

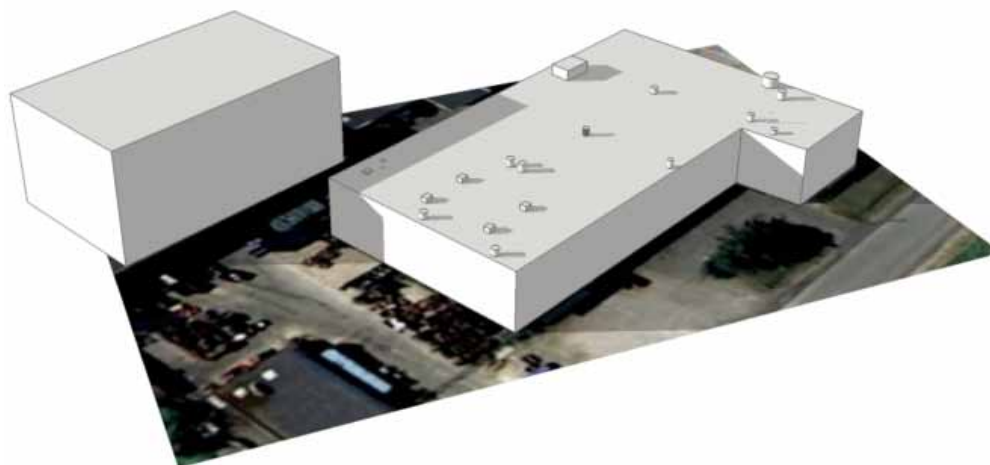


Case Study: Expanding System Size for Increased ROI (Solar Power Networks)

June 22, 2012

The Challenge:

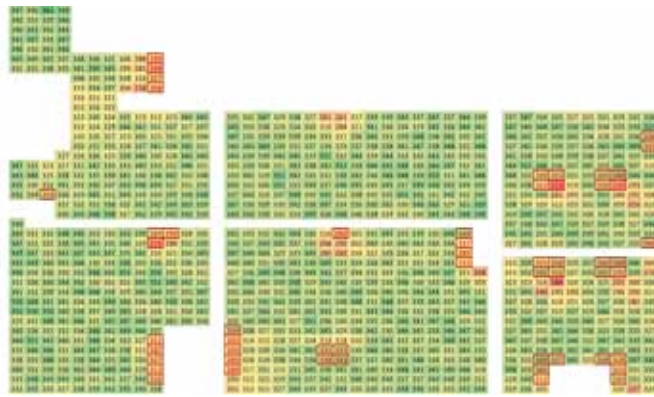
Solar Power Networks had a challenging commercial rooftop installation with obstructions on the roof and shading from another building nearby. They were at risk of sacrificing total power and leaving modules out of the design to avoid these obstructions. Their total roof space allowed for 322.8 kW of solar, but in order to avoid shading, they were willing to reduce their installed capacity to 308.5kW.



3D Shade Modeling Per Panel

The Solution:

Tigo Energy was brought in to model the system using software from Gibb's Labs to create a full system prototype in 3D in order to predict the production of each module in the array at every point in time throughout the year. Tigo was able to calculate shade patterns and run full electrical simulations with and without optimizers on the array. These calculations included financial modeling, which allowed Solar Power Networks to analyze the economics of adding each module to the system. Since Tigo Energy is not limited to traditional string lengths, and their technology isolates the impact of shaded modules, Solar Power Networks was able to add modules based entirely on their individual profitability.



Gibb's model compares output of each module making it easy to assess financial viability

The Results

Tigo Energy's extensive model of data allowed Solar Power Networks to accurately predict how every panel would function with and without solar optimizers, which allowed them to forecast the profitability of adding each panel. The result of this level of analysis increased the system size by 4.5% with optimizers. The increased system size and energy harvest from panel level optimization led to a 5.5% increase in profits for Solar Power Networks with Tigo Energy products.

	Baseline	Expanded	Difference	Comments
Modules	1,164	1,218	+4.6%	Add all 54 modules
Total power	308.5 kW	322.8 kW	+4.6%	
Average irradiance	1,264	1,261	-0.2%	New modules receive slightly less irradiance than baseline
Total cost	\$1,175,380	\$1,218,310	+3.7%	Only incur marginal cost (modules, inverter, and electrical BoS)
Total revenue	\$2,233,359	\$2,331,240	+4.4%	New modules receive slightly less irradiance than baseline
Total profit	\$1,057,979	\$1,112,930	+5.2% +\$54,950 +\$0.18/Wp	Topline increases faster than cost
Profit margin (ROI)	474%	477%	+0.7%	



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