

Value of Solar Group

Update

February 25, 2014

Solar Working Group Website

- www.michigan.gov/renewables
 - Then click on the solar icon in the middle of the page
 - Then Solar Working Group
- Helpful documents are posted
- Always looking for additional documents to post

Value of Solar Group

February 25, 2014 Agenda

- Overview of Minnesota Value of Solar: Methodology document
- Highlights of NREL White Paper: The Value of Grid-Connected Photovoltaics in Michigan
- Discussion with Karl Rabago
- Next Steps

Minnesota Value of Solar

- MN passed legislation in 2013 requiring the Dept of Commerce to develop and submit a methodology for calculating the VOS to the PUC.
- VOS tariff will be used as a substitute for net metering and the rate for community solar gardens.
- Methodology was issued on January 31, 2014
- Prepared by Clean Power Research (consultant for Minnesota Dept of Commerce, Division of Energy Resources)

VOS Calculation Table (Example)

Minnesota Report

Figure 3. (EXAMPLE) VOS Levelized Calculation Chart (Required).

25 Year Levelized Value		Gross Starting Value	×	Load Match Factor	×	(1 +	Loss Savings Factor) =	Distributed PV Value
		(\$/kWh)		(%)			(%)		(\$/kWh)
	Avoided Fuel Cost	\$0.061					8%		\$0.066
	Avoided Plant O&M - Fixed	\$0.003		40%			9%		\$0.001
	Avoided Plant O&M - Variable	\$0.001					8%		\$0.001
	Avoided Gen Capacity Cost	\$0.048		40%			9%		\$0.021
	Avoided Reserve Capacity Cost	\$0.007		40%			9%		\$0.003
	Avoided Trans. Capacity Cost	\$0.018		40%			9%		\$0.008
	Avoided Dist. Capacity Cost	\$0.008		30%			5%		\$0.003
	Avoided Environmental Cost	\$0.029					8%		\$0.031
	Avoided Voltage Control Cost								
	Solar Integration Cost								
									\$0.135

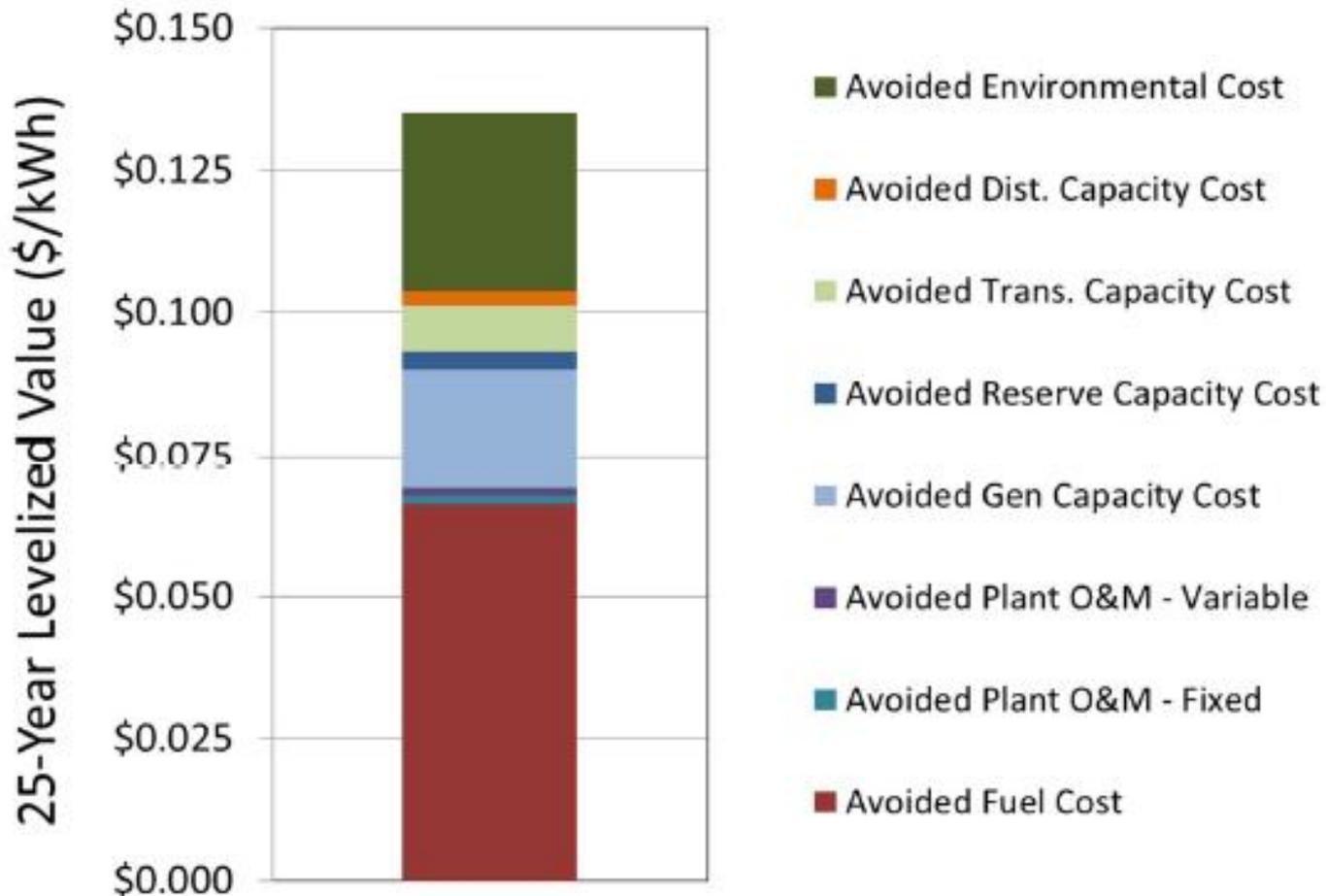
MN VOS Tariff Concept

- Under a VOS tariff the customer receives an initial VOS rate that is adjusted for the previous year's inflation rate.
- Each year, a new VOS rate is calculated using current data that is applicable to new customers entering the tariff during the year.

VOS \$/kWh (Example)

Minnesota Report: 13.5 cents/kWh

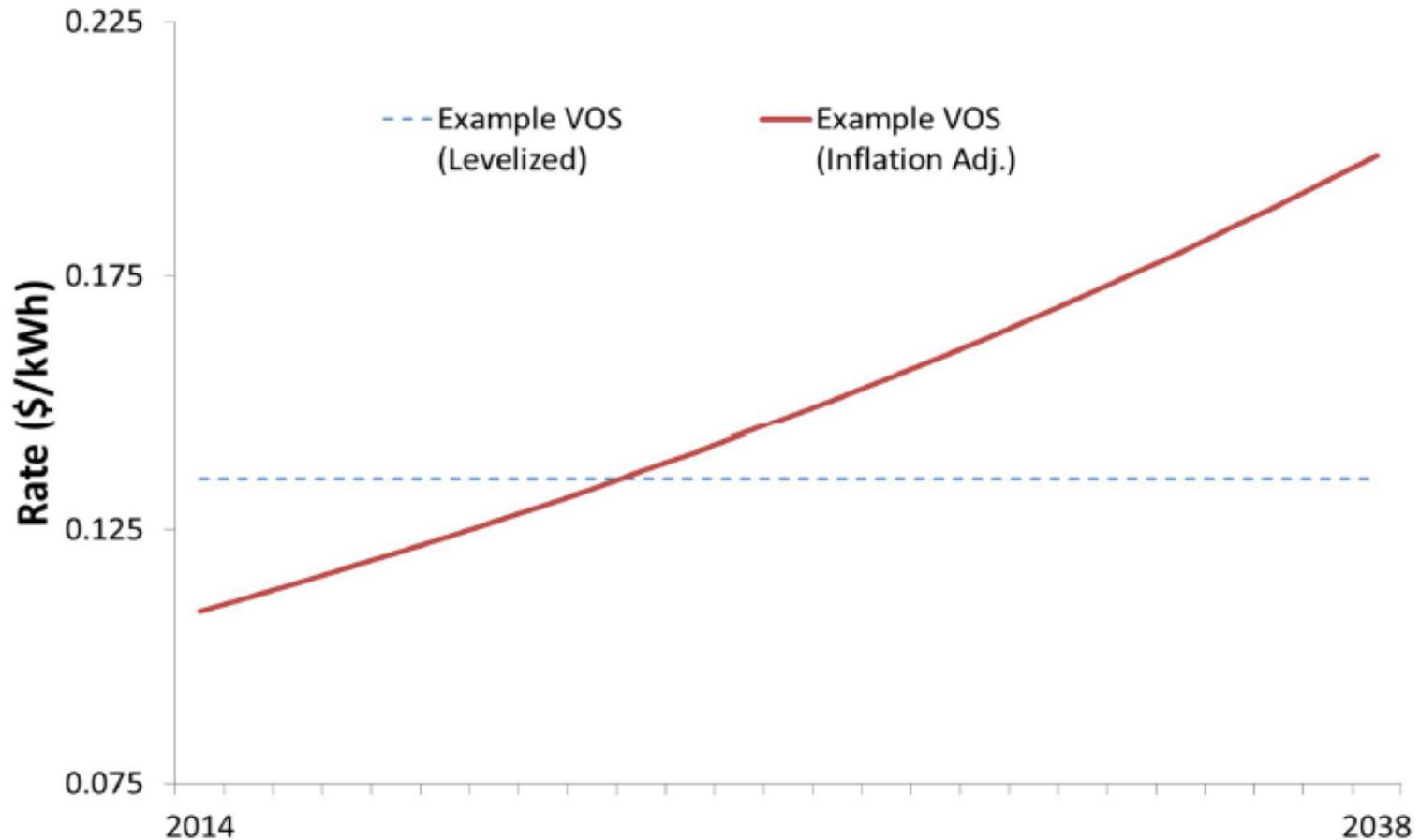
Figure 4. (EXAMPLE) Levelized value components.



Inflation-Adjusted VOS (Example)

Minnesota Report

Figure 5. (EXAMPLE) Inflation-Adjusted VOS.



NREL White Paper: Value of PV in MI

- Draft released January 23, 2012 (Report was never finalized.)
- 8 page white paper
- Michigan Hub MISO LMP prices from 2006 – 2008 were used to calculate the energy and generation value of solar PV

NREL White Paper: Value of PV in MI: 13.8 cents/kWh

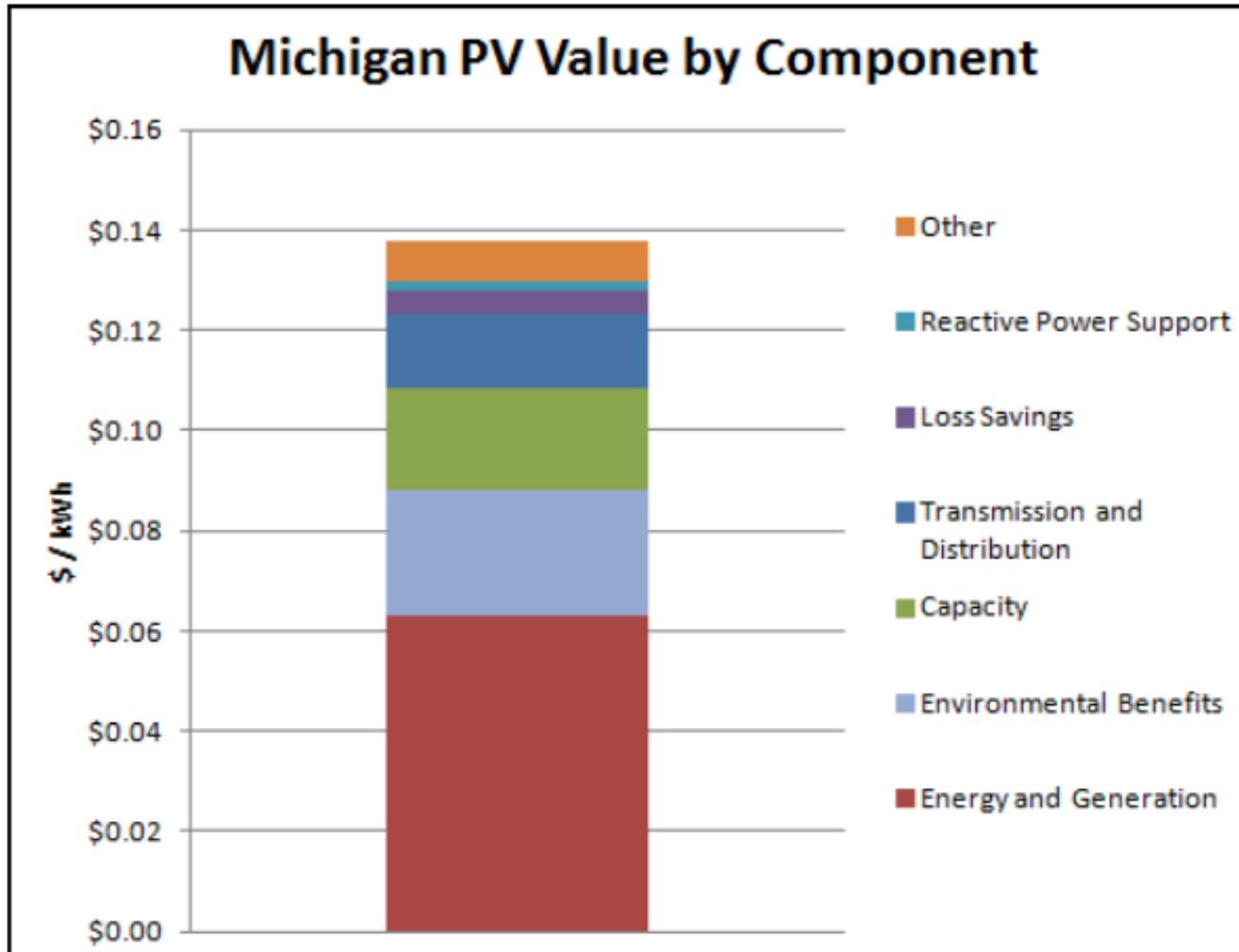


Figure 5. Estimated value of PV in Michigan

Figure 1: Disparate DSG Valuations in Texas Studies (cents/kWh).



The figure above shows that Austin Energy's latest valuation of 12.8 cents per kWh is 150% greater than the 5.1 cent valuation by City Public Service in San Antonio, just 80 miles away. Even more dramatic is the difference in DSG values for APS, with 3.56 cents by the utility consultant and a range of 21.5 to 23.7 cents by the solar industry consultant.