

Solar Soft Costs. What are they exactly?

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Solar panels are no longer the most expensive part of solar power. The price of solar panels has plunged dramatically in recent years, even while efficiency has increased. However, the “soft costs” of solar power have held relatively steady over the last five years. As a result, soft costs now account for more than half of the price of a solar photovoltaic power system. Because soft costs represent so large a share of solar power’s price, it is important for those in the industry to understand exactly what they are.



The “soft costs” of solar power are all non-hardware costs of getting a solar photovoltaic system up and running. These costs include financing, sales taxes (in some states), customer acquisition, installation labor, costs of obtaining permits and inspections, and interconnection with the utility grid. Other soft costs, which are less well-defined, include profit and other forms of overhead. This article, the first in a series of four, explains each of these costs.

Financing costs, or expenses of raising capital, vary depending on who seeks financing. Property owners may finance solar power systems through federally insured Energy Mortgages with interest rates around 8%. However, most solar projects today proceed under a third-party model, where property owners lease solar systems or buy solar energy from a third party, such as SolarCity. This approach has many advantages, but third party businesses generally have a higher financing cost, on average around 9.9%. Either type of financing adds significantly to the price of a solar power system.

Sales taxes range as high as 12% in some areas, but fortunately Oregon does not impose a sales tax. 28 states also offer exemptions or deductions for renewable energy projects. As a result, sales taxes are a significant soft cost only in roughly half the nation.

Customer acquisition costs include marketing and advertising, screening potential projects for viability, and designing systems to fit customers’ needs. On average, customer acquisition costs \$0.67/W, more than 10% of the overall cost of an average residential system. The problem for developers is that they incur these costs before customers sign a contract. If a customer decides not to go through with a project, the developer either must bear the costs itself or pass them on to other consumers.

Installation labor costs, on average, \$0.59/W, and is roughly ten times more expensive than in Germany, which has a booming solar power market. The costs are much higher in the U.S. in part because German installers earn lower wages, but mostly because installing a solar power system takes ten times as long in the U.S. Additionally, long inspection appointments can cause delays while workers are still on the clock.

In fact, inspections, permitting, and interconnection add significant costs and delays for solar developers, costing between \$0.20/W and \$0.77/W. Permitting requirements and inspection processes vary among states, counties, cities, and utilities. Inconsistent practices force developers to waste time familiarizing themselves with each jurisdiction's requirements. Additionally, permit fees are sometimes set high in order to raise revenue instead of recovering costs of processing permits. Finally, interconnection with a utility grid can cause weeks of delays and may require very expensive studies.

The next articles in this four-part series will explore how soft costs affect solar businesses and can reduce their profits, what businesses can do to bring down soft costs, and what government programs exist that can help reduce soft costs as well.

