

**Outdoors Swimming Pool Heating  
Energy Consumption Comparative Study  
May 1st to September 30th Heating**

Presented by





in Collaboration with

**Northwest Wholesale**



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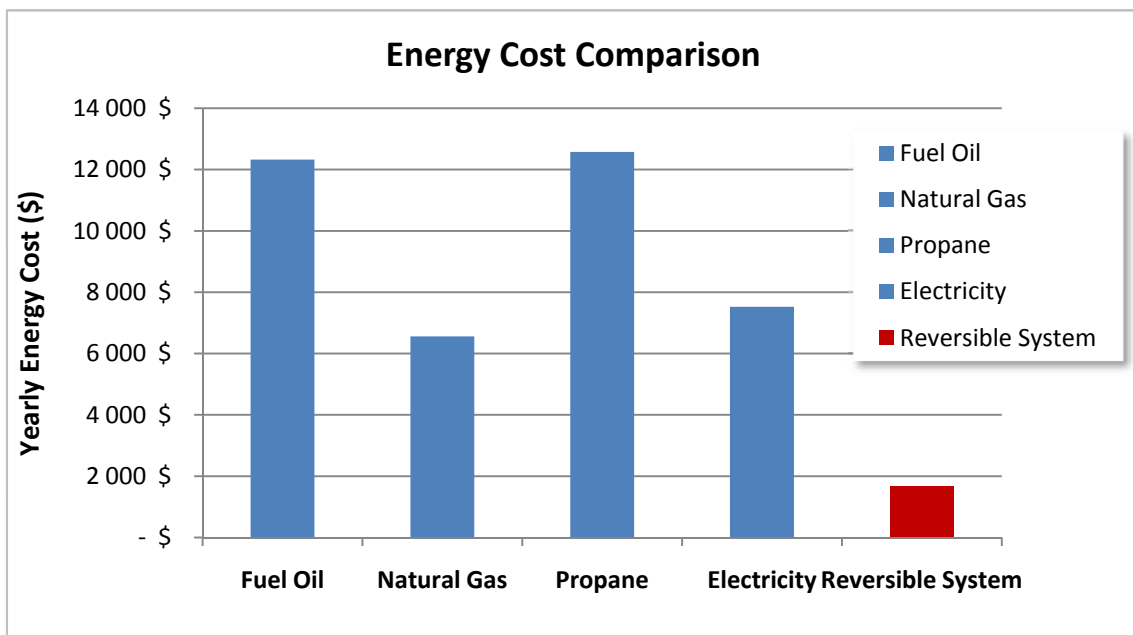
## Project Summary

In ground Outdoors Pool  
 Rectangular shape, 20'x40', average depth 6'  
 with a solar blanket used 8 hours daily  
 Residential use, 2 hours daily  
 Water must be kept at 84°F  
 From May 1st to September 30th  
 Weather information of Winnipeg, MB used  
 Average air temperature for the period is 60.3°F  
 Lowest air temperature for period is 39.2°F

Required Heating Capacity*	48,4 kW 165 MBH	
Energy Provided to the Pool Yearly**	117 078 kWh 399 487 kBTU	
Energy Cost Using Fuel Oil	12 325 \$/year	<b>86%</b>
Energy Cost Using Natural Gas	6 557 \$/year	<b>75%</b>
Energy Cost Using Propane	12 574 \$/year	<b>87%</b>
Energy Cost Using Electrical Heater	7 526 \$/year	<b>78%</b>
Energy Cost Using Reversible System	1 670 \$/year	
<b>Savings Over Natural Gas System</b>	<b>4 887 \$/year</b>	

\* Based on historic low temperatures

\*\* Based on monthly average temperatures



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## Unit Cost of the Energy Sources

			1 kWh Cost	1 kBtu Cost	
Fuel Oil (No. 1, 2, 4)	<b>0,89</b>	\$ / Liter	▼	<b>0,105 \$</b>	<b>0,031 \$</b>
Natural Gas	<b>0,49</b>	\$ / Cubic Meter	▼	<b>0,056 \$</b>	<b>0,016 \$</b>
Propane	<b>0,60</b>	\$ / Liters	▼	<b>0,107 \$</b>	<b>0,031 \$</b>
Electricity	<b>0,06</b>	\$ / kWh		<b>0,064 \$</b>	<b>0,019 \$</b>

## Efficiency of Reference Pool Heaters

Fuel Oil	<b>80%</b>	For new units, common values range from 78% (cheap) and 83% (High quality). This value drops within a few seasons unless strict maintenance is performed.
Natural Gas	<b>82%</b>	A few costly units can reach 95% efficiency, typical new natural gas heater efficiency is around 82%. Units older than 5 years typically have a 75% or lower efficiency.
Propane	<b>80%</b>	Efficiency values for propane pool heaters range between 70% and 84%. The typical value is around 80%.
Electricity	<b>98%</b>	Electric heaters have a good efficiency of around 98% because they do not lose heat in combustion fumes.

## Efficiency of Reversible Pool Heater

Season Average Ambient Temperature	<b>60,3</b>	°F	▼		
Water Temperature	<b>84</b>	°F	▼	<b>1 kWh Cost</b>	<b>1 kBtu Cost</b>
Efficiency	<b>442%</b>			<b>0,014 \$</b>	<b>0,004 \$</b>



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## Heating Capacity Analysis

	Qty		
Primary Model	<input type="text" value="2"/>	POPASRW080-U	▼
Secondary Model (for large projects)	<input type="text" value="0"/>	(None)	▼
Minimum Ambient Temperature	<input type="text" value="39,2"/>	°F	▼
Required Heating Capacity	<input type="text" value="48,4"/>	<b>kW</b>	
Residual Heating Capacity	<input type="text" value="2%"/>		
<b>Total Heating Capacity</b>	<input type="text" value="49,5"/>	<b>kW</b>	
Ambiant air temperature : 39,2°F			
Water temperature : 84°F			

## Specifications of the Units

UNIT	Model	Primary	Secondary
		POPASRW080-U	(None)
Heating Capacity	kW	40,4	
	BTU/h	138 000	
Heating Power Input	kW	7,2	
Running Current	A	31,3	
Compressor Rating Load	A	28,7	
Compressor Locked Rotor Load	A	58	
Minimum Circuit Ampacity	A	40	
Max.Fuse	A	80,5	
Power Supply	V/Ph/Hz	230/1/60	
Compressor Quantity		2	
Compressor Type		Scroll	
Fan Quantity		2	
Fan Rotate Speed	RPM	830	
Fan Direction		Vertical	
Noise Level	dB(A)	61	
Water Connection	inch	2.5	
Water Flow Volume	GPM	53	
Water Pressure Drop (max)	PSI	2,18	
Unit Net Dimensions (L/W/H)	inch	57.1/29.5/42.5	
Unit Shipping Dimensions (L/W/H)	inch	61.0/31.5/47.2	



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