

# NATURAL CURRENT ENERGY GUIDE AND SAVIOR IMPACT

## Frequently asked questions

### 1. How does the electric company bill you?

Answer: They bill you monthly for each kilowatt hour (kWh) used.

### 2. What is a KW?

Answer: This is a metric term "kilowatt" or 1000 Watts of load or power of electricity.

### 3. How can we measure KW's?

Answer: Voltage multiplied by the current or amps of electricity. This is the physical law of electricity called "Ohm's Law".

### 4. How much does a kWh cost?

Answer: It varies from area and house to house. The average is 0.11 to 0.15 cents per kWh in the US, over .25 cents per kWh in the Caribbean depending on which island and to over a \$1.00 per kWh other areas. Also, electric costs increase on a yearly average of 8%. When viewing your electric bill, take the total cost of your bill and divide by that month's kWh consumption, this will provide your actual cost per kWh

### How Much Electricity is Your 230volt Pool Pump Using?

A basic electrical calculation using "Ohm's Law" requires obtaining the voltage and amperage of a device. Ohm's law states that if you know the volts and amps of a device, you can then calculate the Watts. Located on the pool motor is the rating plate. Note that there will be two units of information required: 1) the voltage and 2) the amperage.

Often times the motor will state two voltages and likewise two amperages. In regards to the calculation sheet prepared for the Homeowner, this will have no effect on the outcome of the calculation. However, the voltage will typically be stated as 115/230 and the amps will likewise state two amperages. The amperages can be 18.6/9.3. When the motor is wired for 115 volts the higher or first number is used, and when wired for 230 volts, the lower amperage will be used. Most pool systems are wired to run on 230 volts. Below is an example of a 1.5 horsepower motor specification and the calculation to show how to determine the kilowatt-hour consumption.

## How to measure your return on investment:

### Calculate your monthly savings:

Pool pump motor volts x motor amps =watts  
Divide by 1000 = (KWH)  
Multiply this by hours a day (run time)  
Multiply by number of days in billing cycle.  
= Number of KWH saved per month  
Multiply by cost of KWH = monthly savings

### Example for a 1.5HP A/C pump

230 volts x 9.4 = 2162 watts  
2162 / 1000 = 2.162 KWH  
2.162 x 8 hours =17.296  
17.296 x 30 days = 518.88 KWH/month  
518.88 x .25 cents per KWH = \$129.72  
\$129.72 X 12 months = \$1556.64

*\$1556.64 per year savings at .25 per kwh – this could be higher if the cost per kwh was higher!!!*

## Savior 10K Savings & Return on Investment (ROI)

Energy Cost	Run Time	Annual Energy Savings	Return on Investment
\$0.15 k/Wh	6-8 Hours	\$702-\$936	12 Months
\$0.20 k/Wh	6-8 Hours	\$936-\$1,248	8 Months
\$0.30 k/Wh	6-8 Hours	\$1,404-\$1,872	6 Months

These costs are based on an average pool filtration system

## Electrical Consumption

How to calculate what your cost of your pool pump per kWh actually can be.

\_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ Watts

(Volts).....X.. (Amps)

\_\_\_\_\_ / 1000 = \_\_\_\_\_ kW

(Watts)

\_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ kWh/Day

(kW).....X..... (Hrs/Day)

\_\_\_\_\_ X 30.4 days = \_\_\_\_\_ kWh/Month

(kWh/day)

\_\_\_\_\_ X \$0.13 = \$ \_\_\_\_\_ Monthly Cost

(Monthly kWh)

\$ \_\_\_\_\_ X 12 = \$ \_\_\_\_\_ Annual Cost

(Monthly Cost)

## R.O.I and Payback

$$\frac{\$ \text{_____}}{\$ \text{_____}} = \text{_____} \%$$

(Annual Savings)...../(Estimated Price of System) .....=(Annual R.O.I.)

$$\frac{\$ \text{_____}}{\$ \text{_____}} = \text{_____} \text{ Years}$$

(Estimated Price of System)...../(Annual Savings)..= (Simple Payback)

## Pollution

$$\text{_____} \times 1.9\text{lbs} = \text{_____} \times 12 \text{ months} = \text{_____}$$

(Monthly kWh).....X..... (Lbs. per month).....= (Lbs. per year)

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## THE ENVIRONMENTAL COST OF USING ELECTRICITY

The Electric Bill Project: An Elementary School Introduction to Energy

<http://www.sci-ed-ga.org/modules/k6/elec/elec.html#envir>

### Emergency Power Systems with Photovoltaic

<http://www.fsec.ucf.edu/en/publications/pdf/FSEC-CR-1144-99.pdf>

### Union of Concerned Scientists

[http://www.ucsusa.org/clean\\_energy/coalvswind/c02c.html](http://www.ucsusa.org/clean_energy/coalvswind/c02c.html)

[http://www.ucsusa.org/clean\\_energy/coalvswind/c01.html](http://www.ucsusa.org/clean_energy/coalvswind/c01.html)

### Clean Air Network

<http://www.greenlink.org/assess/pdfs/cleanairnetwork.pdf>

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## How to Calculate Swimming Pool Volume in Gallons

### Here is how to figure out the Gallons in a swimming pool:

Measure the swimming pool. You will need the overall length, width and the depth in both the shallow end and deep end.

The formulas below assume you are measuring in feet, and want results in gallons.

### For a Rectangle Pool:

(Deep End + Shallow End) / 2 = Average Depth

Average Depth x Length x Width x 7.48 = Volume in Gallons

**For a Round Pool:**

Depth x Diameter squared x 5.9 = Volume in Gallons

**For a Free Form Pool:**

(Deep End + Shallow End) / 2 = Average Depth

(Width A + Width B + Width C + ...) / (number of measurements) = Average Width

Average Depth x Length x Average Width x 7.48 = Volume in Gallons

**An Example for a Rectangular Pool:**

Average depth (3' to 8' deep)

$$3 + 8 = 11$$

$$11 / 2 = 5.5$$

Rectangle:

Depth as in the example above

40 feet long, 20 feet wide

$$5.5 \times 40 \times 20 \times 7.5 = 33,000 \text{ gal.}$$

Reference:

<http://www.wikihow.com/Calculate-Swimming-Pool-Volume-in-Gallons>

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## Why is there a Savior Solar Powered Pool Filter?

**10 Million Pools and over 100 Billion Gallons of Water to Filter in the USA**

**15 Billion Dollars is being spent on electricity by pool owners annually**

**150 Billion pounds of pollution pumped in the air annually**

***In 2010 Michael Evingham from Dana Point, California invented the (patent pending)***

***Savior Solar Powered Water Filter for you to offset your pool or spa impact.***

According to the property appraisal statistics, in USA alone, there were over 10 million pools. That equates to over 100 billion gallons of water to filter. The home utilizes the conventional alternating current (A/C) motor to filter the water. The conventional motor is inefficient, has a short life span, adds to the noise and air pollution and is costly to operate. With rising energy costs it is becoming ever more expensive to filter the pool water.

The average Homeowner with a pool typically uses over 500-600 kWh a month just to filter their pool. With the cost of electricity in USA averaging \$0.13 per kWh and an average 8% increase per year in energy costs, the savings for the Homeowner who has the Solar Pump product gets better every year.

The Solar Energy Center rates the pool pump as the second largest consumer of electricity in the home next to the air conditioner. This equates to about 20 percent of the average homeowner's electric bill.

On the GREEN side, with each kWh produced by coal-burning power plants, the customer is saving the planet 1.9 pounds of pollutants from entering the atmosphere. This means the average installation prevents over 11,000 pounds of pollutants from entering our atmosphere each year.

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## **Be Prepared For Power Failures & Natural Disasters**

The Savior will not only will filter your water BUT it can be a great for emergencies when there is zero power available. The Savior is ideal for use in developing countries and areas prone to hurricanes, earth quakes and other acts of nature. It's a good investment.

The Savior 10K 60-Watt lets you harness the power of the sun, the most powerful and plentiful source of energy available to us. This inexhaustible supply of power is freely available wherever the sun shines, and gives users the freedom to power batteries, and electronic equipment. Savior can help cut your energy bills by reducing your dependence on the main electrical grid to power your pool or spa pump, and can also provide emergency back-up power during outages.

Savior solar panels convert sunlight into an electric current, they do not store power. Solar charging and inverters kits are primarily used to recharge 12-Volt batteries which store and provide usable power and Inverters are used to power 110 volt appliances (not included).

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# PERSONAL IMPACT

Your Average Pool/Spa Energy Consumption		
Pool pump motor volts :	230	Volts
Motor amp's :	11.4	Amp's
Watts :	2622	Watts
Kilowatt Hour=1000 Watt Hours   How many KWH get used in one hour :	2.622	KWH - hour
Hours a pump should run in a day :	8	Hours
KWH used in a day :	20.976	KWH - day
How many days a pool pump runs   KWH a month :	30	Days
How many KWH used in a month charged   KWH a month used :	629.28	KWH - month
Average Pool/Spa Energy Cost		
Average cost someone pays for 1 KWH on electricity bill   KWH cost :	\$0.20	KWH fee
Hourly cost for running your pool pump   KWH hour cost :	\$0.52	Hour cost
Daily cost for running your pool pump   KWH day cost :	\$4.20	Daily cost
Average monthly pool electricity bill cost   KWH monthly cost :	\$125.86	Monthly cost
Average yearly pool electricity costs   Yearly cost :	\$1,510.27	Yearly cost
Average Pool/Spa Pollution Impact		
Pounds of Pollution put in the air by running a pool pump   Lbs Day :	40	lbs a day
Lbs Month :	1,196	lbs a month
Annual pounds of pollution   Lbs Year :	14,348	lbs a year
The Savior Benefits & Personal Impact		
Number of Savors and Pools or Spas :	1	Savior Units
Natural Current Base Retail :	\$ 799.00	MSRP
Financial Savings		
Financial savings in electricity from not running pool pump   Day Savings :	\$4.20	Day
Monthly Savings :	\$125.86	Monthly
Annual Saving :	\$1,510.27	Yearly
Energy Power Savings		
Watts - Day :	20,976	Day
Watts Volume - Month :	629,280	Monthly
Watts Volume - Year :	7,551,360	Yearly
Kilowatt hour (KWH) - 1000 watt hours   KWH - Day :	21	Day
KWH Volume - Month :	629	Monthly
KWH Volume - Year :	7,551	Yearly
Megawatt is equal to one million watts   Megawatts - Day :	0.021	Day
Megawatts - Month :	1	Monthly
* US generates 4,500,000,000 MWhs a year   Megawatts - Year :	8	Yearly
Environmental Savings		
Pounds of Pollution - Day :	40	lbs
Month :	1,196	lbs
Annual Pounds of Pollution - Year :	14,348	lbs
4.5 tonnes for the average US car   Offset the average cars :	1.446	Cars
6.2 tonnes co2 gas the average US household   # of US household :	1.049	Homes
Natural Resources Savings		
1 gallon of gasoline produces 19 lbs of co2   Gallon of Gasoline per - Day :	2	Day
Month :	63	Month
Gallon of Gasoline Saved per - Year :	755	Year
19.6 gallons of gasoline from each barrel of crude oil   Barrel of oil - Day :	0.107	Day
Month :	3	Month
Barrell of oil - Year :	39	Year
5 Trees per tonnes of co2   Number of trees saved per - Month :	0.108	Month
Number of trees saved per - Year :	1.301	Year
Human Foot Print Savings		
* The average global citizen produces 4.5 tonnes of carbon dioxide per year Global citizen foot print offset per - Year :	1.446	People

# GLOBAL CONTRIBUTION

<b>The Savior Benefits &amp; Planet Earth Impact</b>		
Estimated Number of bodies of water in the World with a Savior :	75,000,000	75M
Savior base cost for 75 million Savior's to address the IMPACT BELOW:	\$45,000,000,000.00	Cost
<b>Financial Savings</b>		
Financial savings in electricity from not running pumps   Day Savings :	\$314,640,000.00	Day
Pumps included: Swimming Pool, Spa, Ponds, Fountain and some open bodies of water. Monthly Savings :	\$9,439,200,000.00	Monthly
Annual Saving :	\$113,270,400,000.00	Yearly
<b>Energy Power Savings</b>		
Watts - Day :	1,573,200,000,000	Day
Watts Volume - Month :	47,196,000,000,000	Monthly
Watts Volume - Year :	566,352,000,000,000	Yearly
Kilowatt hour (KWH) - 1000 watt hours   KWH - Day :	1,573,200,000	Day
KWH Volume - Month :	47,196,000,000	Monthly
KWH Volume - Year :	566,352,000,000	Yearly
Megawatt is equal to one million watts   Megawatts - Day :	1,573,200,000	Day
Megawatts - Month :	47,196,000	Monthly
* US generates 4,500,000,000 MWhs a year   Megawatts - Year :	566,352,000	Yearly
Gigawatt is equal to one billion watts   Gigawatt Year :	566,352	GW
Terawatt is equal to one trillion watts   Terawatt Year :	566	TW
Petawatt is 1,000,000,000,000,000 one quadrillion watts   Petawatt Year :	0.56635	PW
* Sunlight striking Earth's atmosphere is estimated at 174 PW :	174,000,000	174 PW
<b>Environmental Savings</b>		
Pounds of Pollution - Day :	2,989,080,000	lbs
	1,355,592	tonnes
Pounds of Pollution - Month :	89,672,400,000	lbs
	40,667,755	tonnes
Annual Pounds of Pollution - Year :	1,076,068,800,000	lbs
	488,013,061	tonnes
4.5 tonnes for the average US car   Offset the average cars :	108,447,347	Cars
6.2 tonnes co2 gas the average US household   # of US household :	78,711,784	Homes
<b>Natural Resources Savings</b>		
1 gallon of gasoline produces 19 lbs of co2   Gallon of Gasoline per - Day :	157,320,000	Day
Month :	4,719,600,000	Month
Gallon of Gasoline Saved per - Year :	56,635,200,000	Year
19.6 gallons of gasoline from each barrel of crude oil   Barrell of oil - Day :	8,026,531	Day
Month :	240,795,918	Month
Barrell of oil - Year :	2,889,551,020	Year
* United States (March 2009) spent \$18 billion importing oil from overseas : Number of USA months offset importing oil from overseas :	386,000,000	Mth barrels 7.5 Months
5 Trees per tonnes of co2   Number of trees saved per - Month :	8,133,551	Month
Number of trees saved per - Year :	97,602,612	Year
<b>Human Foot Print Savings</b>		
* The average global citizen produces 4.5 tonnes of carbon dioxide per year Global citizen foot print offset per - Year :	108,447,347	People
<b>Utilities Power Generation Savings Impact</b>		
Number of 500 MW Gas Power Plant year energy output offset :	129	Gas Plants
Number of Gas Power Plant in carbon dioxide offset per year :	325	Gas Plants
* At 100% capacity factor a 500MWhs Gas Power Plant output year is : * 1.5 million tonnes of co2 a year from a 500MW gas power plant	4,380,000	MWhs
Number of Coal Power Plant year energy output offset :	65	Coal Plants
Number of Coal Power Plant in carbon dioxide offset per year :	59	Coal Plants
* At 100% capacity factor a 1000MWhs Coal Power Plant output year is : * 8.3 million tonnes of co2 per year for an older 1,000MW coal plants * There are over 1,522 coal generators in the USA	8,760,000	MWhs
Number of Nuclear Power Plant year energy output offset :	65	Nuclear Plants
* US Operating Nuclear Reactors: 104 (35 boiling water, 69 pressurized) * Nuclear Power Plant building costs is \$9.9 to \$17.5 billion		