How to calculate the value of solar

Many CHELCO members are interested in installing solar arrays at their homes as a way of reducing their energy bills and as a way to produce electricity with less environmental impact. CHELCO has used actual data from local installers in our area with average kilowatt hours of energy (kWh) produced annually to produce a tool to estimate annual savings and estimated payback period.

Payback calculation (ROI) using CHELCO NTOU rates

The following three scenarios assume a percentage of the solar energy produced by a members array will be used on site, with the remainder being sold to CHELCO. It is also assumed that in winter production, none of the solar energy is produced during peak periods, and during summer production, 20% of the solar production occurs during CHELCO peak times. All scenarios do not take into account potential cost savings should a member shift their energy use to CHELCO off peak hours.

Solar Array Payback -- 90% Consumed/10% Sold

Array Size	5KW
$ Invested after tax credit	$13,011
Annual kilowatt hours (kWh) produced	7,166

Value of electricity produced

	Used/Sold	kWh	Rate/kWh	Savings
Used by members	10% Peak	645	$0.066404	$385.48
	90% Off Peak	5805	$0.054174	$34.94
Sold to CHELCO	10% Peak	72	$0.066404	$4.78
	90% Off Peak	644	$0.054174	$34.89
Total used & sold		7166		$450.09
Investment divided by total savings		**Years to payback**		**28.28***

* without tax credit, and should the array be financed, payback period will be increased

Assumptions

CHELCO has a special rate for those who install solar, wind or other self-generation. This rate allows them to reduce their electric bill in two ways.

1. Kilowatt-hours used in the home, which means they pay for fewer kWh purchased from CHELCO.
2. If there is more energy produced by a solar array than used on site, CHELCO will meter the energy and credit the member by purchasing those kWh at a rate similar to our wholesale power rate.

The models are based on average installation cost of a 5 kW solar array installed from local solar installers in our area.

Annual kWh produced is estimated using PVWatts.com. The rates shown for CHELCO's NTOU rate include the average 2019 wholesale power cost adjustment (WPCA.)

CHELCO can customize the calculation with a member's individual installation cost, array size and current rates.

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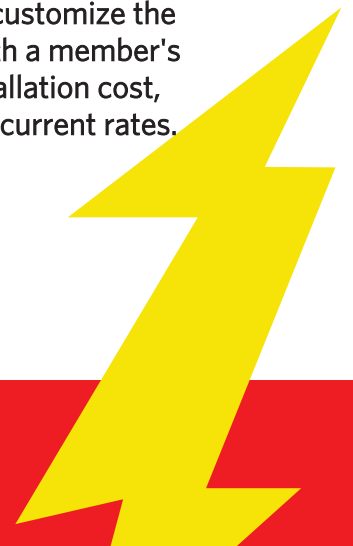
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Solar Array Payback -- 100% Consumed/0% Sold

Array Size	5KW	
$ Invested after tax credit	$13,011	
Annual kWh produced	7,166	

Value of electricity produced

	Used/Sold	kWh	Rate/kWh	Saving
Used	10% Peak	716	$0.066404	$47.55
	90% Off Peak	6,450	$0.054174	$349.42
Sold to CHELCO	0% Peak	0	$0.066404	$0
	0% Off Peak	0	$0.054174	$0
Total used		7,166		$396.97

Investment divided by total savings	**Years to payback**	**32.78***

* without tax credit, and should the array be financed, payback period will be increased

Solar Array Payback -- 33% Consumed/67% Sold

Array Size	5kW	
$ Invested after tax credit	$13,011	
Annual kWh produced	7,166	

Value of electricity produced

	Used/Sold	kWh	Rate/kWh	Saving
Used	10% Peak	237	$0.066404	$15.74
	90% Off Peak	2,128	$0.054174	$115.28
Sold to CHELCO	10% Peak	480	$0.066404	$31.87
	90% Off Peak	4,321	$0.054174	$234.09
Total used & sold		7,166		$396.98

Investment divided by total savings	**Years to payback**	**32.77***

* without tax credit, and should the array be financed, payback period will be increased

For more information, call our energy services department at (850) 892-1122, or email us @energyservices@chelco.com.

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