HOW TO ASSESS THE TRUE VALUE OF SOLAR (VOS)

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What is a Value of Solar study?

- An analytical process,
- That uses ***data*** to quantify the present value of the costs and benefits,
- For energy produced by a distributed solar system,
- To the utility, its ratepayers, and society.

A Value of Solar study is a comprehensive avoided cost analysis that starts with wholesale market value, and includes all the benefits (net of costs) in terms of energy, capacity, transmission, distribution, market price impacts, fuel price risk, environmental costs, and other known and measurable categories.

Key Design Elements

- A Value of Solar study should assess costs and benefits over the entire useful life of a solar photovoltaic (PV) system—at least 25 years.
- A Value of Solar study **must** account for the value of energy and its delivery, generation capacity, transmission capacity, transmission and distribution line losses, market price effects, fuel price volatility reduction benefits, and environmental value. Other known and measureable values ***may*** also be assessed.
- A state government energy office or other expert agency should establish the methodology for conducting the Value of Solar study using a stakeholder process, operating against deadlines. The methodology should be submitted to the Public Service/Utility Commission for approval.
- Utility service providers should regularly update the Value of Solar using the approved methodology and verifiable cost and benefits data.

Applying Value of Solar Studies

- Benchmarking solar energy offers from independent power producers.
- Benchmarking direct incentives.
- Evaluating net metering offset rates.
- Setting the offset rate for distributed solar generation by customers.

Example: The figure on the next page is an example of the results a Value of Solar study for Maine. The retail electric rate is about $0.13 per kilowatt hour (kWh). The 25-year levelized Value of Solar is over $0.33 per kWh.

Value of Solar Study Results Example

Figure ES- 2. CMP Distributed Value – 25 Year Levelized ($ per kWh)

25 Year Levelized		Gross Value A ($/kWh)	×	Load Match Factor B (%)	×	Loss Savings Factor (1+C) (%)	=	Distr. PV Value D ($/kWh)	
Energy Supply	Avoided Energy Cost	$0.076				6.2%		$0.081	Avoided Market Costs
	Avoided Gen. Capacity Cost	$0.068		54.4%		9.3%		$0.040	
	Avoided Res. Gen. Capacity Cost	$0.009		54.4%		9.3%		$0.005	$0.138
	Avoided NG Pipeline Cost								
	Solar Integration Cost	($0.005)				6.2%		($0.005)	
Transmission Delivery Service	Avoided Trans. Capacity Cost	$0.063		23.9%		9.3%		$0.016	
Distribution Delivery Service	Avoided Dist. Capacity Cost								
	Voltage Regulation								
Environmental	Net Social Cost of Carbon	$0.020				6.2%		$0.021	Societal Benefits
	Net Social Cost of SO_2	$0.058				6.2%		$0.062	$0.199
	Net Social Cost of NO_x	$0.012				6.2%		$0.013	
Other	Market Price Response	$0.062				6.2%		$0.066	
	Avoided Fuel Price Uncertainty	$0.035				6.2%		$0.037	
								$0.337	

Gross Values represent the value of perfectly dispatchable, centralized resources. These are adjusted using

- Load Match Factors to account for the non-dispatchability of solar; and
- Loss Savings Factors to account for the benefit of avoiding energy losses in the transmission and distribution systems.

Source: Figure ES-2, Maine Distributed Solar Valuation Study. Maine Public Utilities Commission. April 2015.