



This schematic shows four different building typologies from an energy systems perspective, and how they are all connected to the district heating and cooling system.

SHIFTING THE PARADIGM

“How on earth can that work? Hot air rises.”

That’s the response of most North Americans who have contemplated the radiant heating system embedded in the ceilings of the Olympic Village. When hot air systems are all you’ve experienced, it’s a struggle to understand how heat energy carried by water can “come down” from above.

This is just a single example of the paradigm shifts – outside our experience and often beyond our current understanding – that we must make to achieve a sustainable society.

As the globe warms, alarmingly more quickly than originally forecast, we need to challenge almost all of our existing paradigms. And we need unprecedented collaboration and buy-in, across a diverse set of professions and individuals, if the necessary paradigm shift is to occur.

To achieve the energy efficiency goals of the Olympic Village, designers, engineers, contractors and trades had to drop traditional boundaries. Architects worked within passive design constraints aimed at satisfying engineering standards for thermal comfort. Engineers supported trades

in learning how to install unknown technology. There was risk involved – how do you quote on a job when you’ve never done it? Yet, as the work progressed, new capacity was developed. Numerous firms in the Vancouver area now have experience with a highly energy-efficient alternative – from estimates to installation.

The paradigm shift still lacks a final piece, however. Future Village inhabitants must also learn the technology – from a thermostat that doesn’t show air temperature, to knowing how to treat their ceilings. They will be provided with a device that will report how much energy they are using – but they must choose whether to care, and whether to reduce their consumption to a sustainable level.

An integration of skills and knowledge was necessary for the energy systems to be designed and implemented at the Olympic Village. But an integration of intent – from designer through to resident – is required to deliver the project’s potential. This is certainly a new paradigm: working across differences to solve a global problem. The Olympic Village provides hope that we may be able to arrive at such an integration of intent, and make the paradigm shift we need.

This chapter tells the story of energy systems at the Olympic Village, from sewage to ceiling. The details of the systems themselves – while rich with innovation at present – may fade in relevance as technology continues to improve. Critical in these pages, however, is the story of shared problem-solving, learning, patience and cooperation. The tone of urgency is appropriate too – driven on this project by the tight deadline, but looming over us much more widely as the world’s climate changes.

The story begins at the end, with the closed-loop concept of energy being drawn from what has already been thrown out. The Southeast False Creek Neighbourhood Energy Utility will produce from sewage much of the energy required by the Olympic Village and adjacent

neighbourhoods yet to come. The chapter moves on into radiant energy and energy design, and includes stories of implementation. Finally we detail the behavioural supports – the how and why of measuring energy use and the hoped-for results of providing that information to residents.

Energy is, without question, a critical topic in a shift to sustainability. Not only does energy efficiency correlate in most jurisdictions with greenhouse gas reduction, it is also an area of sustainability where problems and progress can be precisely measured and subjectivity kept to a minimum. If you save energy, you generally save money. For all these reasons, raising the bar in this area is critical to gaining the momentum we need.

“We need unprecedented collaboration, across a diverse set of professions and individuals, if the necessary paradigm shift is to occur.”