7 This system is the 1.25 kWp canopy with Atlantis transparent modules at the Thoreau Center in San Francisco, CA (USA). The canopy protects the entrance against the rain and wind but daylight is still allowed through via the transparent modules. Reproduced from Eiffert P, Kiss G, *Building-Integrated Photovoltaic Designs for Commercial and Institutional Structures – A Sourcebook for Architects*, 7–10, NREL, Golden, CO (2000) with permission by NREL USA [17]

22.2.2 PV as Part of “Green Design”

The government’s role in promoting and supporting sustainable energy (PV systems) strongly influences the extent to which these systems are used in buildings. In countries with less government intervention, the power companies play a bigger role. Even without financial support, the government can encourage sustainable energy, for example, by demanding better performance for buildings. By introducing certain performance goals, sustainable energy and solar energy PV systems might be considered.

There is a growing interest in “green” products such as organic food, organic fibers as well as green buildings. Insurance companies and financial markets are becoming aware of “green” financing, which requires a different design approach from architects. “Green” design is the basic reason for integrating PV systems into buildings.

22.2.3 PV Integrated as Roofing Louvres, Facades and Shading

For architects, the application of PV systems must be part of a whole (holistic) approach. A high-quality PV system can provide a substantial part of the building’s energy needs if the building has been designed in the right way. In general, the energy consumption of buildings needs to be cut down by at least 50% compared to a typical but inefficiently designed building.

In a holistic approach, integrating a PV system not only means replacing a building material but also aesthetically integrating it into the design. The integration also takes over other functions of the building’s skin. Mounted on a sloped roof, profile systems mean that PV modules can be part of the watertight skin. The system can also be mounted above an impermeable roof foil, thereby protecting the foil against UV light and direct sun. This extends the life span of the foil. This kind of system is also available for flat roofs. The Powerlight Company from Berkeley, CA (USA) introduced a PV system into