



SUMA SOLAR POOL HEATING PROGRAM

Go Green – Heat Your Swimming Pool for Free**

One of Saskatchewan's primary energy efficient resources is FREE – the SUN. However, harnessing that resource requires an initial capital cost outlay. Utilize the SUMA program and the federal government REDI Grant to significantly reduce that cost.

Benefits of Solar Pool Heating (See Appendix I)

- 3 – 5 year payback period on capital cost
- Eliminate green house gases
- Eligibility for 25% federal government grant through REDI (Renewable Energy Deployment Initiative)

Partnership

- Partnering with Kelln Solar in Lumsden, SUMA Member Services can provide product and installation expertise to those members wishing to participate in our first ever energy efficiency program.
- Kelln Solar enhanced their large-scale installation skills on the recent Bengough solar pool project. Deb Ashby, Recreation Director in Bengough stated, "Kelln are expert installers, using high quality materials and meeting all stated timelines with speed and efficiency. Their service provision, which included assisting with the REDI Grant Application, went above and beyond expectations."

Benefit of SUMA Advantage Program

- Reduction in cost through partnership program – 8% on both panels and installation, as these are the major cost components, this reduction is considerable.
- Knowledgeable assistance from Kelln Solar on REDI Grant application, helping to speed up the process.
- Administration of the program from the SUMA office provides a solid base for any issues arising that require resolution or clarification.

**** Three to Five Year Payback Period Required.**

Cost Estimate (See Appendix II)

- Appendix II is designed as an estimation tool for budget purposes. As solar panel installation is site specific, Kelln Solar will complete on-site evaluations for each member providing a firm price prior to commitment.
- REDI Grant refund for up to 25% of purchase, and 8% savings on both panels and installation decrease the overall cost.

HOW THE PROGRAM WORKS:

1. A minimum of ten (10) and a maximum of fourteen (14) solar pool heating systems can be completed in any given year. Early "expression of interest" will guarantee your community an opportunity to take part in this program in 2005.
2. Request an on-site inspection in 2004 by completing and faxing the dual-purpose form included in this package. Kelln Solar will be in direct contact with your designated project coordinator to arrange the site visit. The cost of the evaluation, shown below, will be deducted from the overall price of the installation if your municipality proceeds; if your decision is to withdraw, these costs will be billed to your municipality for payment.
 - Mileage - \$.35¢ per kilometre
 - Site Evaluation - \$45.00 per hour (Minimum one hour charge) including travel time.
3. Kelln will provide a firm quotation for the full installation showing the SUMA Program 8% discount. Once the quote has been received, and council resolution has approved the project, the community should refax the dual-purpose form, with section two completed to the SUMA office.
4. A commitment deposit of \$5000 will be requested by SUMA at this time. Once product has been ordered, this deposit will be forfeited if a member decides to withdraw from the program. Pool installations will work on a first paid, first install basis.
5. Kelln Solar will provide all necessary documentation and application process expertise to assist in speeding up the REDI grant application. Early completion of this grant application is necessary to have the funding in place for the 2005 season.
6. Product will be delivered to your site at least two weeks prior to installation, at which time 50% of the project cost, less your \$5000 deposit will be invoiced by Kelln Solar and due on delivery.
7. Commencement of system installs are planned for April 15th, 2005 (weather permitting). Each system will take approximately three (3) weeks to complete.
8. All installations will include commissioning of the system prior to departure from your site. Kelln Solar will be available to assist with any operational issues that arise during start-up, running time, and shut-down. Most issues can be resolved by telephone, but a trip to your site will be made if deemed necessary.
9. In the case of systems for which no grant has been approved final payment will be due upon completion of installation and commissioning. Those systems with REDI grant approval will be invoiced for 25% of the remaining costs upon completion and the final amount will be due upon receipt of grant monies.

SOLAR POOL HEATING –*Outdoor Pools in Saskatchewan*

WHAT IS A SOLAR POOL HEATING SYSTEM?

Solar Pool Heating is the process of using solar heating panels to heat pool water, replacing heating typically done by a gas-fired boiler. The panels, made of a durable, lightweight plastic, are mounted on a suitable space, preferably a south-facing roof. East and west roofs can be used if necessary, although some additional panels will be required to compensate for the less-than-ideal orientation. The water from the pool is forced by pump through the panels where the solar absorption warms the water for its return to the pool. The installation requires connecting pipes and likely an additional booster pump to assist with the extra water circulation. There is also a flow control to limit the amount of hot water entering the circulation system to ensure that the pool is not over-heated. A well-designed system should provide sufficient heating to completely offset the fossil-fuel fired boiler contribution during summer months.

SEASONAL HEATING

For heating outdoor pools in the summer time (usually June-early September inclusive), which is the case in Saskatchewan, the less expensive non-glazed panel system is sufficient. The solar panels are connected to the existing plumbing system and may require an auxiliary boost pump for the additional requirement of pumping the pool water through the panel system. Otherwise, the system is quite straightforward, requiring a minimum of maintenance. Each year the system must be drained down in the fall to prevent damage from frost. Low level frost such as may occur in late summer (minus 2-3 degrees) will not be cause for problems provided that the circulation pump is in operation at the time.

For non-summer months, a solar pool heating system would have to be sized considerably larger mostly because of the reduced solar collection in other three seasons. In addition, the system would have to use more expensive glazed panels and heat exchangers because the pool water could not be circulated outside for risk of damage by freezing – the fluid in the panels would have to be of anti-freeze solution. Obviously most all-season pools are indoor pools (except for very mild climates), so the heat-loss performance of the building and the minimum outside temperature will have a factor in design.

ADVANTAGES OF SOLAR POOL HEATING SYSTEM

1. Lower Cost, Longer Season – Payback in as few as Three Years.

The Solar Pool Heating System requires very little operating energy – only the additional electricity to run the water through the panel system. However, when the gas-fired boiler is not operated for the summer, there is a considerable cost saving in natural gas. And the reduction of cost means that facilities can be open for a longer season. In fact, the annual savings can be enough to pay for the system capital cost within about three to five years (even faster as the gas rates go up) – depending on the energy-efficiency of the existing boiler system.

2. Going Green – Eliminating Green House Gases

The Solar Panel Heating system displaces the burning of a fossil-fuel, natural gas, which as clean as it is purported to be, it still creates undesirable and excessive greenhouse gas – CO₂. Over the life span of the solar heating system a very significant amount of CO₂ is eliminated.

3. Grants Available– as much as 33% or more off Capital Cost

The Solar Pool Heating System is eligible for federal government grants from the Renewable Energy Deployment Initiative (REDI) which will fund 25% of the capital costs. In addition, the SUMA **Advantage** partnership with Kelln Solar provides for an 8% reduction on both panels and installation costs.

4. Longer Season

A Solar Pool Heating System can extend the pool season by economically heating the water during times when it is considered overly expensive to operate the pool.

ECONOMICS OF SOLAR POOL HEATING

The payback period of a solar pool heating system can be from five to as low as three years. In addition, if government grants/incentives are used to cover some of the capital costs, the payback period is further reduced.

If natural gas climbs at 10 per cent per year and the community is able to get a 25% grant (for capital cost) the payback period may be as short as four years. And the savings will continue as the solar heating system will continue to supply free heat for years - long after the fossil fuel prices have escalated to amazing levels. After a few years, the funds formerly used for heating or paying for the solar pool heating system can be re-directed to another area of need within your municipal budget.

This relatively quick financial payback is as good as can be found in the area of renewable energy. At the same time, the environmental savings are immeasurable, but increasingly important to succeeding generations.

COSTS – Capital and Operating

Capital Cost

The capital cost of a solar pool heating system depends on a number of factors:

- *Size of Pool(s)* - heat loss is directly tied to pool surface area
- *Types of Pools*– general swimming, children’s pool, warm pool require different levels of heating.
- *Direction and Slope of Available Mounting Area* – south-facing is best, otherwise extra panels are required
- *Complexity of Necessary Panel Layout/Installation* – depends on factors such as roof slope and construction, area of available roofing, location of panels to pump location.

More specifically, the following components are part of a solar pool heating system installation:

- *Solar Panels and Associated Plumbing*
- *Booster Pump* – to assist existing circulation pumps with flow of fluid through solar panels
- *Installation*
- *Additional Components/Requirements for a specific site* – i.e. strapping for rough roofing, surcharge for scaffolding or safety equipment

Operating Cost

The annual operating cost of a solar pool heating system will be very small, typically consisting of the additional electricity required to run the booster pump. Other costs would be similar to any mechanical system for example, ensuring there are no leaks or breaks in connections, and repair of damage from human cause or acts of God.

MAINTENANCE

Ongoing Maintenance

For the most part there will be minimal ongoing maintenance. Periodic inspections to ensure there are no leaks, or loosened connections are the most critical.

Season Close-down

At the close of each pool season, the panels must be drained down to prevent damage from freezing. It is recognized that there are occasional nights with freezing weather during the pool season (i.e. August, early September) but as long the water is circulating there is no risk of damage. Once the pool is shut down for the season, all lines must be drained to the lowest point – usually the pump location. In some cases, the design of the system may require some drain valves be located on the roof of the building in which those valves must be accessed and opened for drainage

Season Startup

At the startup of each pool season, all drain valves must be closed and the pool water circulated through the system. All lines and panels must be purged of air to be effective in their operation.

DETAILS ON GRANTS AVAILABLE

REDI - Renewable Energy Deployment Initiative

The REDI provides 'incentives' (grants) to the end-user of solar installations with a special category for municipal governments. The program provides a grant or refund of up to 25% of purchase and installation cost of qualifying solar installations up to a maximum refund of \$80,000. ***An eligible recipient must have a signed contribution agreement in place before the start of project construction.***

The application for the proposed project must include specifics as to what present energy costs will be displaced and detailed technical information on the proposed design.

There is no specific end deadline to this program at present. Applications will be received on an ongoing basis.

Contact:

Office of Energy Efficiency
Natural Resources Canada
580 Booth Street, 18th Floor

Ottawa, Ontario K1A 0E4

TEL: 1-877-722-6600 (toll-free)

FAX: 613-942-1590

E-mail: <mailto:redi.penser@nrcan.gc.ca>

redi.penser@nrcan.gc.ca

Website: <http://www.nrcan.gc.ca/redi>

Application: go to website above, look under "INCENTIVES"

SUMA SOLAR SWIMMING POOL System Costing

This information is designed as a **simple method of estimating your pool system for budget purposes only**. Each system will be quoted as a per job basis with a site visit to determine the actual requirements of the system before any final quote is given.

Price variance may be affected by the factors listed below. The site evaluation price provided by Kelln will be considered true and accurate taking all of these factors into consideration.

- Amount of shade the pool receives in a day
- If a pool cover is used or not
- Direction in which mounting roofs are facing
- Slope of mounting roofs
- Need for booster pumps
- Temperature which pool is to be maintained at

The on-site visit and system quote provided by Kelln Solar will be billed at the following rate.

Mileage - \$.35¢ per kilometer

Site Evaluation – \$ 45.00 per hour (Minimum 1 hour charge), including travel time

Note! All site evaluation costs will be deducted from the overall cost if a pool system is purchased.

Panels & Fittings Costs

The following panel costs are based on a pool square footage of 3900 sq. ft. Calculate your pool square footage and use the following multiplication factor to determine panel costs.

Pool square footage _____ X \$ 9.50 = _____

Installation Costs

The following installation costs are based on a pool square footage of 3900 sq. ft.

Pool square footage _____ X \$ 1.92 = _____

Plumbing & Hardware Costs

The following plumbing costs are based on a pool square footage of 3900 sq. ft.

Pool Square footage _____ X \$.65¢ = _____

Travel & Accommodations

The following travel expenses are based on a pool square footage of 3900 sq. ft.

Pool Square footage _____ X \$.45¢ = _____



SOLAR POOL HEATING PROGRAM

(This form is dual purpose: (a) to notify us that you wish to proceed with the evaluation (b) and once it is completed, to inform us of your intent.)

**Return by fax to the SUMA Office (306) 525-4373
Attention: Susan Dishaw**

Municipality Name: _____

Address: _____

The municipality of _____ requests that an on-site evaluation be completed by Kelln Consulting Ltd. (Kelln Solar) to determine a firm pricing prior to our decision to participate in the program in 2005.

Contact _____ at phone # _____ in our office to arrange this evaluation.

We understand the price associated with this evaluation is as follows, and that these costs will be deducted from the cost of the solar install if we decide to proceed. These costs will be paid directly to Kelln on receipt of invoicing from them, if for whatever reason we decide not to proceed.

Mileage - \$.35¢ per kilometre
Site Evaluation - \$45.00 per hour (Minimum 1 hour charge), including travel time

Authorized Signature: _____ Date: _____

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Kelln Solar have completed our on-site evaluation and provided us with a firm quotation. We wish to:

_____ Proceed with the installation in 2005

_____ Withdraw from the program – forward invoice for evaluation costs.

Authorized Signature: _____ Date: _____