To the City Clerk:

Please add my comments to the agenda for the March 27, 2024 Infrastructure and Environment Committee meeting on item 2024.IE12.3, Toronto's Climate Change Readiness: Updates on commitments and a refreshed mandate for coordinating resilience activities

I understand that my comments and the personal information in this email will form part of the public record and that my name will be listed as a correspondent on agendas and minutes of City Council or its committees. Also, I understand that agendas and minutes are posted online and my name may be indexed by search engines like Google.

Comments:

Dear Members of the Infrastructure and Environment Committee:
Councillor Mike Colle (Co-Chair)
Councillor Jennifer McKelvie (Co-Chair)
Councillor Amber Morley
Councillor James Pasternak
Councillor Anthony Perruzza
Councillor Dianne Saxe

I'm writing on behalf of Morgan Solar, a company founded in Toronto in 2007 and based in York South-Weston. Solar energy and zero emission technologies generally have completely transformed over the last decade, and what is possible from a technical and economic perspective is incredibly exciting right now.

A lot of thinking about net zero retrofits and the green transition generally are mired in fears based on facts that have changed already. Outdated perceptions persist unfortunately, and I hope my letter can help clear some of them up.

I am a strong advocate for a "fuel switch first" approach; switching from natural gas to heat pumps before doing deep energy retrofits to address insulation improves local air quality, is affordable, and cuts GHG emissions. Even if the electricity used to run a heat pump comes from fossil fuels, the overall emissions into the environment is reduced because heat pumps are so much more efficient than gas boilers.

And there is no reason that the energy used to run a heat pump needs to come from fossil fuels. Regardless of what short term blip may occur where the grid uses more fossil fuels briefly, the underlying economics of solar energy, wind energy, batteries, and geothermal are such that the grid will continue its long term trend towards getting cleaner.

Residents and businesses will have the ability to choose to make their own energy thanks to rapid advances in the field of building integrated photovoltaics, which will cut operating costs and improve energy efficiency. A barrier faced by residents and businesses are the timeliness and cost associated with getting permission from Toronto Hydro, which is out of step with

other jurisdictions. The relatively small amount of solar energy on Toronto's grid means that we can and simplify the interconnection process, and cut cost and time.

The city should lead by example in all of its facilities, mandating a scheduled replacement of any gas boilers with air to water or air to air heat pumps as appropriate. Solar energy should also be deployed at these sites to offset electricity use by those new heat pumps.

A longstanding criticism of solar energy has been that there is plenty of it in the summer and not enough in the winter. Two recent developments in this field have changed these dynamics, and this is another outdated criticism.

The first new development is the emergence of BIPV, or building integrated photovoltaics. While the current plans the city has published calls for some ground-mounted solar energy, this is out of step with the fact that we are in an urban context and that ground spaces and parks are precious. Most of the sunlight falling on the city hits buildings. Building facades can be electrified without sacrificing their aesthetics and a beautiful solar facade that my company is building at the moment at the Bridlewood TPL is an example of the kind of thing that is possible with technology today. We are also working with corporations like Cisco and BGIS to pilot Energy Blinds in Toronto, which are solar panels that masquerade as window blinds and which bring much needed clean energy into new builds and retrofits without massive construction costs. Building integrated photovoltaics on vertical facades and in windows produce energy with relative uniformity year round, with production in the winter and summer months being roughly the same.

Another development is coupling of rooftop solar systems with ground source geothermal heat storage. Morgan Solar participated in a green energy retrofit at the Ontario Architecture Association on Moatfield Drive, where the surfeit of energy in the summer months is pumped into the ground and stored to be recalled in the winter months to heat the building. The system uses heat pumps to both heat and extract thermal energy from the ground source and, remarkably, the system has proven capable of efficiently holding onto heat across the seasons and eliminating the need for fossil fuels. The University of Toronto, where I was formerly a member of the Governing Council, has also built a similar system of boreholes under a new parking lot for thermal energy storage and use.

Do not believe the naysayers claiming it cannot be done. In the words of the sci fi author Arthur C. Clarke, "The future is already here, it's just not evenly distributed." These technologies are available right now and can be scaled across the city, to eliminate emissions from fossil fuels, improve air quality, and do our part to limit climate change.

Best regards,

John Paul Morgan
President and Chief Technology Officer, Morgan Solar Inc.