

Deputation

To: City of Toronto - Infrastructure and Environment Committee

Date: December 2, 2021

Item: IE26.16, TransformTO - Critical Steps for Net Zero by 2040.

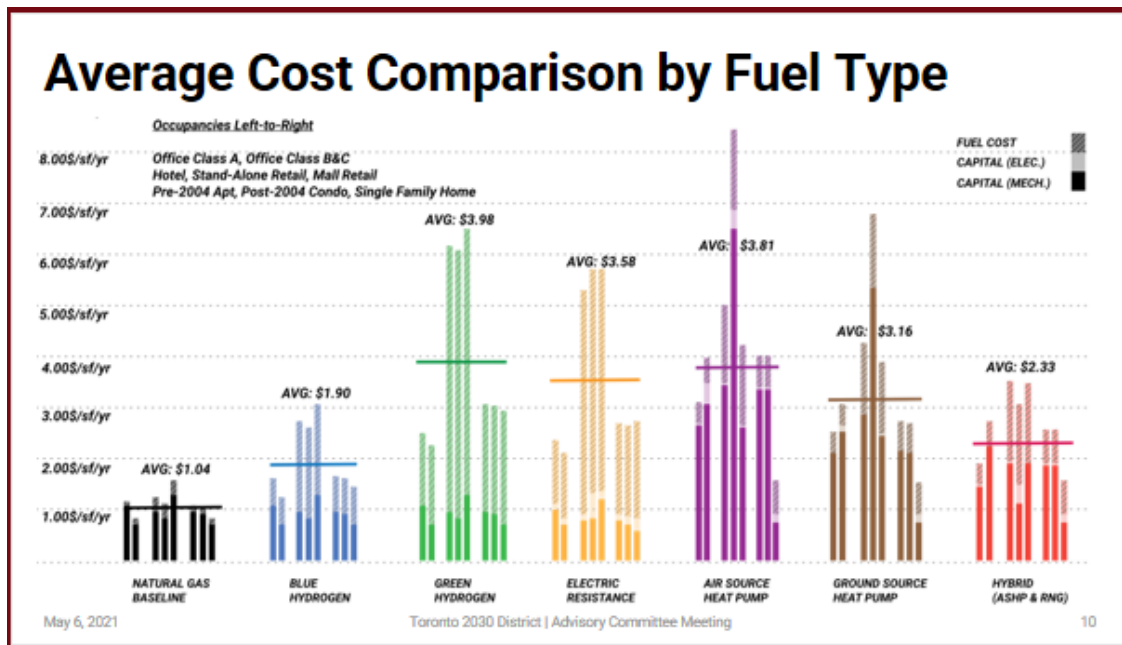
From: The Toronto 2030 District

Sheena Sharp, Vice Chair; Co-Chair of the Pathways Project

We are a collective action not-for-profit made up of building owners, consultants, contractors and suppliers. Our owners manage nearly 30M sq.ft. of buildings in all asset classes in Toronto's downtown. To be a member you have to support the 2030 climate targets which are 60% reduction in District emissions below 1990 by 2032, and a hundred 100% reduction by 2050. These targets follow the science put out by the UN and are similar to Quebec's targets. This is not a pledge that you have a plan in place, it's a pledge to collectively figure how to do it.

We are currently focused on a project we call The Pathways Project which aims to identify the most economical path to decarbonizing the District's buildings.

The approach we took was to start with analyzing the options for switching buildings off fossil fuels because it is the one thing we know has to occur. We started with data from our previous project, the Toronto 2030 Platform, that established GHG emissions for the 2030 District buildings from block level utility data. We used typology modelling to arrive at indicative costs per floor area for 6 scenarios for converting existing buildings to clean energy. The results are summarized in the following chart.



In addition to the costs, we assessed the practicality of building out the distribution system for each energy scenario, and determined that the two most practical were complete electrification based on cold climate heat pumps, and a hybrid system of green gas and standard heat pumps. We also determined that, for both these systems, we already have the distribution systems in place, and it was

feasible for the systems to handle the loads. Of course, these alternative energy sources cost more. If the fuel switch did not cost more, it would have already happened.

We then evaluated whether deep energy efficiency measures would reduce the costs of fuel switching. If they would, the implementation could be in any order: fuel switch first or deep energy efficiency first. However, we found that energy efficiency they will not reduce the cost of fuel switching in buildings. Essentially, even though the fuel cost was more, the savings from reduced energy consumption were not enough to recover the amount spent on deep energy retrofits.

That does not mean that energy efficiency should not be pursued, but it is not the priority. We recommend fuel switching first approach. It has the following advantages:

- The low current cost of natural gas means that savings will not drive the deep energy retrofits needed to optimize fuel switching.
- Switching out gas fired equipment is much less disruptive than a deep energy retrofit, which usually involves the building envelope.
- If a building is in a position to undergo major disruption, for example when it changes owners or occupancy or when it has reached an age that it needs an overhaul, then owners will do deep energy retrofits because doing the work as part of a larger scope will achieve additional benefits of reduced cost, value preservation, improved comfort, etc that deliver the necessary returns to pay for it.
- Fuel switching first is the only potential way to meet the UN target of 60% reduction by 2030. Deep energy retrofits could save about 60% of the energy if done on all buildings. But we would have to do major, disruptive renovations on 100% of our building stock to achieve that. This is not realistic. If we fuel switch first, then we would have to replace the gas equipment in 60% of the buildings by 2030. Still hard, but its achievable with the right policies and clear direction.
- The reason to do efficiency first seems to be that the industry is used to cutting energy costs, and it lets us kick the fuel decision into the future. But cutting energy costs will not drive the sort of retrofits needed to achieve zero carbon. And we have to stop passing the real problems onto the next election cycle, and our children. Fuel switching is difficult for the City to motivate because it does not control the energy distribution systems, the province does. However, not having the control is not a good reason to choose a strategy that is less likely to succeed.
- We understand that additional costs will be difficult for some. We estimate, for example, that the costs to a MURB is \$2psf per year, or about \$1400 per year for a \$700sf 2 bedroom apartment. It is not reasonable to assume that these costs will not impact rents. Subsidies to individuals may be required, however, the best way to protect tenants to keep the costs as low as possible. Efficiency first is more expensive.

It will take courage and leadership – but switching off fossil fuel should come first. All new buildings need to be electric or hybrid gas/electric now. And the policy supports need to be in place to rapidly adopt fuel switching in existing buildings at the rate needed to meet the science-based target.

One of the key insights, on page 55 of the Net Zero Strategy, should be the focus:

“Fuel switching and a clean electricity grid are the two most significant technical requirements for achieving net zero emissions.”

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