



energy efficient residential swimming pools

h.e.l.p. sheet

overview

If you have a swimming pool, energy consumption can account for up to 60 percent of your summer utility bills making summer energy costs even more expensive than winter heating costs. This h.e.l.p. sheet describes how you can reduce your swimming pool's energy consumption.

Heat loss

Heat loss from outdoor swimming pools occurs mainly from the surface in the form of evaporation, radiation and convection. Evaporation from the surface of the pool lowers both water temperature and water level in the pool. Radiation causes heat loss in the pool by transferring that heat into the surrounding air. Convection of heat energy is the result of cool air blowing over the pool's surface and lowering water temperature. Heat loss is also attributed to conduction, which is a transfer of heat from the water through the pool walls to the surrounding air or soil.

Energy management

To operate your pool more efficiently, you will need to consider water temperature, wind exposure, pool dimensions, in-ground or above ground pools, pumps and pool covers.

Pool temperature

The energy consumption of an outdoor pool depends on the water and air temperature. For typical pool activity, set the temperature at 26° C (79° F). For vigorous swimming, temperatures as low as 22° C (72° F) may be adequate and

will save 65 percent on heating costs compared to keeping the temperature at 26° C. If the pool is used mainly for relaxing, a temperature of up to 30° C (86° F) may be preferred; however this will consume 75 percent more energy than a pool at 26° C. Allowing the pool temperature to drop when not in use will save energy and reduce operating costs.

Wind exposure

The evaporative heat loss in a swimming pool is greater as wind velocity over the pool surface increases.

By constructing a solid fence around the pool to create a sheltered area, pool energy consumption would be reduced by about 20 percent compared to a moderately sheltered pool that is near a house or in a fenced yard. Pools with an open exposure would consume about 50 percent more energy than a moderately sheltered one.

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Pool dimensions

Since most of the pool's heat loss occurs from the surface, the energy use of different-sized pools can be estimated by comparing surface areas. For example, a 6-metre by 12-metre (20-foot by 40-foot) pool would require about 45 percent more energy than a 5-metre by 10-metre (16-foot by 32-foot) pool, as its surface area is 45 percent larger.

Above-ground pools

Above-ground pools generally require 30 percent more energy for heating due to increased heat loss through the metal sides. This additional heating requirement can be significantly reduced by installing an R7 rated layer of insulation around the outside of the pool structure. The sunlight's ultra-violet radiation can damage and reduce the effectiveness of rigid foam insulation, so it is important to ensure the insulation is protected.

Pool pump costs

In addition to the costs for pool heating, electricity consumed by the pump contributes to the operating costs. Most pools are equipped with a three-quarter horsepower pump, running 24 hours a day, circulating water through a filter unit and a pool heater. Based on this pump size, the electrical cost for operating 24-hours a day is about \$36 per month. Because water circulation prevents the growth of harmful bacteria, neither BC Hydro nor the ministry of Health recommend reducing pump operating hours.

Swimming pool covers

Use of a floating thermal pool cover to save energy and maintain the pool temperature when not in use. A cover can save up to 50 percent on energy consumption compared with an uncovered pool and is the most significant energy saving measure a pool owner can take.

Plastic sheeting is not recommended for use as a pool cover because it may not be treated to resist deterioration from solar ultra-violet radiation deterioration and, unless it has special flotation properties, it will sink.

Using a floating plastic swimming pool cover can save a substantial amount of the energy as well as significantly reduce water loss due to evaporation. Two pool cover types are available and are usually treated to resist ultra-violet degradation. The first type of cover

consists of a 3 millimetre layer of closed-cell polyethylene foam covered by a protective layer of woven polyethylene. The second type consists of a translucent cell or bubble arrangement of 0.3 millimetre polyethylene.

The effectiveness of a pool cover depends on the amount of time it is on the pool.

Pool covers are available from most swimming pool suppliers in B.C. See your local Yellow Pages for a supplier in your area.

Summary of energy saving tips

- Set your swimming pool temperature to 26° C (79° F) or for vigorous swimming, 22° C (72° F) may be adequate
- Cover your pool when it isn't in use, it can reduce evaporation and heat loss and can save up to 50 percent on energy consumption
- During sunny summer days, uncover your pool to take advantage of solar heating
- Put a fence around your pool as a windbreak
- Install and cover R7 rated insulation around the outside of your above-ground pool to reduce heat loss through the walls

This is a general guide only. Please ensure that all installations meet your requirements, manufacturer's instructions and all applicable codes, standards and regulations. BC Hydro is not responsible for installations.

ask us for more help:

This h.e.l.p. sheet provides advice for BC Hydro customers and the trades.

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