

SOLAR HEAT

Sustainable Future

**Clean Energy
Solutions for Canada**



CanSIA

Solar Thermal Caucus
Canadian Solar Industries Association

www.cansia.ca





Commercial Air Heating, QC | Enerconcept

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Apartment water heating, NS | Encom

CanSIA Introduction

Who We Are

CanSIA is a national trade association that represents approximately 650 solar energy companies throughout Canada. Since 1992, CanSIA has worked to develop a strong, efficient, ethical and professional Canadian solar energy industry with capacity to provide innovative solar energy solutions and to play a major role in the global transition to a sustainable, clean-energy future.

CanSIA actively represents the Canadian solar industry by promoting the unique economic, environmental and technology benefits of solar energy in Canada. Our goal is to be the source of trustworthy information about solar energy and its growing importance to Canadian energy consumers.

Our Vision

By 2025, solar energy is widely deployed throughout Canada, having already achieved market competitiveness that removes the need for government incentives, and is recognized as an established component of Canada's energy mix. The solar industry will be supporting more than 35,000 jobs in the economy and displacing 15 to 31 million tonnes of greenhouse gas emissions per year, providing a safer, cleaner environment for generations to come.

A Word From the President

John Gorman

President
Canadian Solar Industries Association



Solar thermal heating is an essential renewable energy source for Canada's future. A substantial amount of Canada's conventional energy supply is required to heat our buildings and water, and for process heat applications. Solar heating has the potential to replace a significant amount of that conventional energy.

The solar air and water heating technologies referred to in this report have been used across the globe in every conceivable building application, and are poised to offer large scale energy and carbon dioxide reductions here in Canada when the proper policy mechanisms are implemented. The focus on renewable energy policy in Canada has so far been centered on renewable electricity; there has been insufficient policy support for renewable heating. Solar heating is the next solar energy frontier, which must be prioritized with meaningful policy so that the multitude of benefits that solar heating technologies provide can be realized.

The policy recommendations outlined in this report are the first step towards a competitive and sustainable solar thermal industry in Canada. We hope that policymakers and industry stakeholders from across the country will use this paper as the beginnings of discussion and concrete action for positive change.

Executive Summary

Solar thermal heating is the conversion of energy from the sun to useful heat for a variety of applications, including water heating, space heating, pool heating, and industrial processes. Canada, with an abundant solar resource in much of the country and a developing solar thermal industry, has an opportunity to be a global leader in solar thermal heating. Past government programs in support of solar thermal heating installations created tremendous demand and growth in the industry, which is well on its way to offering a cost-competitive, clean, renewable energy source for Canadians. However, the current policy landscape does not do enough to support the industry as it makes the transition to a sustainable, competitive provider of carbon-free energy.

The benefits of solar thermal heating technologies are many, including reduced greenhouse gas emissions, reduced energy costs, energy conservation, and domestic job creation. Despite these benefits, a number of remaining market barriers means that Canada is falling behind

other major economies in its adoption of solar thermal technologies. With the right mix of policies and programs, Canada's solar thermal industry can make the jump to market competitiveness. Over the long-term, this will drive down costs and remove the need for future government support.

In this position paper, we outline a number of broad policy recommendations for all levels of Canadian government. These policies will accelerate the development of the Canadian solar thermal market, creating domestic jobs, saving money on energy bills, and aiding in the transition to a renewable, sustainable energy future.

Canada's energy future matters to all of us. CanSIA believes that solar thermal heating has an important role to play in our energy future. Solar energy is a clean, free, renewable, and abundant source of heating energy. It is in all of our interests to make the best use of it.



Commercial water heating, BC | Viessmann



Community pool heating, ON | Viessmann



Community pool heating, AB | KCP Energy

Canadian Solar Energy Resource

Canada has an abundant solar resource which allows for cost-effective installations of solar thermal heating projects across the country. Germany, a world leader in solar energy installations, has a much more limited solar resource than much of Canada. The graphics below shows the average yearly solar insolation in Canada and Germany. It is clear that Canada has an excellent solar resource that allows us to be a world leader in the industry.

MJ/m²/year

<2250	Dark Blue
2250 – 2700	Blue
2700 – 3150	Light Blue
3150 – 3600	Teal
3600 – 4050	Green
4050 – 4500	Light Green
4500 – 4950	Yellow-Green
4950 – 5400	Yellow
5400 – 5850	Orange
5850 – 6300	Red-Orange
>6300	Red



Solar Resource Map for Canada [1]

[1] S. Pelland, D. McKenney, Y. Poissant, R. Morris, K. Lawrence, K. Campbell and P. Papadopol, "The development of photovoltaic resource maps for Canada," in *Canadian Solar Buildings Conference*, Montreal, QC, 2006.

Solar Heating Introduction

What is Solar Thermal Energy?

Energy from the sun can be actively collected for use by two primary methods: solar thermal energy and solar photovoltaic (PV) energy. Solar thermal energy converts energy from the sun into useful heat, while solar PV creates electricity. Solar thermal energy can be used for both heating and cooling purposes.

Solar thermal heating is a simple and mature technology which can be used to meet a variety of water and space heating needs for residential, commercial, institutional and industrial sites. Solar thermal heating is among the most cost effective form of on-site renewable energy generation.

Solar energy can be used for a variety of heating applications:

Water Heating

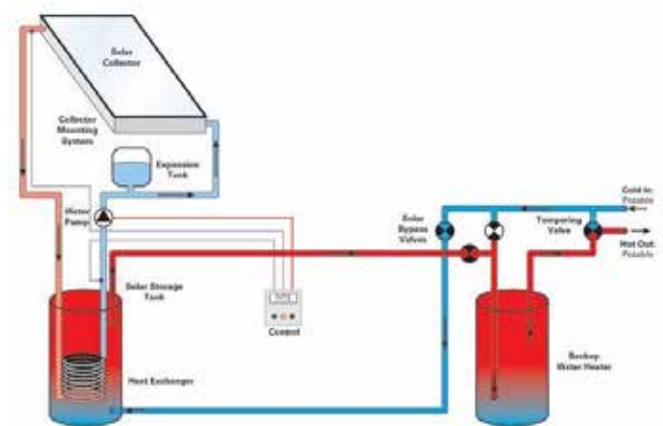
Solar hot water heating is the most widespread application of solar thermal energy worldwide. A typical residential solar hot water system can supply between 40-60% of a home's water heating energy needs. Solar hot water systems are usually integrated with an existing hot water tank to ensure a continuous supply of hot water.

Solar hot water can also be used for commercial, institutional and industrial processes. For example, solar hot water can be used for cleaning dishes in a restaurant or for a variety of industrial processes requiring low to medium grade heat.

A final application of solar hot water is space heating. Solar heated fluid can be circulated through conventional hydronic heating systems, including conventional radiators or a radiant floor system, to provide space heating.



Residential water heating, ON | Enerworks



Solar thermal hot water system
(Source: www.homepower.com [2])

[2] www.homepower.com

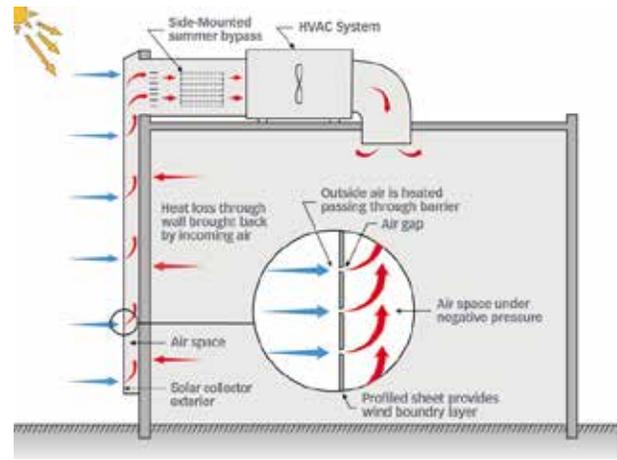
[3] Office of Energy Efficiency, "Survey of Household Energy Use 2007," Natural Resources Canada, Ottawa, ON, 2010.



Chicken Barn air heating, AB | Solarwall

Air Heating

Solar energy can heat air that is to be used in an industrial, institutional, commercial or residential application. Canada is a global leader in the solar air heating industry; technologies that have been specifically developed in Canada are now being exported across the world. Collector panels are affixed to the south wall of a facility, such as a factory, warehouse or airport hangar. As air rises through the panels, it is heated by solar rays and the heated air is vented into the building when it reaches the top of the collectors. Heat collected from a solar thermal air collector can be used for space heating or for industrial processes that require medium to low grade heat, such as drying.



Solar thermal air system

Pool Heating

Pool heating, both indoor and outdoor, is an excellent application of solar thermal energy. Solar thermal systems can use the existing pool pumping system to circulate water through unglazed solar collectors. Solar pool heating systems help extend the swimming season of outdoor pools by two to four weeks, especially if combined with a solar thermal pool cover. Indoor pools can benefit year round from glazed collector systems. Operating costs are essentially eliminated, avoiding the use of electricity or natural gas for heating.



Residential pool heating, BC | Resolution Electric



Residential water heating, BC | Resolution Electric

Benefits of Solar Heating

Reduced greenhouse gas emissions. A majority of Canada's space and water heating requirements are met through fossil fuels [4]. Domestic hot water heating alone contributes roughly 6 million tonnes of CO₂ to Canada's greenhouse gas emissions every year. Solar thermal energy is emissions free, an essential source of energy to rapidly reduce our reliance on fossil fuels. A 2009 report by the C.D. Howe Institute notes that solar thermal technologies provide the most cost-effective way to reduce greenhouse gas (GHG) emissions [5].

Reduced energy bills. Solar energy is a free, renewable energy. Using solar thermal energy reduces your demand for electricity or natural gas, which are expected to increase in price in the coming years. Solar thermal heating systems pay for themselves within a few years of installation, after which the system provides essentially free energy.

Energy conservation. Canada's electricity and gas supply infrastructure is aging and undersized; energy conservation is a major focus of many governments. Electricity provides roughly 40% of Canada's space and water heating needs [4]. Solar thermal is an excellent option for conserving electricity and gas, easing the stress on Canada's utility infrastructure.

Domestic employment. Past solar thermal programs created hundreds of skilled green energy jobs in a cross-section of industries. CanSIA and ESTIF (the European Solar Thermal Industry Federation) estimate that for every 100 m² of solar thermal energy system that is installed, 1 Full-Time Equivalent Job Position is created [6].

Market Barriers

Despite the many benefits of solar thermal heating, the technology has not yet been widely adopted in Canada. This is primarily due to the existence of a number of market barriers:

Lack of financial incentives. Due to the high up-front installation costs of solar thermal, a lack of financial incentives negatively impacts the payback period in comparison to other technologies.

Canada is blessed with an abundant inexpensive energy supply; however there is no accounting for negative externalities. The cost of other heating fuels (primarily natural gas and electricity) in Canada does not account for the cost of carbon, the risk of supply disruption, safety issues, and the volatility of fuel costs. This artificially lowers the cost of these energy sources in comparison to solar thermal, which has a free, clean fuel supply but larger capital costs.

No long-term solar thermal strategy or goals. Without targets, strategy or direction, governments and industry have no way to measure progress or chart a path to a sustainable, mature solar thermal market.

Lack of public awareness. Solar thermal heating is often overlooked by the public and governments when making decisions about renewable energy investments.

The market barriers to solar thermal heating are not unique to Canada; governments here and abroad have long supported the market adoption of solar thermal through policies and programs designed to overcome market barriers. A variety of policies and programs have been developed over time to assist the growth of the solar thermal industry into a sustainable sector.

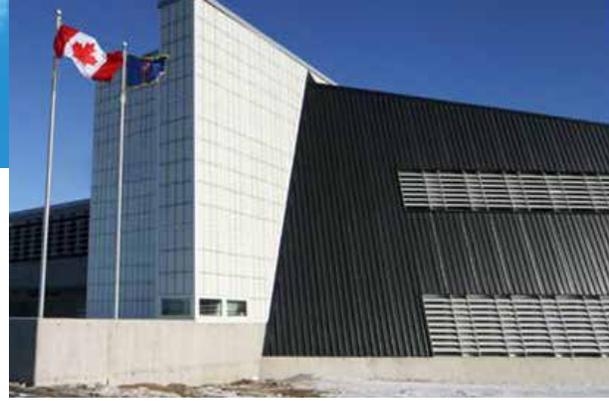
Hotel water heating, BC | Swiss Solar Tech



[4] R. A. Samson and S. B. Stamler, "Going Green for Less: Cost-Effective Alternative Energy Sources," *Commentary*, vol. 282, pp. 1-25, February 2009.

[5] CanSIA, "Ontario FIT Program Review: Solar Thermal," Canadian Solar Industries Association, Ottawa, ON, 2011.

[6] City of Toronto, "Residential Energy Retrofit Program," 2013. [Online]. Available: <http://www.toronto.ca/teo/residential-energy-retrofit.htm#a04>. [Accessed September 2013].



Policy and Program Options

Policies and programs for solar thermal are subdivided into two types: financial and non-financial.

Financial

Financing programs offer low interest loans for solar thermal systems. A common form of this type of program is a Property Assessed Clean Energy (PACE) program. Property owners receive a low-interest loan through a municipality to install a solar thermal system; the loan is then repaid through increased property taxes, while the property owner saves money through lower energy bills. Examples: Halifax's Solar City Program; PACE programs in 30 US States, pilot project approved for Toronto [6]

Performance-based incentives compensate system owners at a premium rate for each unit of heat energy generated. Example: The United Kingdom's Renewable Heat Program

Rebates and subsidies reduce the cost of a solar thermal system through an upfront cash incentive. The value of the rebate or incentive generally depends on the size of the solar thermal system. Examples: Canada's ecoEnergy for Renewable Heat program, expired 2011

Tax incentives, such as income tax credits or accelerated depreciation rates effectively reduce the cost of the system installation. Example: US Renewable Energy Tax Credit



Apartment water heating, ON | Guelph Solar

Non-Financial

Non-financial policies indirectly affect system costs by simplifying, encouraging, or requiring the installation of solar thermal heating systems.

Building code requirements can support or even require the installation of solar thermal energy systems. A 'Solar Ready' building is one that is built in preparation for a future solar energy system (see sidebar). Examples: 32 B.C. communities have adopted Provincial Solar Ready Regulations; Israel and Hawaii require all new homes to have a solar thermal system installed

Permitting process simplification. The process of acquiring permits for a solar thermal system can be expensive, drawn-out, and confusing. Best practices for simplifying the permitting process include clear requirements, standard permits, accelerated processing and approval times, and low-cost permits. Examples: simplified permit processes in Calgary and Germany

Long-term strategies and targets send a message from government to industry that solar thermal energy will be a stable market over the long-term. This encourages investment, growth and innovation, which will ultimately reduce the costs of solar thermal energy and improve the performance of the technology. Example: European Union renewable energy targets for 2020

Education, training and certification. Two key areas require attention: training aimed at improving industry capabilities, and the need to educate consumers about energy issues and opportunities.



Policy Case Study: California Solar Initiative

The California Solar Initiative (CSI) is an excellent example of a comprehensive solar thermal heating program. The CSI-Thermal program is a long-term, well-funded, incentive-based program that has successfully promoted the solar thermal heating industry in California. Project highlights include:

- \$250 million committed over seven year (2010-2017)
- A goal of 200,000 new solar hot water systems
- Funded through natural gas ratepayers
- Subsidies available for both commercial and residential applications
- Simple formula for calculating rebate
- To date, the CSI-Thermal program has approved 1174 projects with a total collector area of almost 32,000 m².

Solar Ready Buildings

A Solar Ready building is built to accommodate a solar energy system (PV or ST) at a future point in time. There are many benefits to building solar ready homes:

- For Homeowners: Solar Ready homes will save money on the installation of a future solar energy system while increasing the value of the home
- For Builders: Solar Ready homes are an environmentally-conscious, low-cost upgrade for new homes
- Manufacturers and installers: Solar Ready homes encourage the market uptake of solar energy systems

CanSIA, in partnership with Natural Resources Canada and the Truss Plate Institute of Canada, developed *Solar Ready Guidelines*, the technical specifications for solar ready homes in Canada. The basic specifications for solar thermal systems ensure that Solar Ready homes have a suitable roof area for a solar energy installation, a conduit from the roof to the mechanical room, and appropriate plumbing connections. Please refer to *Solar Ready Guidelines* for further details.

State of the Canadian Market

Market Overview | 2001 - 2011

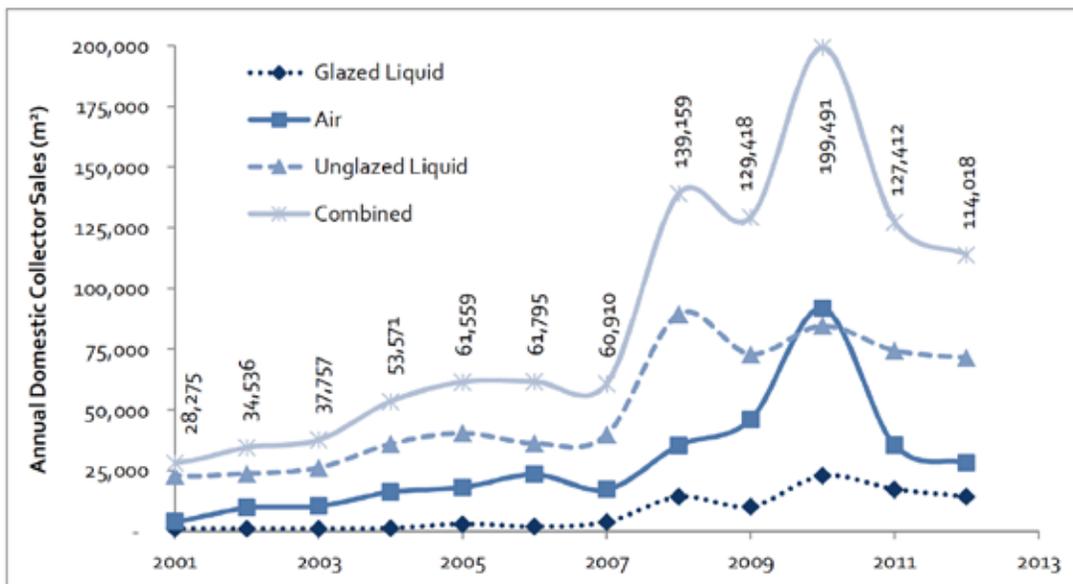
From 2000 to 2007, the Canadian solar thermal market grew at an average annual rate of 16%. The total cumulative installed capacity of operating solar thermal systems more than doubled, from 247 MW at the beginning of 2000 to 513 MW at the end of 2007 (228,000 to 544,000 m²). During this period, liquid solar collectors accounted for 70% of annual market.

The ecoENERGY program, as well as some complimentary provincial programs, accelerated the growth of Canada's solar thermal industry. Average market activity grew annually by roughly 40 – 50% by collector area, with demand for solar thermal air systems surging from under 15 MW per year to over 35 MW per year.

In 2010, Canada surpassed 1,000,000 m² of cumulative solar thermal systems in operation (1,138,800 m² actual) and by the end of 2011, Canada surpassed 1 GW (1,000 MW) in operation (1,041 MW actual).

Market Since 2011

In 2011, the federal ecoENERGY for Renewable Heat program, along with other provincial programs, was cancelled. This has led to a significant decline in the market for solar thermal in Canada. To ensure the ongoing viability of the market, and its contribution to renewable GHG emissions-free energy in Canada, new policies and programs are essential.



Historical annual domestic collector sales (m²) [7]

[7] ClearSky Advisors Inc., "Survey of Active Solar Thermal Collectors, Industry and Markets in Canada (2012)," Natural Resources Canada, Ottawa, ON, 2013.

Comparison to Other Markets

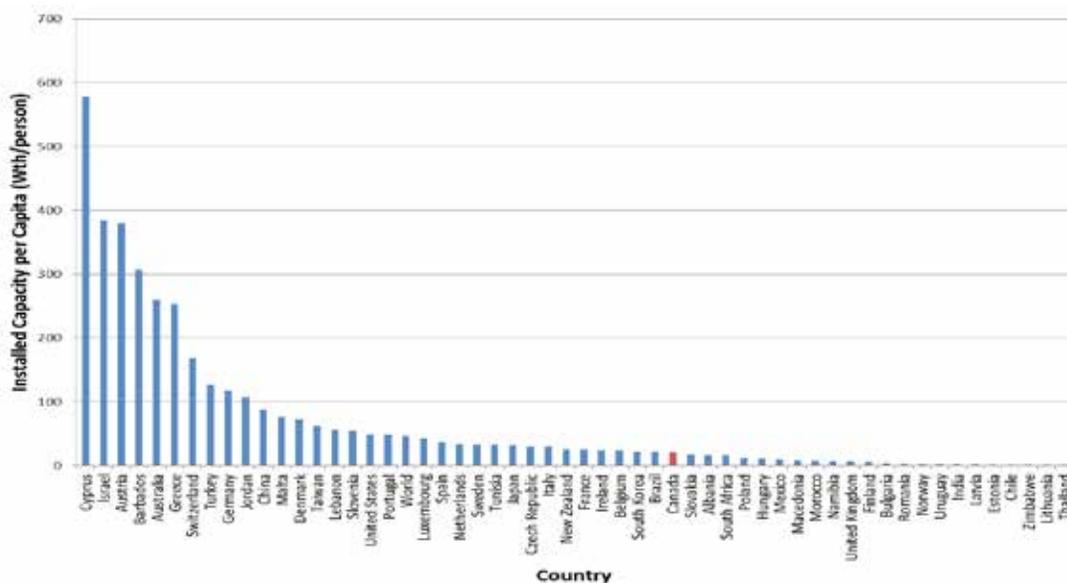
In 2010, the global market for solar thermal heat was 42.2 GWth, equivalent to 60.2 million m² of newly installed solar collectors [8]. The cumulative installed capacity was 196 GWth, or 280 million m², of which 118 GWth (60%) was in China and 36 GWth (18.4%) was in Europe. As mentioned, Canada has an installed capacity just over 1 GWth, ranking 20th out of 55 countries with available data [8].

Over 99% of the world's solar thermal heating market is for liquid collectors. Canada is a world leader in air collectors, ranking 2nd globally in total unglazed air collector capacity and 3rd in total air collector capacity [8]. Solar air heating technology was developed here in Canada, and the square footage of solar air collectors sold here exceeds that of liquid collectors. This is a clear indicator of the incredible export potential for Canadian technology as countries start focusing on solar space/process heating.

Despite success in the solar thermal air market, Canada is being left behind in terms of per capita capacity of solar thermal heat, as shown in the graph below. Globally, Canada ranks 33rd out of 55 countries with 21.2 Wth/person, far behind world leaders Cypress (578.3 Wth/person) and Israel (383.9 Wth/person). Comparisons between Canada and

countries with similar (or worse) solar resources and economies show that Canada could be taking much better advantage of solar thermal heat. Austria (3rd, 379.9 Wth/person), Switzerland (6th, 168.3 Wth/person), Germany (8th, 118 Wth/person), Denmark (12th, 72.8 Wth/person), the United States (16th, 49.4 Wth/person) and Sweden (22nd, 32.9 Wth/person) all have higher per capita solar thermal heating capacities than Canada.

The reason for the disparity between Canada and the global leaders is apparent upon examination of the countries' policies and targets for solar thermal heating (see Table, below). This documents a wide range of policies and programs in support of solar thermal accompanied by installation or energy production targets in many countries around the world. What stands out among this select group is that Canada currently has no national supporting policies or programs and no policy targets for solar thermal energy. Without this support, Canada's solar thermal energy sector is underperforming compared to the rest of the world.



Global overview of installed solar thermal energy capacity per person [8]

[8] W. Weiss and F. Mauthner, "Solar Heat Worldwide: Markets and Contributions to the Energy Supply 2010," IEA Solar Heating & Cooling Programme, Gleisdorf, Austria, 2012.

[9] G. Duffour, "Solar Water Heating in the World: Strong Diffusion due to the Large Impact of Incentives," 1 May 2012. [Online]. Available: <http://www.leonardo-energy.org/solar-water-heating-world-strong-diffusion-due-large-impact-incentives>.

Overview of Global Solar Thermal Policies and Targets

(Source: Leonardo Energy [9], IEA [10])

Country	Current Policy Support	Target
Austria	Rebates Subsidies	1965 GWh _{th} by 2020
Brazil	Subsidies	15 million m ² by 2015
Canada	None	None
China	Subsidies	300 million m ² by 2020
France	Tax Credit Investment Grants	10,780 GWh _{th} by 2020 4 million SWH equipped homes by 2020
Germany	Preferential loans Subsidies	14,480 GWh _{th} by 2020
India	Subsidies Investment grant	15 million m ² by 2017 20 million m ² by 2022
Italy	Tax credit Subsidies	18,445 GWh _{th} by 2020
South Korea	Subsidies	3980 GWh _{th} by 2020 21,890 GWh _{th} by 2030
Spain	Minimum solar contribution to the hot water supply	7490 GWh _{th} by 2020
United States	Accelerated depreciation Preferential loans Tax credits	None

History of Solar Thermal Policies in Canada

Across Canada, a substantial number of solar heating projects, in a wide range of applications, have been developed through past policies and programs. Federally, grants and rebates have been a key driver of past programs, especially the REDI program and the ecoEnergy for Renewable Heat program, which ran from 1997 to 2006 and 2007 to 2011, respectively. These policies led to a substantial uptake in technology in a relatively short period of time, with corresponding growth in jobs for installation, sales, marketing and manufacturing.

At the provincial level, the policy history for solar thermal energy is varied. Some provinces offered programs to match the ecoEnergy rebate, such as Ontario's Solar Thermal Heating Incentive. Nova Scotia currently offers a limited rebate on solar thermal systems, while British Columbia is moving forward with its own solar ready guidelines.

At the local level, various municipalities and utilities have offered rebates or finance incentives for solar thermal installations. Halifax is currently running its Solar City Program with the goal of installing up to 1,000 solar water heating systems per year. In B.C., 33 municipalities have adopted the province's solar ready regulations.

While all of these policies and programs are welcome, the overall policy situation in Canada is still a patchwork of incentives and guidelines, creating unique market barriers and challenges from province to province, municipality to municipality. For this reason, we suggest immediate actions are warranted so that previous investments in solar thermal continue to yield economic and environmental benefits.

[10] IEA, "IEA/IRENA Joint Policies and Measures database," [Online]. Available: <http://www.iea.org/policiesandmeasures/renewableenergy/?country=Canada>.



District heating, AB | Enerworks

Canadian Success Stories: The Diverse Uses of Solar Heating

Solar thermal heating has been used for a variety of purposes, both small and large in scale across Canada. Here are just three of the many examples of successful solar thermal heating applications in the country.

- **Drake Landing Solar Community.** Drake Landing is a planned neighbourhood in the Town Okotoks, Alberta that combines solar thermal technology with energy efficiency to provide over 90% of the community's space heating needs through solar thermal energy. Each home's garage is outfitted with flat plate liquid collectors, over 800 in total. The community has an underground borehole thermal energy storage system to store summer solar energy for space-heating use in the winter. In addition, each residence has its own solar domestic hot water unit to provide up to 60% of the home's domestic hot water needs. Drake Landing is an international success story, receiving numerous awards and demonstrating the ability of solar thermal energy to significantly reduce a community's dependence on natural gas and electricity for heating purposes.
- **MEMO Farm, South Durham QC.** MEMO farm is a pig farm, which requires lots of fresh air for ventilation of its barns. It is expensive to heat all the fresh air during the winter, so MEMO farm installed a solar thermal air system to pre-heat the ventilation air for the barn. The south facades of the buildings are covered in solar collectors, for a total area of roughly 200 m². The payback period for the entire system was less than two years [11].
- **Toronto Community Housing, Moss Park.** Moss Park is a community of affordable housing located in downtown Toronto. The multi-residential buildings require continuous ventilation of the hallways and common-areas, leading to high heating costs during the winter months. Two of the towers were clad with 315 m² SolarWall air heating systems, while the other tower had a 45 m² roof-mounted solar air heating system installed. The solar heating projects improve the operation of the towers, save money and energy, and serve as examples of environmentally conscious buildings for the community [12].
- **Confederation Place Hotel.** Located in Kingston, Confederation Place Hotel offers 94 guest rooms, conference facilities, and a seasonal pool. The hotel has a rooftop solar water heating system for use in guest rooms, onsite laundry, the kitchen, and pool. The system produces 44,155 kWh of solar thermal energy per year, with a payback period of just four years [13].
- **Scott Aqua Park.** The Scott Aqua Park is an outdoor waterpark in Kingston that includes a 10-metre water slide, a lazy river, and toddler pool. It features a 61 m² solar thermal heating system that produces 37,000 kWh of thermal energy per year.

[11] Natural Resources Canada, "Solar Air Heating for Animal Barns," 2004. [Online]. Available: <http://www.cansia.ca/sites/default/files/NB047s.pdf>.

[12] SolarWall, "Thousands of SolarWall Projects in 35+ Countries," [Online]. Available: <http://solarwall.com/en/case-studies.php?dgp=1#system>.

[13] Enerworks, "Case Study: Confederation Place Hotel," 2013. [Online]. Available: <http://enerworks.com/wp-content/uploads/2012/05/Casestudy-Confederation-Place-Hotel.pdf>.



Community pool heating, ON | Viessmann

Policy Recommendations

CanSIA envisions a future in which solar thermal energy is an integral part of Canada's energy mix, providing a substantial portion of the country's heating load. In the future, the solar thermal energy industry will be cost-competitive with other energy technologies, reducing the need for government support.

To reach that stage, the Canadian solar thermal industry needs public support to overcome the existing market barriers. This requires a coherent suite of policies to encourage consumer and industry participation in this important industry. CanSIA has a number of broad financial and non-financial policy recommendations suitable for many levels of government that can substantially improve the outlook for Canada's solar thermal energy sector.

Financial Policy Recommendations

CanSIA supports an incentive or rebate based on installed collector area or expected system performance. Long-term, stable incentives will create the conditions for a viable solar thermal industry in Canada. Previous rebate programs have been very successful in creating demand for solar thermal technology, but further support is required. The eventual wide-spread adoption of solar thermal installations will drive down costs over the long-run, making solar thermal cost competitive with traditional space and water heating applications.

CanSIA also supports the further development and approval of Property Assessed Clean Energy (PACE) programs, which offer low or zero interest loans to homeowners who wish to install solar thermal systems on their houses. PACE programs reduce the financial cost and risk of installation for homeowners, with little risk for municipalities as the loan repayment is tied to the property tax bill.

Non-Financial Recommendations

In addition to the financial measures discussed above, a number of non-financial policy changes can promote the rapid adoption of solar thermal products and services. CanSIA supports the following non-financial policies:

- **Include solar thermal** in all energy conservation and demand side management programs by governments, and fuel utilities
- **Adopt the Solar Ready guidelines.** The building code should be updated to require all new buildings to follow the Solar Ready guidelines. The guidelines have already been created by CanSIA and its partners; this initiative would be low cost for governments. Solar Ready buildings save money on future installations and promote the adoption of solar technologies.
- **Renewable Heat Requirements.** Mandate government and institutional buildings to generate a percentage of their heat from renewable sources, with specified solar energy requirements.
- **Simplify the permitting process.** Dismantle barriers and break down government silos that slow down project development and increase project costs.

Solar Vision 2025

Our vision is a strong, responsive and diversified solar thermal industry in Canada, which delivers high-value energy solutions as Canadian-developed solar products and services achieve market competitiveness on a global scale, requiring no government incentives.

CanSIA believes that with a properly defined solar heating strategy and the correct policy mechanisms supporting it, solar thermal heating will become a mainstream energy technology in Canada, generating a substantial percentage of on-site energy on a wide range of commercial, industrial, residential and agricultural buildings.

With the proper policies and incentives, CanSIA believes the historic growth of solar thermal technologies can resume, based primarily on opportunities in the commercial and industrial markets. These markets can drive innovative product development and economies of scale, with benefits passed on to the residential and other sectors. Another key area of growth is off-gas grid buildings requiring electric space and water heating solutions, as both solar thermal hot air and hot water technologies offer the advantages of a fixed-cost, highly efficient system, along with environmental benefits. CanSIA believes the solar thermal industry can reach an installed capacity of between 8 GWth and 15 GWth by 2025, based on a number of growth scenarios.

For comparison, the Solar Energy Industries Association (SEIA), CanSIA's counterpart in the U.S., just released their roadmap for solar heating [14]. The SEIA promotes goals of 100 GWth by 2025 and 300 GWth by 2050; adjusting for population differences, the SEIA goals are in line with CanSIA's 8-15 GWth projections for the year 2025. To achieve their goals, the SEIA advocates for long-term financial incentives, in the form of subsidies or tax credits, to reduce the upfront capital cost of solar thermal systems. SEIA is also promoting renewable heating mandates at the state level, updates to the building code to require on-site renewable heat generation, and a mix of supporting programs to educate consumers and develop the workforce.

There is a striking unity in the solar thermal goals and policies proposed in this document and by our neighbours to the south. With the right support, Canada's solar thermal industry can flourish not just domestically, but abroad, as nations around the world take advantage of solar thermal energy.

Realizing Our Vision

We all have a stake in Canada's energy future. Achieving our vision of a strong, competitive solar thermal industry will create long-term benefits for everyone – a more sustainable economy, energy security, new businesses and jobs, and a cleaner environment. From industry members to governments and consumers, we all have the opportunity to play a role in accelerating the development of solar energy and creating a competitive industry.

In order to realize our vision for the Canadian solar thermal market, Canada's governments must make a long-term commitment to the sector today. The basic policy recommendations outlined in this document are a proposed starting point for this process.

CanSIA encourages dialogue between policymakers, industry stakeholders, and the public to further our understanding of Canada's energy future, and the vital role that solar thermal energy has to play in that future. Solar thermal energy is a free, clean, boundless energy source with negligible environmental impact and the potential to create jobs and reduce energy price volatility. We can all agree that is a future worth striving for.

With the support of these policy recommendations, as well as creative solutions that should emerge in discussions between stakeholders, Canada's solar thermal industry will continue to develop towards competitiveness at home, and on the world stage. CanSIA encourages all stakeholders in uniting towards our vision of a sustainable solar thermal industry.

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#CanSIA

[14] Natural Resources Canada, "Solar Water Heating Systems: A Buyer's Guide," Government of Canada, Ottawa, ON, 2003.

[15] Rural Renewable Energy Alliance, "Solar Powered Furnace: Solar Air Heat Basics," [Online]. Available: <http://www.rreal.org/solar-powered-furnace/solar-air-heat-basics/>.