Solar Energy - Photovoltaics

Solar energy has proven to be a sustainable form of energy production due to its virtually unlimited supply and universal accessibility. The sun has a lifespan of 5 billion years and the amount of solar energy that hits the Earth in an hour is equivalent to the world's energy consumption for an entire year. Solar energy is not localized so it is accessible to anyone and is more efficient than other renewables energy sources since photovoltaics can be installed on-site, obviating any transmission losses.

The mass-market appeal of photovoltaic solar energy depends on its financial parity with existing energy sources. In 2010, solar energy comprised 1% of total renewable energy consumption in the United States at a cost of 21.4 cents per kWh. Decreasing photovoltaic production costs from economies of scale, however, reduced costs to 11.2 cents per kWh by 2013. The Department of Energy is aiming for a rate of 6 cents per kWh by 2020. Projections dictate that solar energy production in the United States will reach price parity in 36 states by 2016 and the rate of household photovoltaic installations will increase from one installation every 4 minutes to one every 83 seconds.

The ever-increasing worldwide electricity consumption means that solar energy is still far from becoming a significant source for energy production. Worldwide electricity consumption is projected to rise by 50% to 30 trillion kWh and although photovoltaic capacity in the United States has the potential to reach 50 GW by 2016, that would still account for only 2% of total U.S. energy production. As a result, the benefits of solar energy and photovoltaics will only be evident if decreasing costs and increasing adoption rates are combined with an overall decrease, or at least stagnation, in overall electricity consumption.