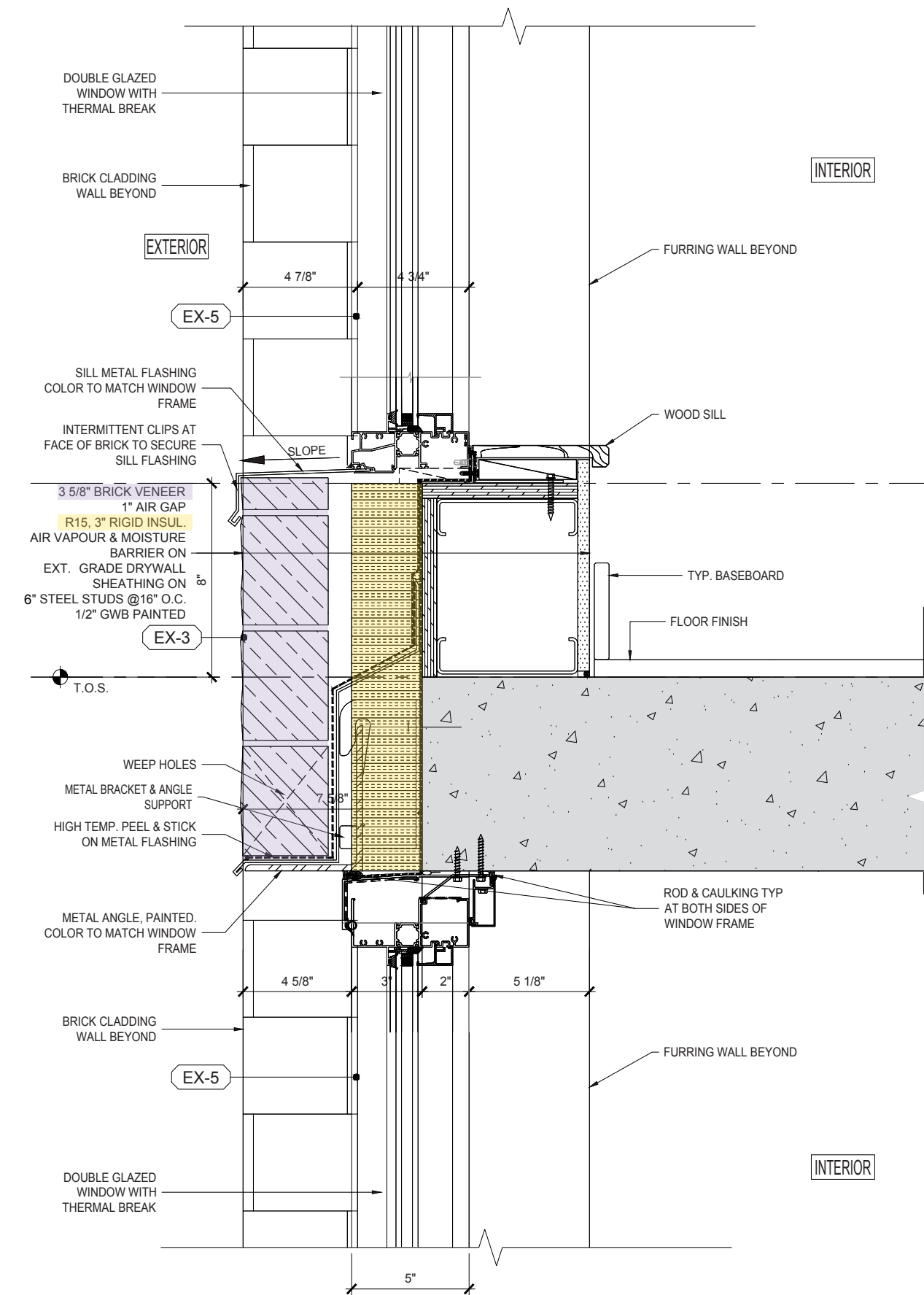
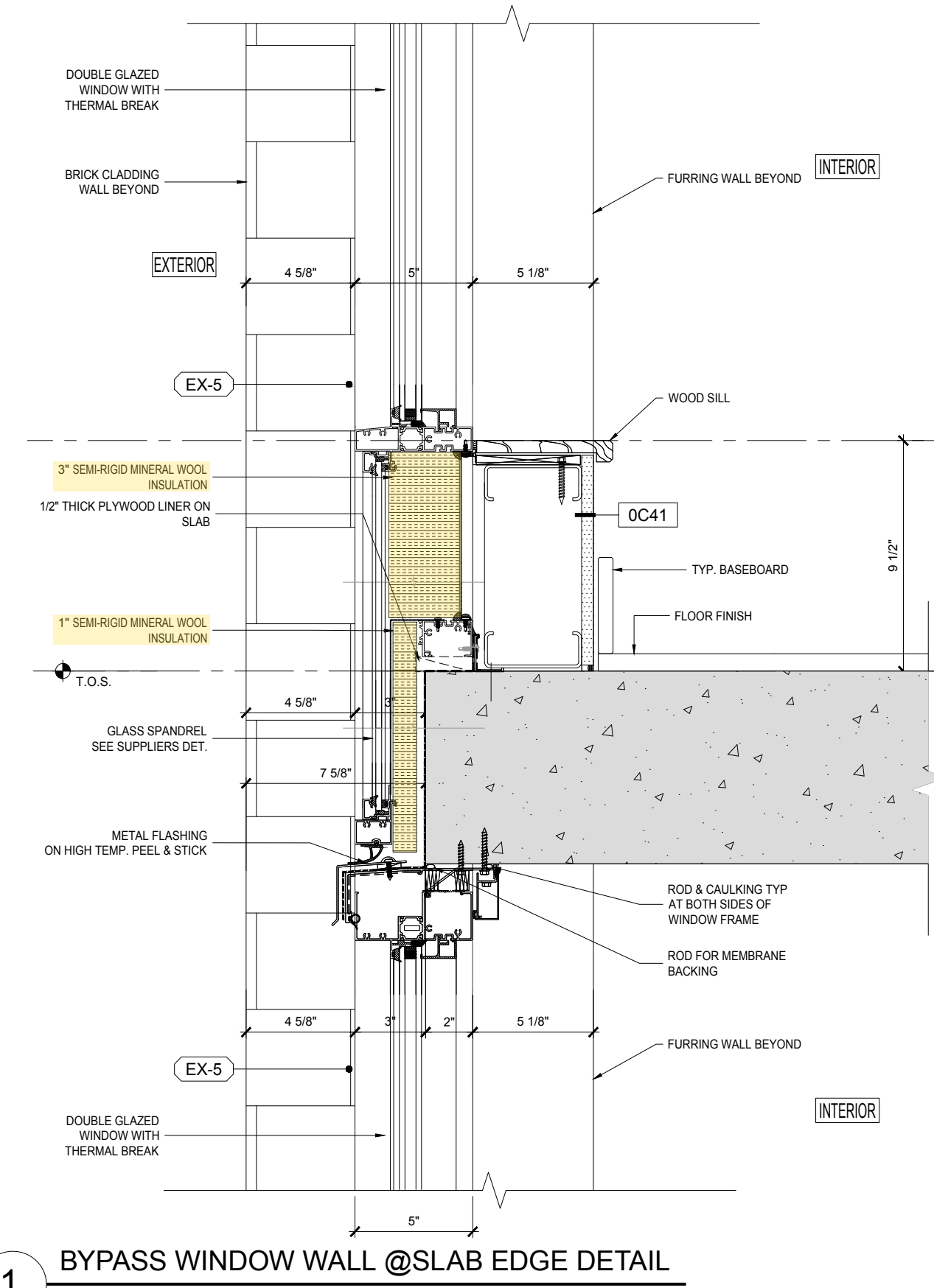


# SUSTAINABILITY – ZERO EMISSIONS BUILDING PLAN

The City of Vancouver's Zero Emissions Building Plan (ZEBP), among other requirements, sets out building performance targets for projects going through rezoning. The performance requirements shift in focus away from "percentage better than code" and towards absolute performance, with three metrics forming the basis of the requirements.

### KEY ENERGY SAVING FEATURES

- Heat recovery on ventilation air
- High performance envelope
  - Interior lighting power reductions in common and retail areas
- Low flow plumbing fixtures achieving 20% DHW flow savings
- Variable Refrigerant Flow system in retail area



**TEUI** – Total Energy Use Intensity, in units of equivalent kWh/m<sup>2</sup>, is the overall total energy use of the building per unit of area. All energy use and efficiencies are accounted for.

**TEDI** – Thermal Energy Demand Intensity is in units of equivalent kWh/m<sup>2</sup>. This metric represents the annual heating load of the building, which is generally reflective of the performance of the envelope and quantity and performance of the ventilation systems, on a per unit area basis. It does not account for the efficiency or type of the heating system.

**GHGI** – Greenhouse Gas Emissions Intensity is the kg/unit area equivalent of CO<sub>2</sub> generated by the building annually and includes all utility uses on site.

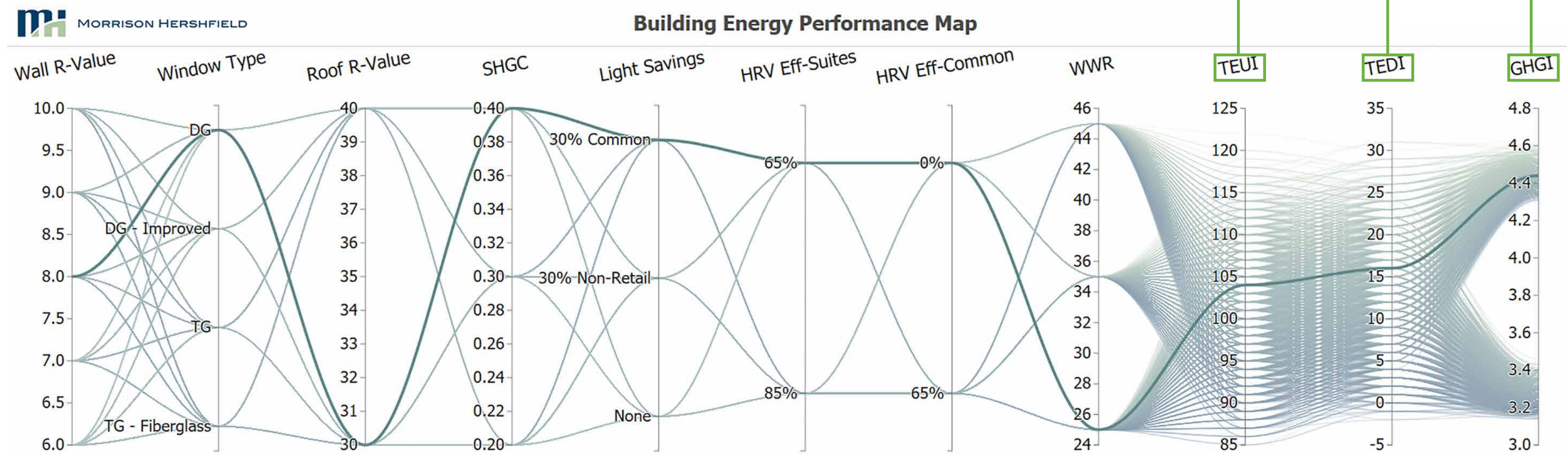


FIGURE 3: SIMULATION RESULTS SUMMARIZED IN PERFORMING MAPPING TOOL

Morrison Hershfield analyzed the energy performance of the building by running a large number of design options on the base energy model to identify which combinations of options could meet the required performance targets. Our interactive data visualization tool, the Building Energy Performance Map, allows us to visually and quickly assess the impact of any combination of design options on specified metrics, in this case TEUI, TEDI and GHGI. A screenshot of the tool is shown in Figure 3, where each line represents one simulation, and each axis represents a parameter in the simulation or an output from it. The location where the lines cross the axes corresponds to the value of that parameter or output for the given simulation.

### RESULTS

A parametric analysis was performed using the energy model and various scenarios were investigated. A summary of the base results for a likely scenario is shown in the Table 2. The new rezoning policy requires that buildings of different types meet different targets and that they use area weighted values for mixed-use buildings. The Commercial and Broadway project is a mix of retail and residential spaces so the weighted targets are listed in Table 2 below. There are also requirements for limiting over- and under-heated hours. Based on our initial assumptions, and the rules laid out in the draft City of Vancouver Energy Modelling Guidelines, the preliminary design meets the requirements of the new rezoning policy.

	Electricity (GJ)	Gas (GJ)	Total (GJ)	TEDI (ekWh/m <sup>2</sup> )	TEUI (ekWh/m <sup>2</sup> )	GHGI (ekgCO <sub>2</sub> /m <sup>2</sup> )
Proposed Design	2,022	687	2709	16.3	104.1	4.4
Target	-	-	-	31.2	123.5	5.8

TABLE 2: SUMMARY OF ANNUAL ENERGY MODELLING RESULTS

# SUSTAINABILITY – SUMMARY OF PROPOSED MEASURES



December 16, 2019

Dear Scott Erdman  
Rezoning Planner | Vancouver – Midtown  
Planning, Urban Design and Sustainability | City of Vancouver

**Re: Sustainability Statement, 1619-1651 East Broadway**

Jameson Broadway & Commercial LP's proposed retail and residential building at 1619-1651 East Broadway is being designed to meet the City of Vancouver's new Green Buildings Policy for Rezoning.

Vancouver City Council approved the new Zero Emissions Building Plan in July 2016, adopting a target to reduce emissions from new buildings by 90% as compared to 2007 by 2025 and to achieve zero emissions for all new buildings by 2030. The plan establishes greenhouse gas emissions limits and thermal energy limits for new buildings. As part of the implementation of the Zero Emissions Building Plan, the new Green Buildings Policy for Rezoning was approved by council in November 2016, adopting targets and policies around energy, greenhouse gas emissions, water and waste reductions, healthier homes, and resiliency. We believe this project will be in compliance with the new Green Buildings Policy for Rezoning, using the strategies outlined below.

Energy use intensity, greenhouse gas emissions, and thermal demand of the building (TEDI) will be minimized, using:

- Ventilation air heat recovery, minimizing mechanical heating requirements while supplying outdoor air
- Exterior insulated wall assemblies to minimize thermal bridging and maximize effective thermal performance.
- Reduced window areas to below 45%, minimizing heat loss through glazing.
- Heating provided by electric baseboards, minimizing greenhouse gas emissions.
- Domestic hot water provided by high efficiency natural gas heater for residential portion of the building.
- High-efficiency LED lighting in common and suite areas, and occupancy sensors for lighting in common areas, minimizing lighting energy use.
- MRL elevators to reduce elevator motor consumption.
- Central switch in each suite to shut off all plug loads, minimizing phantom power.
- Passive cooling will be achieved using operable windows located to enable significant opening areas (i.e. restrictors not required), providing natural ventilation. Larger windows are strategically located under balconies to provide shading, and within portions of the floor plate near internal corners, using the building shape to provide vertical shading. Window sizes are minimized, minimizing solar heat gain, and windows are slightly recessed, providing some additional shading due to the exterior insulated wall assemblies.
- A VRF system with HRVs will be used for retail, reducing greenhouse gas emissions and thermal demand.

- 2 -

- DHW for retail tenants will be supplied with electric hot water heaters, reducing greenhouse gas emissions.

These strategies are expected to meet the City of Vancouver's new energy use intensity, greenhouse gas, and thermal demand targets, based on parametric energy modeling analysis of an archetype multi-unit residential building. A detailed model is under development and additional parametric analysis will be conducted to ensure that the proposed strategies meet the targets. The model will also include an analysis of overheating in suites to ensure that passive cooling strategies meet the city's requirements. This will help ensure that the building occupants will have a comfortable environment and that suites will not overheat.

Jameson Broadway & Commercial LP has also committed to conducting whole-building airtightness testing, engaging a Commissioning Authority to conduct enhanced commissioning, designing for direct ventilation, and selecting low-emitting materials. Indoor air quality testing will be conducted for a sample of suites. Morrison Hershfield has been engaged to conduct a life cycle analysis to calculate the embodied and refrigerant emissions over the life of the building.

Each residential suite and retail tenant in the building will be separately submetered.

Clean drinking water access will be provided in the amenity space for building residents.

Integrated rainwater management and green infrastructure strategies are being designed for, and will be shown on drawings and in the draft integrated rainwater management plan.

We trust that the above description of the project's design strategies clearly documents how the proposed retail and residential rental building at 1619-1651 East Broadway will meet the City's new rezoning policy.

Yours truly,  
**MORRISON HERSHFIELD LIMITED**

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