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Building a greener house

Architect Nick Bray is designing homes to be lean, clean and beautiful

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Nick Bray Architecture designed the "Eastside Upside" house to be sustainable, flexible and, most of all, livable. PHOTO BY SUPPLIED /PNG

If you love the idea of a gas fireplace, Nick Bray has some bad news for you.

“A gas fireplace or a gas cooktop in a modern apartment building . . . these ideas of the past just don’t apply any more,” says the Vancouver-based architect. “Gas fireplaces just aren’t practical. In a modern, air-tight apartment, it just overheats as soon as you turn it on. And it’s like living with someone who smokes. These romantic ideas of the past just don’t apply today.”

Gas, be it for heating, cooking or creating a cosy ambience, is gradually being phased out in new B.C. homes. It’s just one of the changes we can expect to see in the new generation of energy-efficient buildings, which will not only function differently, but look different, too.

Leading the effort in redrawing how we live are architects like Bray, who won four HAVAN Awards in 2021 for his work (Best Custom Home, Best High Performance Home, Excellence in Building Science Innovation and Best New Kitchen).

He describes his style as “certainly modern,” but adds: “I’d like to think [we’re] progressive as well, not just in terms of sustainability, but all types of technology and community. One thing that came out of COVID was not just [the need for] open spaces, but the need for people to interact, for mental health reasons, especially in Vancouver where we keep building towers where nobody knows their neighbour.”

He’s recently been working on a number of mid-rise apartments and a community centre with inclusive washrooms and Indigenous elements. But mostly he’s working on energy-efficient builds.

“All the houses we’ve done are energy efficient,” he says. “We’re focusing on carbon and trying to reduce it both in construction and when the building is operating. But whether you go for certification is another matter.”



Nick Bray designed the "Passive Narrowtative" house to make the most of a skinny urban lot in East Vancouver. PHOTO BY SUPPLIED /PNG

By “certification,” he’s referring to programs like Passive House, Net Zero and our own BC Energy Step Code. This is an optional compliance path in the BC Building Code that encourages the design and construction of more energy-efficient buildings. Communities can offer incentives to builders to meet steps along the path, with the highest, Step 5, reaching Net Zero, where a building produces as much energy as it uses.

“North Vancouver, for example, and West Van as well, are very much moving toward Step Code 5 and very much moving away from natural gas,” Bray says. Natural gas is a major source of methane, which, along with carbon dioxide, is one of the main greenhouse gases that contribute to global warming; a growing body of study also suggests it produces unsafe levels of air pollution in our homes.

“The way all of these buildings are designed is they have ERV (Energy Recovery Ventilation) or HRV (Heat Recovery Ventilation) built in—ventilation systems that bring in fresh air and exhaust stale air,” Bray explains.

“They’re not taking away the ability to open windows; you just don’t have to because you have constant fresh air.”

He adds: “There’s some serious health benefits to this. We are getting some seriously air-tight buildings. It makes so much difference to the efficiency.”

But it also makes a lot of difference to the home’s appearance.

“The reality is that energy modelling is pushing us toward a cube with no features—that is the most efficient form,” Bray says. “The more bits you have hanging off it, the less efficient it is. That’s the challenge. We’re trying to do something that allows some expression at the same time.”

If a featureless cube sounds a lot like that classic of local design, the Vancouver Special, well, you're not far wrong. Bray notes that there are right and wrong ways to create a forward-looking design that still pays respect to traditional local styles, especially our much-loved West Coast modernism. Using canopies and overhangs is one way to adapt the traditional features of the West Coast modern house, he says. So is using traditional materials like exposed cedar.

There is currently no material advantage to building a house to Step Code 5, Net Zero or Passive House standards, aside, of course, from having "a higher quality, higher performing building." As Bray says, "Right now, our experience of it is well-meaning clients and developers interested in making a positive difference." But the plan is to bring the entire industry up to Step Code 5 by 2032, which is only a decade away.

It's not just the energy a house uses—so-called operational carbon—that's an issue. There's also what's called "embodied carbon," the CO₂ emissions associated with materials and construction processes throughout a building's entire life cycle. Among these, cement is the biggest villain, its production responsible for about seven per cent of the world's CO₂ emissions.

"There's no point building an energy-efficient building if you're using terrible materials," Bray says. "There's a really steep learning curve here."