

Geothermal lessons from Seasons of Tuxedo: The potential of green leasing

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Above: Seasons of Tuxedo is a multi-building, multi-tenant retail development in south west Winnipeg. Received from <http://www.geoxergy.com>



Above: A green lease is a real-estate development opportunity for commercial tenants and landlords. Received from <http://www.greenbiz.com>

Abstract

Key words:

geothermal energy,
commercial real
estate,
retail development,
green lease,
energy efficient,
sustainable

Geothermal energy offers energy efficient design solutions with many benefits for developers, tenants, and the environment. In recent years, Manitoba has become the geothermal capital of Canada and the use of geothermal energy has also increased in the city of Winnipeg (McNeill, 2013). However, many developers and commercial tenants are still waiting to see the value of geothermal energy and are unwilling to pay initial costs and increased rents associated with geothermal technology. An example of this occurred at Winnipeg's Seasons of Tuxedo development, where the original development plan for the north side was changed to exclude geothermal energy. What led to this change in design? What could be done to prevent this from happening in the future? What could be done to more adequately support energy efficient systems and sustainable initiatives such as this? A possible solution is green leasing. A green lease improves environmental performance of leased space by securing critical commitments of the landlord and tenant, and aligning incentives so both parties benefit from adopting green measures (Jones et al., 2013). The geothermal approach at Seasons of Tuxedo will offer lessons to planning practice by recognizing the value of green leasing as a development incentive that could prevent the loss of sustainable and energy efficient development opportunities like this in the future.

Background

In 2012, the Province of Manitoba announced that Seasons of Tuxedo, a new south-Winnipeg retail development, would feature geothermal heating and cooling. Increasing the use of geothermal technology has been a top priority of the Province's climate change and efficient energy strategies, and Manitoba is now known as the geothermal capital of Canada (Government of Manitoba, 2012; McNeill, 2013). Effective policy tools, such as the Green Energy Equipment Tax Credit and the District Geothermal Grant, have been put in place by the Province

To date, 55,000-square feet of the 275,000-square foot mixed-retail site have been completed. Developed by Fairweather Properties, Seasons of Tuxedo consists of a 185,000-square foot box store run on the south side, with other various pad sites forming the remaining area on the north side, across the main parking lot. Originally, the entire site was to be served by a district geothermal energy system that lies underneath this main parking lot. The system was created with the intent to provide "clean, renewable, and efficient heating

time, the north and south sides are served by different energy systems, with the south side being successful at installing geothermal, and the north side being unlikely to include geothermal due to change in ownership.

UNDERSTANDING GEOTHERMAL

In simplest terms, geothermal energy refers to the heat that comes from the earth, or the thermal energy of earth's interior. Compared to natural gas and heating, geothermal energy significantly reduces greenhouse gas emissions, is a clean source of reliable electricity, offers lower operating costs, and is more energy efficient (CanGEA, 2015). To retrieve geothermal energy an underground piping system, known as a ground-coupled heat exchanger, is used. These pipes are in constant contact with the earth and are either closed or open loop. The geothermal system at Seasons is known as a closed ground loop system. Closed loops are sealed pipes buried underneath the ground that carry energy in or out of the heat pump system inside a building. These pipes use environmentally friendly solutions, are very reliable, and require low maintenance. In winter, heat pumps take heat from the ground to heat buildings, and in summer the heat pumps reverse to push heat back into the ground. Heating or cooling is then spread through a forced-air distribution system, similar to a conventional furnace (Geo-Xergy Inc., 2015).



Above: Aerial view of Seasons of Tuxedo. Received from Winnipeg Free Press.

to provide tax rebates and "help offset some of the upfront capital investment" required by a geothermal system (Government of Manitoba, 2012). Developers and investors for the Seasons of Tuxedo development anticipated the use of these geothermal grants to reduce capital and operational costs and allow "for a simple payback to the owner of about eight years" (Geo-Xergy Systems Inc., 2015).

and cooling" to 50 to 60 retail outlets, financial institutions, and restaurants (Government of Manitoba, 2012). IKEA, which is not included in this site, is supported by its own geothermal system. Unfortunately, owners on the north side ultimately did not include the use of geothermal energy on their sites, while the south side is currently "heated and cooled by one of the largest geothermal systems in the country" (Kusch, 2012). At this



Above: Example of trenches for a closed ground loop system. Received from <http://www.geoptimize.ca>

Facts & Outcomes

Ownership of the land on the north side changed during development. The original owner retired and sold the land to two parties who ultimately decided they were no longer interested in the use of geothermal energy. 125 acres were also sold to a Regina developer who plans to designate 60 acres for an outlet mall and rezone 25 acres for multifamily. This area has ownership from at least 3 or 4 parties and coordination for geothermal has proven more difficult with multiple owners.

Due to the changes in ownership and ultimate exclusion of geothermal energy on the north side, many of the original development plans have also changed. For example, a retractable roof system for the proposed mall would have been heated by geothermal

THE SYSTEM AT SEASONS

Designed and built by Geo-Xergy Systems Inc., Seasons of Tuxedo features the largest horizontal ground loop system in Winnipeg and is amongst the largest in Canada. The closed horizontal loop system at Seasons was only possible due to the large amount of space (area of main parking lot) that was available, with two layers of horizontal loops running underground (Geo-Xergy Inc., 2015). The first layer is approximately 5 meters underground and second layer lays at approximately 7.5 meters (Personal communication, April 2, 2015). The six horizontal ground loop modules located under the main parking lot amount to a total of 98,000 feet of horizontal drilling. Four of the ground loops supply energy for heating and cooling to the box store run (south side), while the remaining two supply heating and cooling to the pad sites (north side) through a large distribution loop (Geo-Xergy, 2015). According to Geo-Xergy Inc. (2015), the

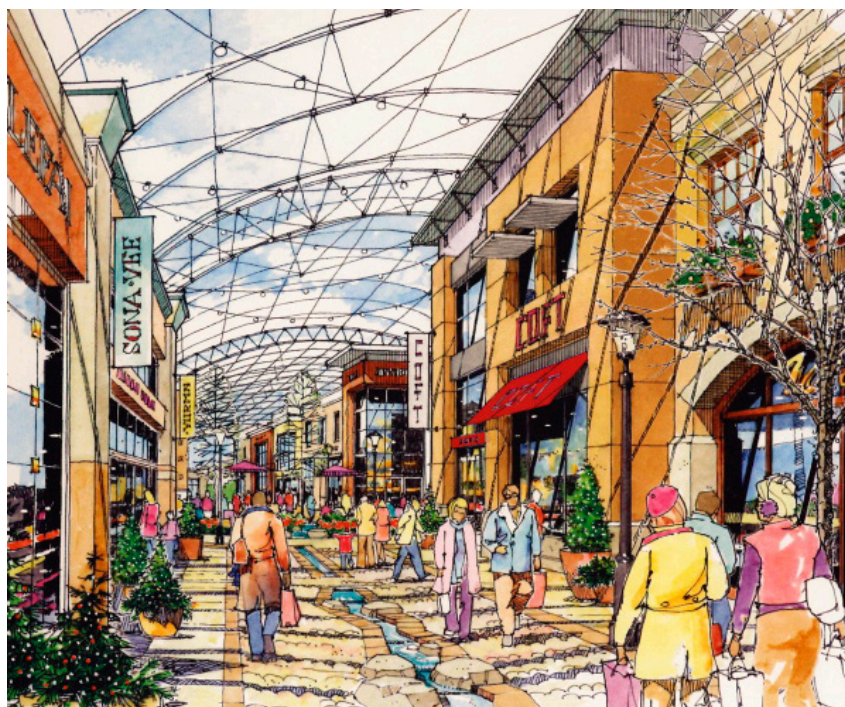
developers retained ownership of the ground loop to operate them as a utility to provide heating and cooling to tenants in each building. The return on investment for this geothermal system was estimated to be less than eight years, with each of the tenants eventually and significantly benefitting from significantly lower utility costs (Government of Manitoba, 2012).



Above: Renders for the North Side. Received from Winnipeg Free Press.

and closed from fall to spring to keep snow out (Personal communication, April 2, 2015). In winter, the walkways between shops would have been heated to 7 or 8 degrees “to keep them warm enough so the floor remained dry but people wouldn’t have to wear gloves” (Personal communication, April 2, 2015). In spring, the roof would begin to retract to be an open street by summer, with no air-conditioning costs and ultimate reduction in the mall’s carbon footprint. At one point there were even plans for four separate wings, each with its own climate and one that could have supported fruit trees. Unfortunately, these plans were hard to sell due to their cost per square foot. Very detailed drawings were done on a unit-by-unit basis to see what the costs to build each unit per square foot would be. It was these initial anticipated costs that made it very hard to attract tenants who were willing to pay for geothermal, due to the fear they would be unable to recover these costs within their lease periods (Personal communication, April 2, 2015).

Being the largest geothermal project in Winnipeg, many strategies were used to mitigate anticipated challenges. For example, water lines and sewer lines were built under the main roadways so geothermal could be kept horizontal under the main parking lot. This is because vertical loops, like IKEA uses, have many potential restrictions due to water, sewer, gas, and hydro lines running through



Above: Previous proposal for enclosed mall. Received from Winnipeg Free Press.

them. Any potential repairs would be very costly. At this time, most of the south side is heated by geothermal, including Mr. Lube, Assiniboine Credit Union, and the box run stores (Personal communication, April 2, 2015). Even with the Green Energy Equipment Tax Credit and the District Geothermal Grant, developers were unable to secure commitments of tenants and landlords for the responsibilities associated with geothermal technology. Perhaps if greater supports like green leasing were in place, more commercial tenants and landlords would be willing to invest in this type of sustainable and energy efficient technology.

GREEN LEASING

Green leasing is a new way for energy and resource efficient buildings to maintain lower operating costs, increase

asset values, reduce utility consumption, and enhance corporate image (Kaplow, 2008; Jones, Lange, & LaSalle, 2013). A green lease does this through the allocation of all risks and premiums to owners by making them responsible for capital improvements, while tenants ultimately reap the benefits of energy savings (Kaplow, 2008). Also, green leases improve environmental performance of leased space by securing a few critical commitments from both the landlord and tenant, and aligning financial incentives so both parties benefit from adopting green measures (Jones, Lang, & LaSalle, 2013). As most commercial lease forms already include a clause devoted to capital expenditures and operating/tax costs, a green lease merely requires restructuring terms and agreements in ways that provide sustainable cost

savings and do not negatively impact building performance or occupant comfort. While there are many direct benefits to the inclusion of green leases, studies have shown that there are also non-direct benefits, such as employees taking fewer sick days and being more productive than employees of non-green spaces (Sobelsohn, 2013).

Lessons Learned

At a time when retailers were increasingly coming under fire to reduce carbon footprints and limit the use of plastic bags, the vision for Seasons of Tuxedo was to be “the greenest shopping center in North America” (Personal communication, April 2, 2015). Developers hoped to capitalize on this “growing awareness from a retail perspective of the environmental impact of space,” but unfortunately some of the original development plans for Seasons fell through (Personal communication, April 2, 2015). The process of development for Seasons of Tuxedo was a learning curve for all parties involved and for a “vision that was very bold, it accomplished a lot to get the conversation started” (Personal communication, April 2, 2015).

According to Paul McNeil (2015) who worked closely on the project, “not many people wanted to be pioneers,” and he maintains, “we got half way” towards reaching the original



Above: Site plan and proposed areas for future development. Received from MMM Group Ltd.

goal and vision for development (Personal communication, April 2, 2015). It is encouraging to know that “people are watching” and if the existing geothermal infrastructure proves successful and people begin to recognize the value in low maintenance costs, perhaps more landlords and tenants would be willing to invest in geothermal (Personal communication, April 2, 2015). For planners, the geothermal system at Seasons offers many important lessons for how to approach and manage development like this in the future. With adequate supports like green leasing in place, perhaps more commercial landlords and tenants would be willing to pay the increased costs associated with geothermal technology.

Conclusion

Geothermal technology can provide reliable, sustainable,

and energy efficient heating and cooling systems to commercial tenants. Even with recognition from the Provincial government and options for financing in place, some landlords and tenants remain unwilling to pay for the increased costs associated with geothermal technology. Lessons from Seasons of Tuxedo demonstrate how more adequate supports, such as green leasing, may have been able to prevent the exclusion of geothermal technology from north side tenants. The potential of green leasing to provide the necessary provisions should be considered by investors and landlords so commercial tenants do not lose out on the positive benefits associated with geothermal technology. Perhaps planners could encourage the incorporation of green leasing to commercial owners and landlords so geothermal technology is utilized in all developments where the infrastructure already exists.

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