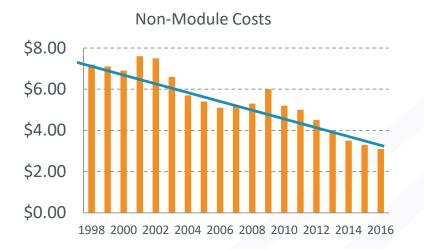


Soft Costs in Solar Today: Opportunities for Non-Federal Actors

energy.gov/solar-office

Garrett Nilsen US DOE Solar Energy Technologies Office

Soft Costs are Declining (Just not as rapidly as Module Costs)

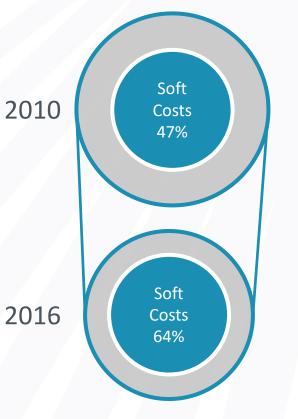


Between 2008 & 2016



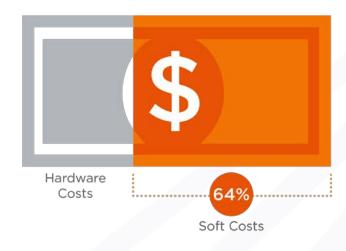
Decrease in Non-Module Costs

Source: NREL Implied Non-Module Cost is used as a proxy for soft costs due to data limitations energy.gov/solar-office





Soft Costs Can Be Traced to Specific Sources, but Vary Widely



4% Permitting, Inspection, Interconnection (and associated fees)

9% * Marketing/Customer Acquisition

11% 1 Labor



Financing

30% 1 1 +

Supply chain, overhead, margin ("Corporate Costs & Profit")



Export Focus		Domestic Focus								
Capital Equipment	Direct Materials	Module Mfg	Inverters Electronics	Sales Distribution	Financial Services	Developers Installers	Operations Services Utilities			
\$250M	\$1.1B	\$900M	\$680M	\$1.4B	\$2.8B	\$17.3B	\$375M			
	35,000 jobs				10,000 jobs	170,000 jobs	15,000 jobs			
	Combined value: \$25B/year									



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Red tape related to solar installations can drive up costs and limit solar adoption. In the U.S., there are



with different rules and regulations.

Unlike physics, where we can fundamentally figure out the upper limit for the efficiency of solar cells, there is no such limit to bureaucracy.



"Well, let's say you can shave 10 seconds off of the boot time. Multiply that by five million users and that's 50 million seconds, every single day. Over a year, that's probably dozens of lifetimes. So if you make it boot ten seconds faster, you've saved a dozen lives. That's really worth it, don't you think?"





If every system installed in 2016 is delayed unnecessarily by just one day, the cost to the market will be approximately

\$**5.6**M/day*

*Lost revenue from electricity sales. Calculations based on estimated 16 GW deployment level for 2016, assuming historic average irradiance of electricity generation a day and at weighted average retail price of \$0.07 per kWh.



Market Barriers and Fragmentation Create Soft Costs

72% of installations are concentrated in 5 states

50 days is the median interconnection time for a PV system

One Third

of installers have avoided doing business in jurisdictions with cumbersome permitting processes

7 states

have no process for compensating exported PV

20 million

low income homes have good solar potential but may be excluded from deployment

32%

of consumers have insufficient credit to procure solar

49% of households cannot procure rooftop solar due to rooftop limitations

15 states

have interconnection policies deemed overly restrictive

14 states installed fewer than 25 MW of PV in 2015



A Market Opportunity Ripe for Innovation

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