



ThermaRay Radiant Heating Case Study



Systems Used:

**Radiant Ceiling Heating Panels
Floor Warming System**



OVERVIEW

Burton, New Brunswick, Canada

Construction:

Single level slab on grade with bonus room over garage
ICF walls @ R22.7
Ceilings R50
9' ceilings
Low-E Argon windows
Insulated steel doors

Other Equipment:

ERV / HRV
Continuous Ventilation (low)
2 independent exhaust fans in bathrooms and 1 in kitchen

Living Area:

2246 sq ft kept at 21°C (69.8°F), 1800 sq ft for garage and bonus room kept at 12°C (53.6°F) (total 4046 square feet)

Inside Design Temperature:

21°C (69.8°F)

Outside Design Temperature:

-23°C (-9.4°F)

Temperature Difference:

44°C (79.2° F)

Average Degree Days:

4817°C or 8670° F

Cost of ThermaRay System:

\$8051.54 (not installed) or \$1.99 sq ft

This house is located near a river on the East Coast of Canada. A combination of radiant heating ceiling panels and floor warming systems were used to maximize comfort. Having a choice of two different radiant systems available from the same manufacturer allowed the owners the freedom to design their home both structurally and decoratively rather than having to compromise due to restrictions imposed by most other types of heating systems.

There are two separate meters: One measuring heating only and the other for all domestic electric use.

<u>Year</u>	<u>Heating KWH</u>	<u>Actual Degree Days (°C)</u>	<u>Actual Degree Days (°F)</u>	<u>Total Heating Cost</u>	<u>Cost Per Sq Foot</u>
2006-2007	15431	4557	8203	\$ 1080.16	\$.27
2007-2008	12101	4612	8302	\$ 847.08	\$.21
2008-2009	15852	4604	8287	\$ 1109.65	\$.27
2009-2010	8169	4081	7346	\$ 571.80	\$.14
2010-2011	7728	4108	7395	\$ 540.93	\$.13
2011-2012	9077	4042	7276	\$ 635.40	\$.16
2012-2013	4780	4097	7375	\$ 334.57	\$.08
2013-2014	9312	4545	8180	\$ 651.84	\$.16
2014-2015	7796	4544	8181	\$ 559.69	\$.14
2015-2016	7170	4264	7674	\$ 501.90	\$.12
2016-2017	9507	4247	7644	\$ 665.45	\$.16
2017-2018	9181	4331	7796	\$ 642.68	\$.16

These figures were acquired over a full 12 month period for each given year.

Utility rate used \$0.07/KWH

Summary

- The capital cost at \$8051.54 (\$1.99 / sq ft) not installed is significantly less expensive than other systems with the exception of electric baseboard heaters.
- The electrical operating costs are significantly lower than people's perceptions - averaged at \$678.43 for a 4046 sq ft heated home.
- The ThermaRay radiant ceiling and floor warming system provides comfort unmatched by convection systems.



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