HEATING THE HOSPITAL WITH SUPERCOMPUTERS

In a series of articles published last year by Érick Rivard, various situations that could take advantage of the expansion of the Enfant-Jésus Hospital in our neighborhood were suggested. The Siberian cold hitting our neighborhood this winter has inspired me to talk about a different idea: heating the hospital with supercomputers!

In hospitals a substantial amount of air needs to be recycled so that bacteria do not multiply. Therefore it is not enough to insulate the building in order to achieve good energy efficiency. It is necessary to find a means to quickly heat the new air that is constantly coming into the building.

At -30 degrees Celsius, that requires a lot of energy. Of course, we have affordable electricity in Quebec, but the means for producing said electricity are becoming more and more contested.

What about killing two birds with one stone? We could convince data center makers to install operations beneath the future l'Enfant-Jésus expansions. The computers would be liquid-cooled by an abundance of pipes, and the resulting heated water could be sold to the hospital to make up for heat lost from entering cold air. The surplus hot water could conceivably be sold to the city of Quebec, just like the system in Stockholm which provides hot water to its citizens.

Why Limoilou?

But why set this up in Quebec City, and more particularly in the Limoilou neighborhood rather than Europe or the United States? First of all, the cost of our electricity is affordable, but that isn't enough. Thanks to the shale gas controversy, electricity produced in the US can be sold at prices as low as two cents per kilowatt-hour. Even with Hydro-Québec's contested special tariffs, the price in Quebec cannot fall below four cents. However, we have winter! The Siberian cold that we've faced lately could in fact cool the water that enters into the supercomputers free-of-charge for the better part of the year. The colder the water, the less electricity that the supercomputers will consume. For the manufacturer, this means that supplying their computers will cost next to nothing (such a device can cost up to $150,000 and its electricity requirements equal that of several dozen villages).

Finally, Quebec offers another advantage that cannot ignored: the energy consumed will be green energy. Rather than shale gas, coal, oil, or nuclear energy, totally renewable hydroelectricity or wind power will power everything.

Who could we attract to our neighborhood?

We could attract mayor Régis Labeaume's major data center project. Or we could attract companies like Apple, Facebook, and Google, whose data centers are springing up everywhere to allow us to use social networks and smartphones. But in order for the project to bring progress to our neighborhood and society, it would be best to attract virtual testing facilities like those used by automobile manufacturers such as BMW. Rather than testing with real cars and crushing mannequins against walls in specialized chambers to evaluate aerodynamics, companies like BMW now use large computers to carry out repeated tests at low cost.

With its proximity to downtown and main roadways, its liveliness, its quality of life, and its still affordable real estate market, Limoilou possess everything necessary to attract these businesses. Moreover, Quebec City has a university capable of providing qualified workers thanks to its departments of electric, computer, software, physical, and mechanical engineering.

Source: http://www.globalsiteplans.com/environmental-design/communityeconomic-development/heating-lenfant-jesus-hospital-of-quebec-city-canada-with-supercomputers/