

# Columbia River PUD

## Generator Sizing Instructions

The following procedure can be helpful in selecting the right size generator for your application.

A generator must be properly sized for the electric load it will be expected to operate. Electric motors require 2 to 3 times their nameplate amperage or wattage to compensate for the initial power surge needed to start the motor. Once running, they draw the nameplate rated amperage.

1. Using the table on the back of this page, place a check mark in the left hand column beside the equipment you wish to operate with the generator.
2. Write the quantity of devices such as one electric blanket and two refrigerators. Lighting Wattage is entered as the total of all bulbs being operated at the same time. For incandescent bulbs, simply total the Wattage printed on the bulbs. For fluorescent or mercury vapor fixtures, multiply the Wattage printed on the bulbs by 1.25 to account for the ballast draw.
3. Multiply the quantity of devices by the Running Watts and write the answer in the Total Running Watts column.
4. Multiply the quantity of devices by the Starting Watts and write the answer in the Total Starting Watts column.
5. Add the numbers written in Running Watts and Starting Watts columns separately and write the totals in the spaces provided at the bottom of the form.
6. Select a generator that has enough starting Wattage capacity to meet the Starting Wattage requirements. Consider the following alternative as a possible way to allow for a smaller generator to be selected:
  - Only use one large motor at any given time. For example, a well pump can be cycled on until the pressure tank is filled, then switched off at the circuit breaker. Running water will be available until enough gallons are drawn out to reduce the pressure in the tank to the point that it must be refilled by the pump.
  - Operate fewer electrical devices at the same time. For example, by switching off the refrigerator, freezer, and well pump circuits, it may be possible to operate an electric water heater for limited amounts of time. It take approximately 2 ½ hours for a 52 gallon tank of cold water to heat up to 130 degrees F. Once the tank is up to temperature again, turn it off at the circuit breaker and turn the refrigerator back on.

Note: If it is necessary to use an extension cord with a generator, the cord must be properly sized by taking into account the electric load it will serve and the length of the cord. If an undersized cord is used, excessive voltage drops and generator loading may result which will cause excessive heating of electric motors. See the following table for the recommended gauge of cord for 120 volt circuits.

<i>WATTAGE DRAW</i>	<i>50 FOOT CORD</i>	<i>100 FOOT CORD</i>	<i>150 FOOT CORD</i>
240	18	18	18
360	18	18	18
480	16	16	16
600	16	16	16
720	16	16	14
960	16	14	12
1200	16	14	12
1440	14	14	12
1680	14	12	10
1920	12	12	10
2160	12	10	10

# Generator Sizing Worksheet

EQUIPMENT	QTY.	RUNNING WATTS	TOTAL RUNNING WATTS	STARTING WATTS	TOTAL STARTING WATTS
<input type="checkbox"/> Coffee Maker .....		..... 1200			
<input type="checkbox"/> Dish Washer - Cool Dry ...		..... 700		..... 1400	
<input type="checkbox"/> Hot Dry .....		..... 1450		..... 1400	
<input type="checkbox"/> Fry Pan/Hot Plate.....		..... 1300			
<input type="checkbox"/> Elect. Range (ea. Element)		..... 1500			
<input type="checkbox"/> Microwave Oven (625W).		..... 625		..... 800	
<input type="checkbox"/> Refrigerator or Freezer ....		..... 700		..... 2200	
<input type="checkbox"/> Toaster .....		..... 1200			
<input type="checkbox"/> Computer .....		..... 500			
<input type="checkbox"/> Copy Machine.....		..... 1500			
<input type="checkbox"/> Fax Machine .....		..... 220			
<input type="checkbox"/> Electric Blanket .....		..... 400			
<input type="checkbox"/> Hair Dryer .....		..... 1200			
<input type="checkbox"/> Iron.....		..... 1200			
<input type="checkbox"/> Lights (wattage indicated on bulb)		.....			
<input type="checkbox"/> Radio.....		..... 50 to 200			
<input type="checkbox"/> Television .....		..... 300			
<input type="checkbox"/> Vacuum Cleaner .....		..... 1100			
<input type="checkbox"/> Automatic Washer .....		..... 1150		..... 2300	
<input type="checkbox"/> Clothes Dryer - Electric ....		..... 5750		..... 1800	
<input type="checkbox"/> Gas .....		..... 700		..... 1800	
<input type="checkbox"/> Garage Door Opener ¼ hp		..... 550		..... 1100	
<input type="checkbox"/> 1/3 Horsepower.....		..... 725		..... 1400	
<input type="checkbox"/> Water Heater .....		..... 4000			
<input type="checkbox"/> Furnace Fan, gas or fuel oil					
<input type="checkbox"/> 1/8 Horsepower.....		..... 300		..... 500	
<input type="checkbox"/> 1/6 Horsepower.....		..... 500		..... 750	
<input type="checkbox"/> ¼ Horsepower.....		..... 600		..... 1000	
<input type="checkbox"/> 1/3 Horsepower.....		..... 700		..... 1400	
<input type="checkbox"/> ½ Horsepower.....		..... 875		..... 2350	
<input type="checkbox"/> Portable Space Heater.....		..... 1500			
<input type="checkbox"/> Pellet Stove .....		..... 250			
<input type="checkbox"/> Septic/ Sump Pump, 1/3 hp		..... 800		..... 1300	
<input type="checkbox"/> ½ Horsepower.....		..... 1050		..... 2150	
<input type="checkbox"/> ¾ Horsepower.....		..... 1100		..... 2800	
<input type="checkbox"/> Well Pump, 1/3 hp .....		..... 750		..... 1400	
<input type="checkbox"/> ½ Horsepower.....		..... 1000		..... 2100	

Total

Total Running Watts \_\_\_\_\_ Starting Watts \_\_\_\_\_

*Note: Where no starting watts are indicated, starting watts do not exceed running watts. These are general guidelines, use actual equipment nameplate data if possible.*