

**EQ** | BUILDING  
PERFORMANCE

**2021 CORPORATE  
SUSTAINABILITY REPORT**

PUBLISHED: 28 March 2022





# The EQ Approach

# 2021 At a Glance

## Sustainability at EQ

*EQ Building Performance's mission is to guide the creation of responsible buildings. We believe that sustainability is the foundation of both responsible buildings and responsible business operations. We are committed to incorporating sustainability into every aspect of our business and to helping our clients achieve their sustainability goals.*

## Our ESG Commitments



We respect the environment and endeavor to use resources responsibly, conserve energy and water, reduce carbon emissions, and produce less waste.



We value our employees and are committed to providing an inclusive and supportive working environment, investing in their personal and professional development, as well as their health and wellbeing.



We believe that planning and measurement are essential to achieving results. We commit to the ongoing monitoring, benchmarking, and reporting of our own sustainability performance and to assisting our clients achieve their own sustainability goals in the buildings they design, construct, and operate.

**75**

**Site Plan Applications with EQ as the Energy/Sustainability Consultant**

**2.6**

**Million Square Metres of New Construction Development involving EQ**

**20**

**Fully Commissioned Buildings, over 500,000 m<sup>2</sup>**

**10**

**Successfully Certified Buildings establishing Excellence in Sustainability & Wellness**

# Looking Back

2021 has been an exceptional year filled with lots of changes. In spite of the challenges associated with operating during the second year of a global pandemic, we have continued to progress our advancement of responsible buildings.

As disruptive as it may have been, in many ways, the pandemic has helped us to re-examine and re-prioritize what's important. Once considered as afterthoughts, occupant health and wellbeing are moving their way towards to top of many designers' lists. Our sustainability team has been working on a number of active projects and continue to see strong interest in wellness certifications such as WELL and Fitwel.

In this year's report, our energy team has revisited the benefit that absolute performance targets are having on improving designed building performance. The industry is rising to the challenge of making better buildings and finding solutions to meet more stringent performance targets. Our commissioning team has also been busy reviewing both building designs and operational buildings to ensure these new systems and technologies are working properly.

We all know how difficult change can be. These next few years will be exciting for our industry as we figure out how to design, construct, and even retrofit buildings to meet significantly higher performance requirements. It has been gratifying to see our clients continue to put their trust in us and help them navigate through this period of uncertainty, and we look forward to seeing what 2022 will bring.

Craig McIntyre  
President





# Our Work

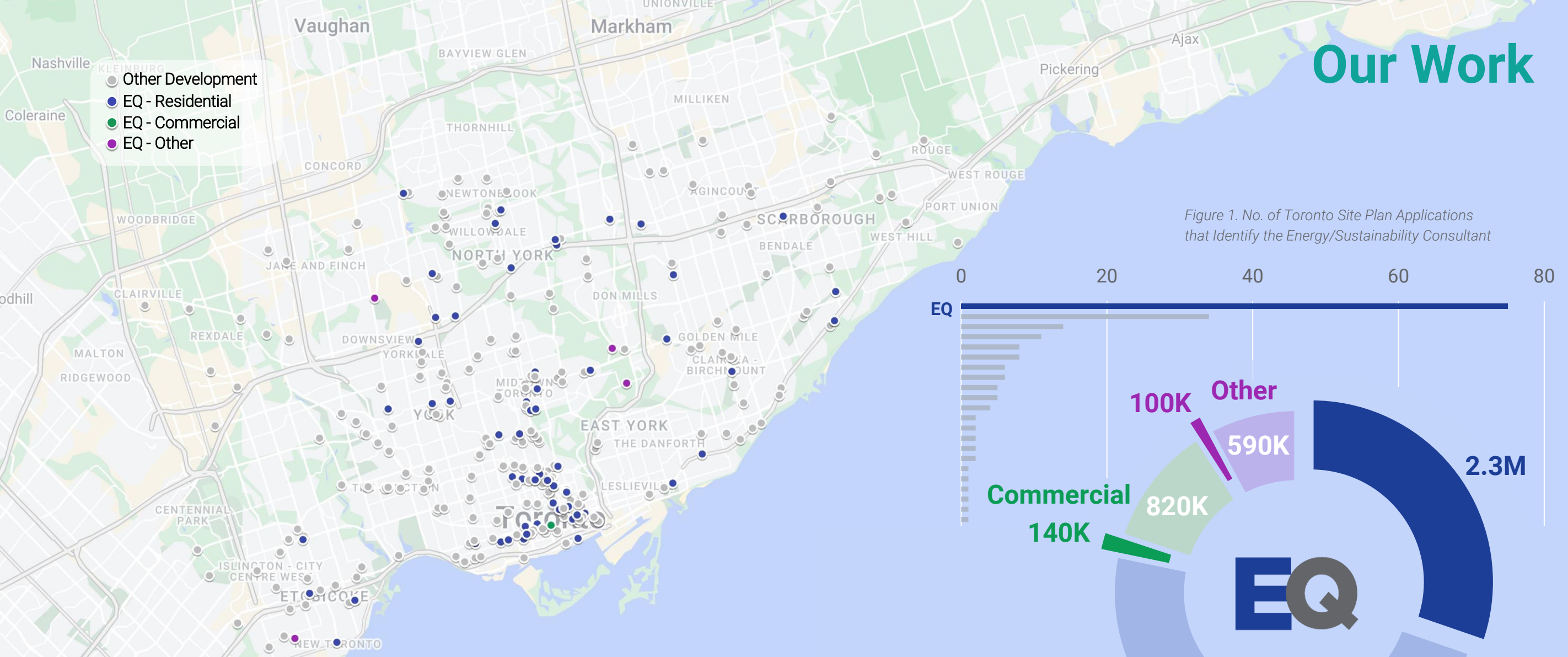


Figure 1. No. of Toronto Site Plan Applications that Identify the Energy/Sustainability Consultant

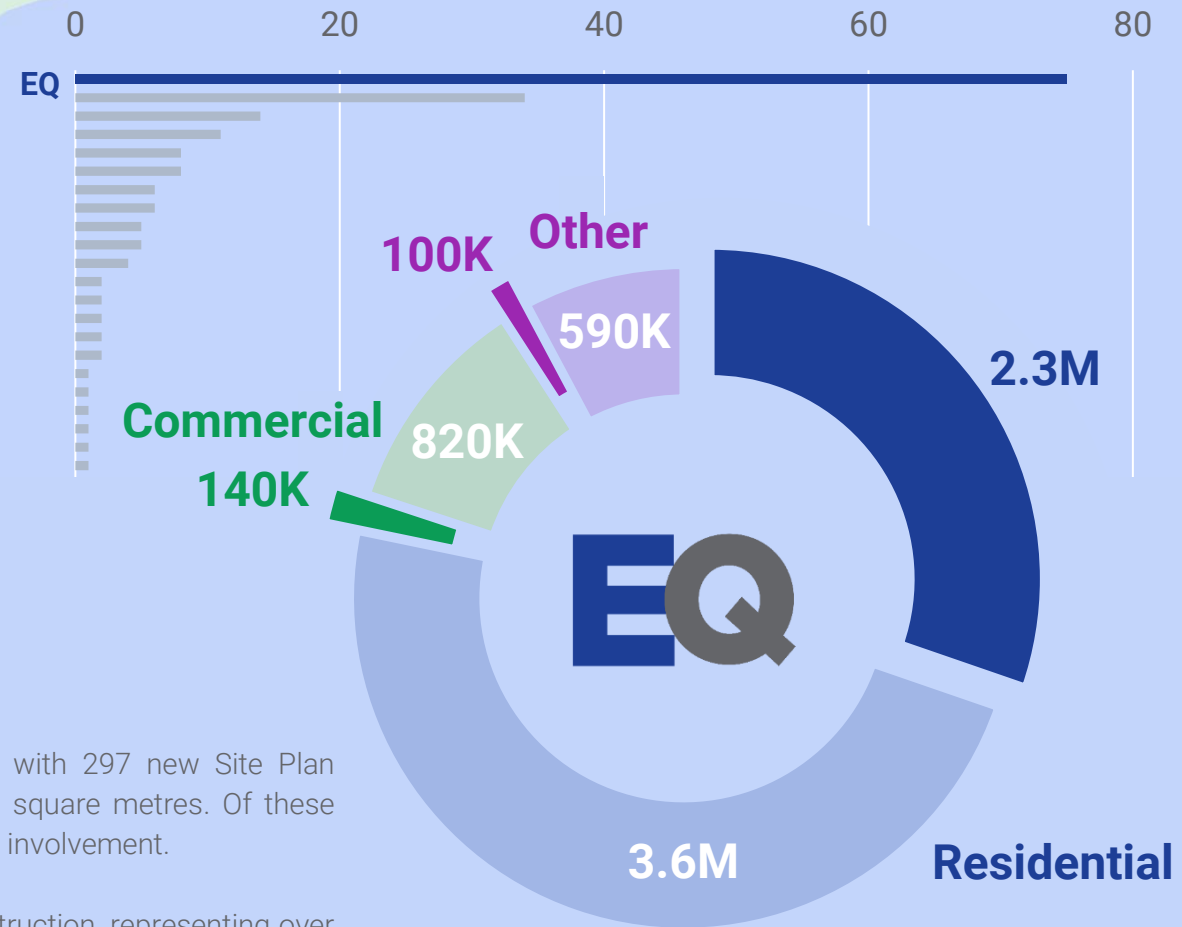


Figure 2. Breakdown of 2021 Toronto New Development as per Site Plan Applications (m<sup>2</sup>) – Bolder Segments Indicate EQ Involvement

Development in the City of Toronto grew in 2021 compared to last year, with 297 new Site Plan Applications being submitted for review, encompassing just over 7.5 million square metres. Of these applications, 198 listed an energy/sustainability consultant; of which 75 had EQ involvement.

EQ's work comprised of over 2.5 million square metres of new proposed construction, representing over a third of the total proposed development in Toronto in 2021.

# Highlighted Projects



## 2 Tecumseth

**Client:** TAS, Woodbourne Canada Management  
**Property:** Residential, Commercial, Institutional  
**GFA:** 90,000 m<sup>2</sup>  
**EQ's Role:** Energy Modelling, Sustainability

2 Tecumseth is a large multi-phase mixed-use development located in Toronto's West end comprised of three high-rise residential towers, a mid-rise commercial office, a low-rise retail building, and extensively landscaped public space.



**Schematic Design**

## Studio Bottega

**Client:** Studio Bottega  
**Property:** Film Studio, Office  
**GFA:** 50,000 m<sup>2</sup>  
**EQ's Role:** Energy Modelling, Sustainability

The Studio Bottega is a proposed film studio with 13 film stages in Mississauga, consisting of two buildings separated by an above-grade parking structure. The development is currently exploring CaGBC's Zero-Carbon Building Design and Performance certifications to support the overall sustainability vision for the site.



## Balmoral Recreation Centre

**Client:** City of Brampton  
**Property:** Institutional  
**GFA:** 3,000 m<sup>2</sup>  
**EQ's Role:** Energy Modelling, Sustainability

The City of Brampton's Balmoral Recreation Centre is undergoing a major renovation and expansion aiming to achieve LEED v4 Silver Certification, which will feature a gymnasium, multi-purpose rooms, and a sauna. The existing pool structure is being retained while an outdoor splash pad and playground will be added to improve outdoor amenities.



**Building Permit**

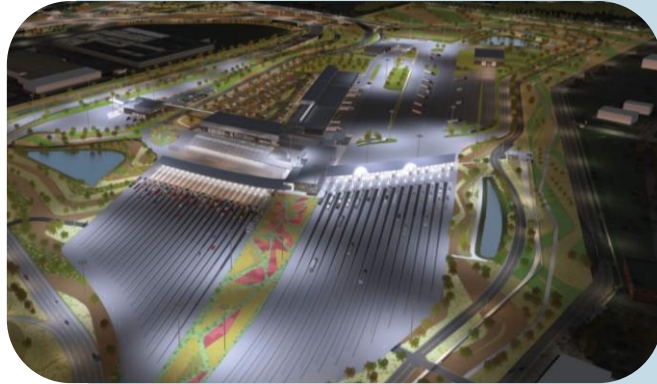


**Bid / Tender**



# Highlighted Projects

## Gordie Howe International Bridge (U.S. and Canadian Port of Entries)



**Client:** Windsor-Detroit Bridge Authority (WDBA)  
**Property:** Government, Office  
**GFA:** 43,000 m<sup>2</sup>  
**EQ's Role:** Energy Modelling, Sustainability

The Gordie Howe International Bridge (GHIB) connecting Windsor and Detroit is the largest bi-national infrastructure project along the Canada – U.S. border, and the resulting bridge will be among the top 5 longest bridges in North America. GHIB has already achieved Envision Platinum, while both Port of Entries are pursuing LEED v4 Silver.



**Construction**



**Post-Occupancy**

## Hollyburn Residential Energy Audits

**Client:** Hollyburn Properties Limited  
**Property:** Residential Portfolio  
**GFA:** 100,000 m<sup>2</sup>  
**EQ's Role:** Existing Building Energy Audits

Our commissioning team conducted over 20 different existing building energy audits for Hollyburn's residential rental portfolio in Toronto and Ottawa. This exercise identified a number of different energy conservation measures and other operational improvements, primarily related to heated and domestic water heating.



**Occupancy**



**End of Life**

# Certifications & Registrations

With increasingly strict energy and sustainability requirements, seeking a certification is one of the best frameworks to commit to higher performance and demonstrate excellence. In 2021 we helped a number of projects achieve their target certifications, as well as work with new teams to set their sustainability goals.

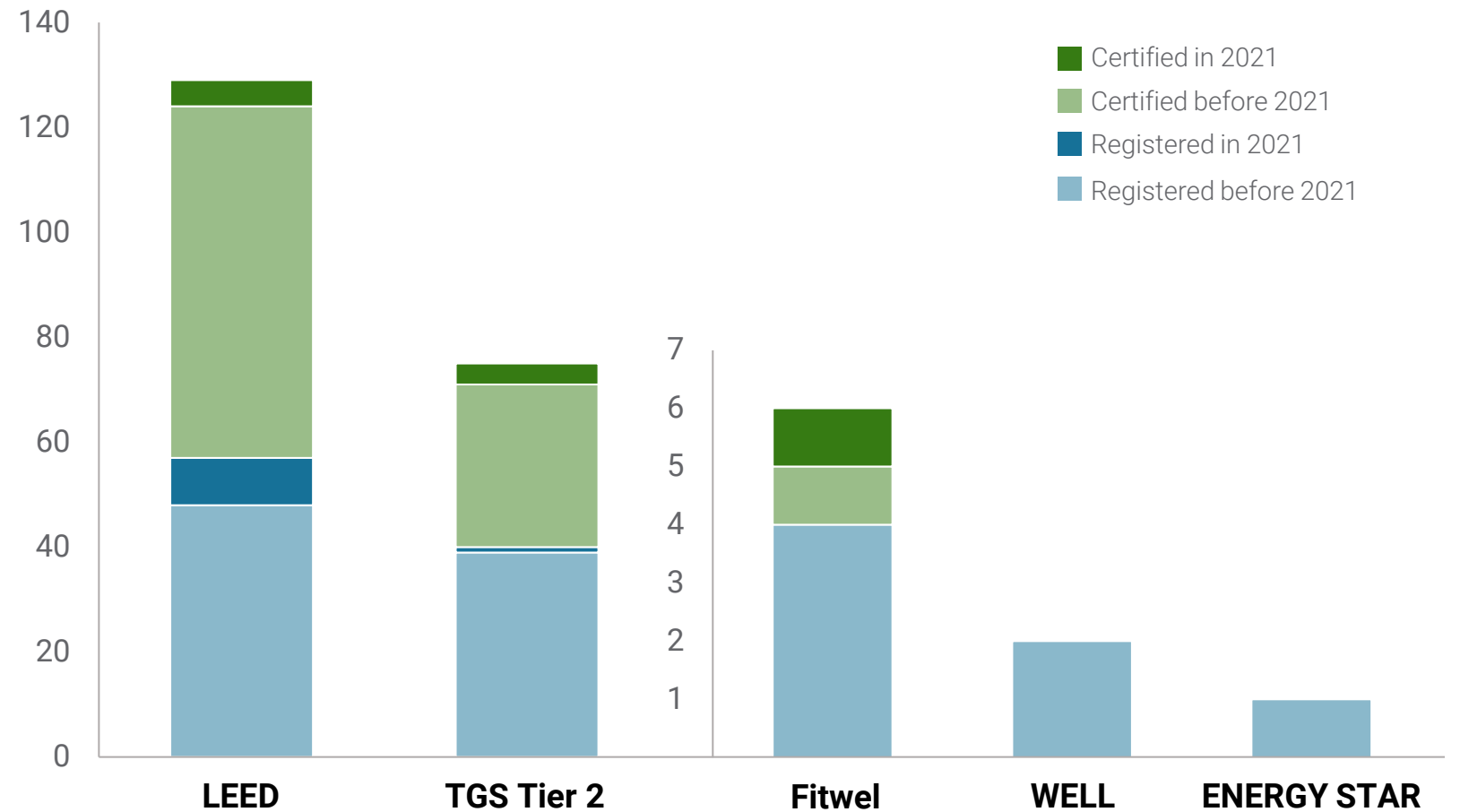


Figure 3. EQ Total Certifications and Registrations

# Performance Metrics

## Ecology

**Green Roof**  
 2021 - 27% of available roof  
 2020 - 45% of available roof

## Waste

**Landfill Intensity**  
 2021 - 35.9 kg/m<sup>2</sup>  
 2020 - 31.0 kg/m<sup>2</sup>

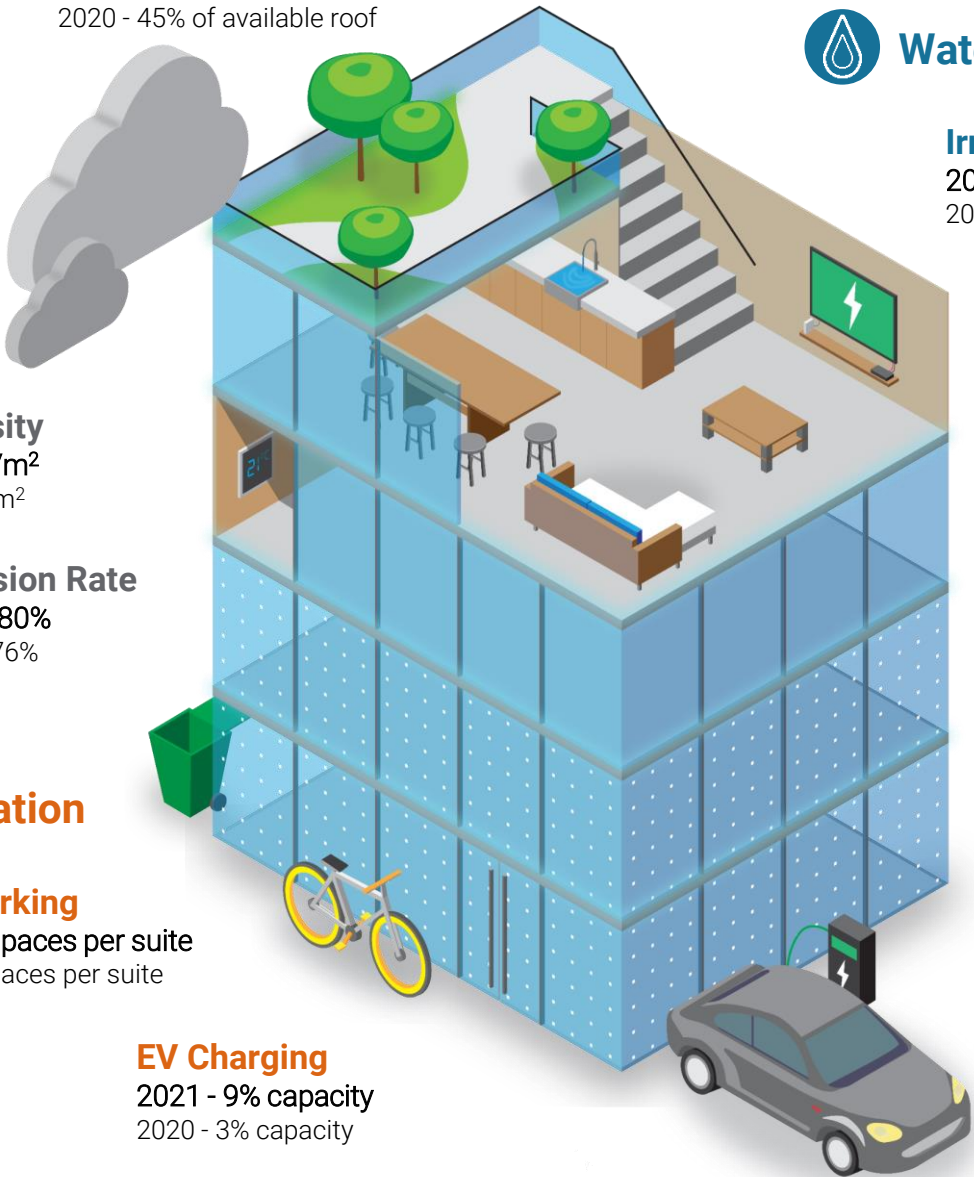
**Waste Intensity**  
 2021 - 177.4 kg/m<sup>2</sup>  
 2020 - 131.2 kg/m<sup>2</sup>

**Diversion Rate**  
 2021 - 80%  
 2020 - 76%

## Transportation

**Bicycle Parking**  
 2021 - 1.01 spaces per suite  
 2020 - 1.03 spaces per suite

**EV Charging**  
 2021 - 9% capacity  
 2020 - 3% capacity



## Water

**Irrigation Intensity**  
 2021 - 5.8 L/m<sup>2</sup> Site Area  
 2020 - 4.7 L/m<sup>2</sup> Site Area

**Indoor Water Use Intensity**  
 2021 - 1451 L/m<sup>2</sup>  
 2020 - 1045 L/m<sup>2</sup>

## Energy

**EUI**  
 2021 - 203.9 ekWh/m<sup>2</sup>  
 2020 - 176.0 ekWh/m<sup>2</sup>

**GHGI**  
 2021 - 24.1 kg CO<sub>2</sub>e/m<sup>2</sup>  
 2020 - 20.7 kg CO<sub>2</sub>e/m<sup>2</sup>

In 2021 we worked with a number of different project teams to help them realize their sustainability goals. Using some key LEED and TGS Tier 2 metrics, we hope that by sharing some snapshots of our project portfolio we can get a better understanding of how green buildings in the Greater Toronto Area are evolving.

For a more detailed year-over-year analysis our Appendix also contains our data from 2018 to 2021.

**Total Floor Area Certified in 2021:  
 122,000 m<sup>2</sup>**





# Waste Not, Want Not

In 2020 we observed an upward trend in total waste intensity for our certified projects. This trend continues in 2021 where both the amounts of waste being recycled and landfill waste increased. However, the diversion rate increased between 2020 and 2021.

Even though the introduction of a new compliance path on waste prevention under LEED v4 has not yet come to fruition, we suspect that other certification systems will utilize similar metrics such that the industry as a whole can minimize construction waste with a focus on waste prevention and not diversion.

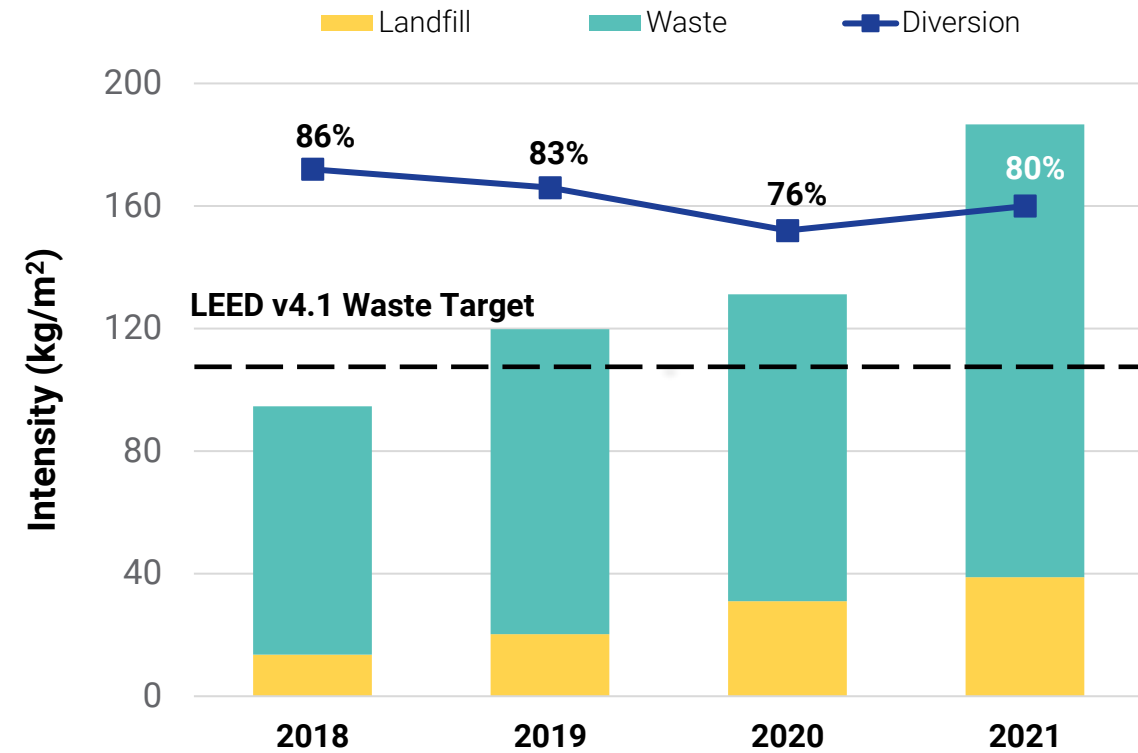


Figure 4. Year-Over-Year Waste Analysis

# Energy & Carbon

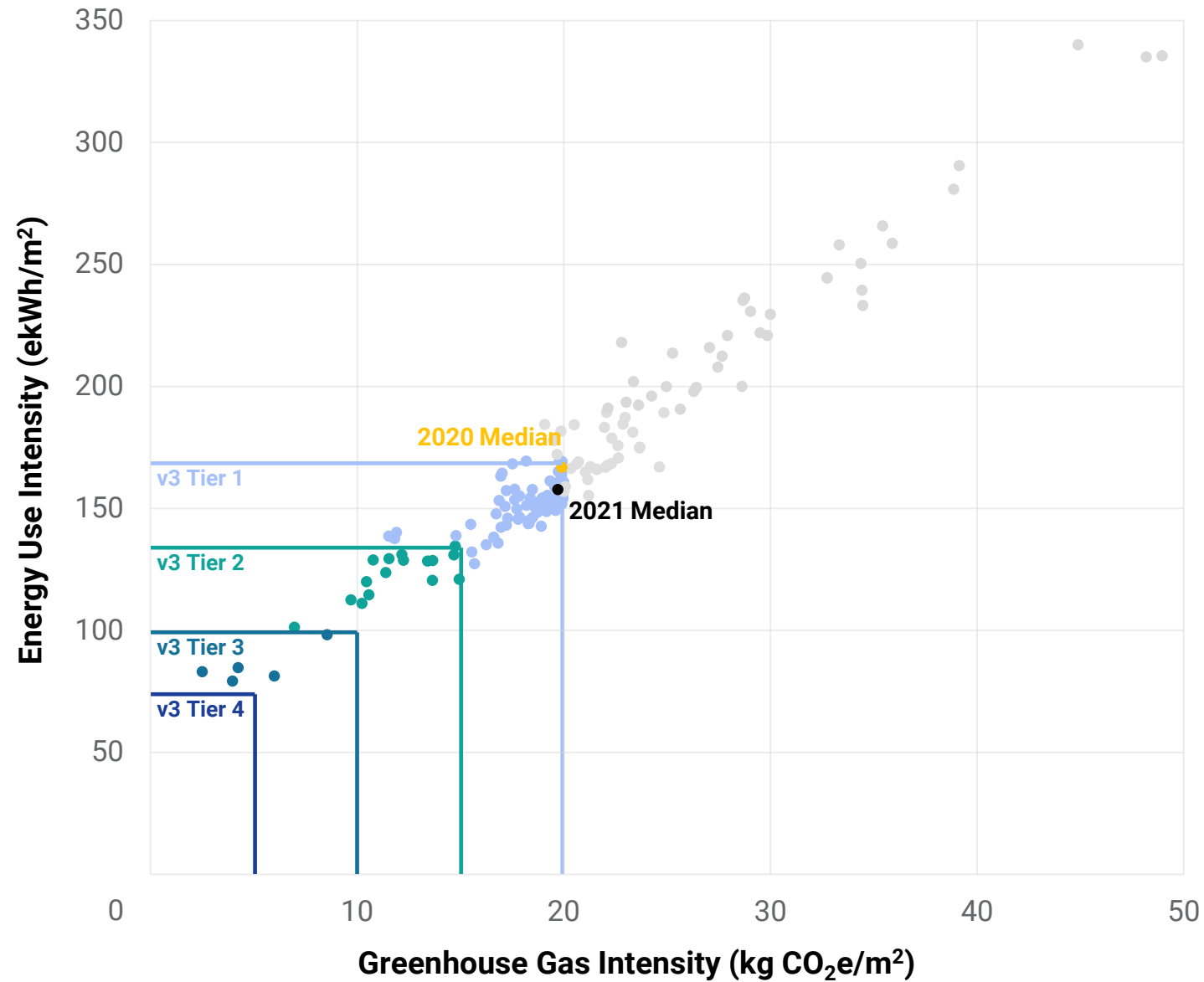


Figure 5. EQ 2021 MURB Modelling Database (Absolute Performance)

In 2021 our energy team completed an impressive amount of work, contributing nearly 170 new MURB projects to our internal database.

Between 2020 and 2021, there was minimal change in median performance, as seen in Figure 5. In 2021 there were no notable changes to energy requirements in Ontario, however it is expected that 2022 and 2023 will see a significant performance shift due to upcoming changes with TGS v4. While there were minimal changes in the median, Figure 6 demonstrates that development is still trending towards improved performance overall.

For a more detailed year-over-year analysis our Appendix also contains our data from 2018 to 2021.

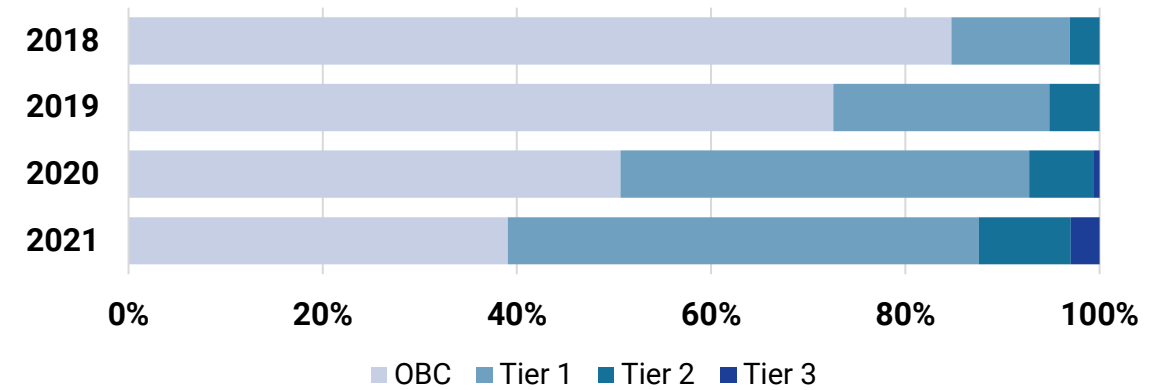


Figure 6. EQ MURB Modelling Database Performance Distribution



# Absolute Impact

As we touched on in our 2020 Report, when TGS version 3 (v3) was first implemented in 2018, there was a transition period where projects could comply with Tier 1 requirements either by pursuing the absolute targets or by achieving a 15% improvement over the Ontario Building Code.

As some time has passed since the absolute targets came into effect, a notable amount have progressed to building permit. As such, we are now able to compare performance to buildings outside of the City of Toronto as well.

While the TGS v3 buildings all perform better on average than a building outside of Toronto, there is a notable performance increase with projects that were subject to absolute performance metrics.

With relative performance path metrics, total energy consumption of a building is generally not prioritized, as compliance is dependent on being better than a code-compliant reference. Focusing on absolute targets generally leads to better building performance.

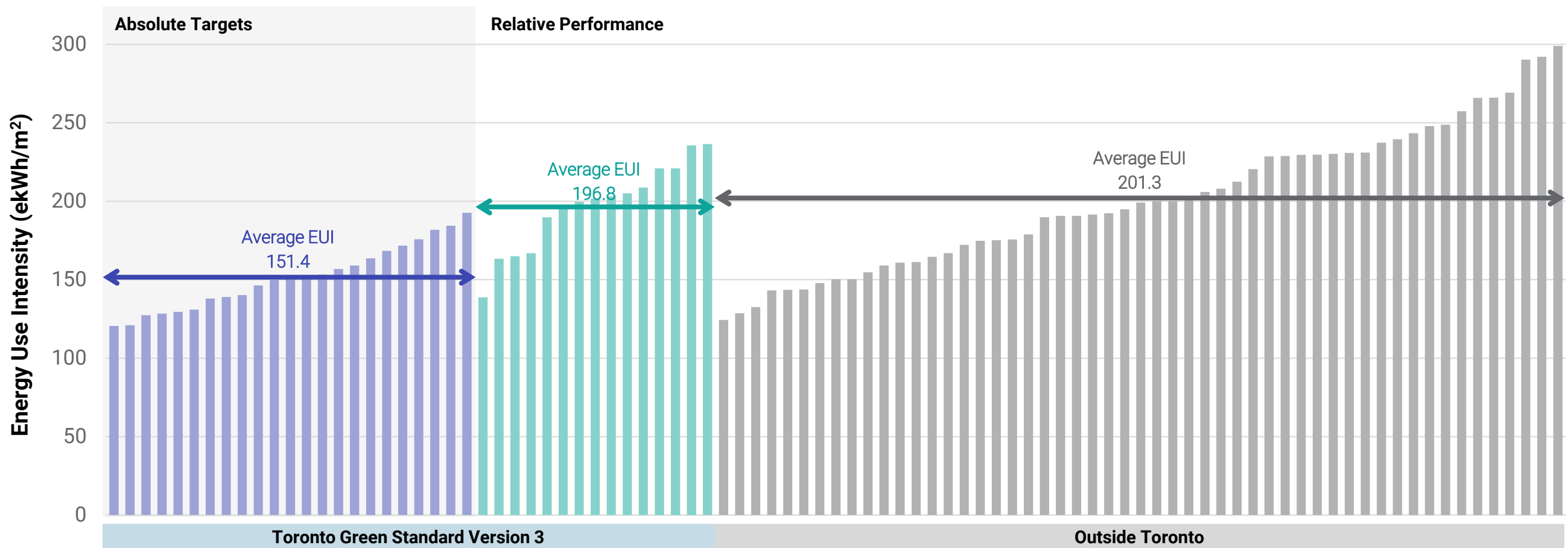


Figure 7. EQ 2021 MURB Modelling Database (Building Permit-Stage Models)

# Deficiency Breakdown

In 2021, EQ's commissioning team was able to identify 880 deficiencies across 30 different buildings. Despite constantly changing COVID-19 protocols, our commissioning team worked with site supervisors, contractors, and team leads to safely and efficiently locate and document deficiencies in order to deliver better buildings.

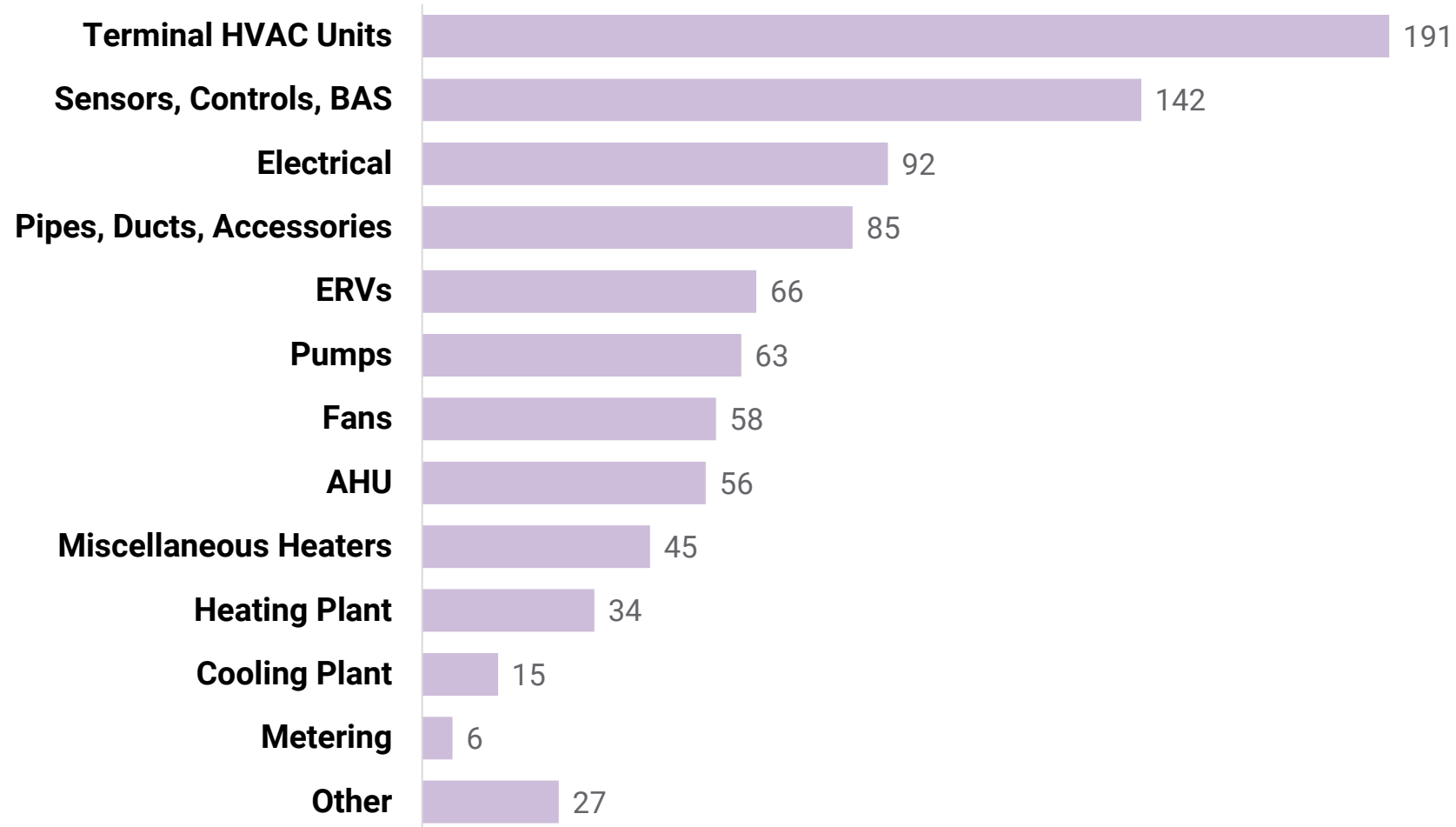


Figure 8. EQ 2021 Commissioning Deficiency Breakdown





# Deficiency Stats

Our commissioning team was busy in 2021, and was able to fully close out on 20 projects, consisting of over 7,000 residential suites.

While we are still unable to establish a consistent correlation between deficiency counts and building size, we hope that sharing this data highlights the value of commissioning in MURBs, especially as building and HVAC design complexity increases to meet our ambitious climate and carbon goals.



**20**  
Fully  
Commissioned  
Buildings



**1,076**  
Total  
Deficiencies



**7,254**  
Total  
Residential  
Suites

**14.8 Deficiencies per 100 suites**

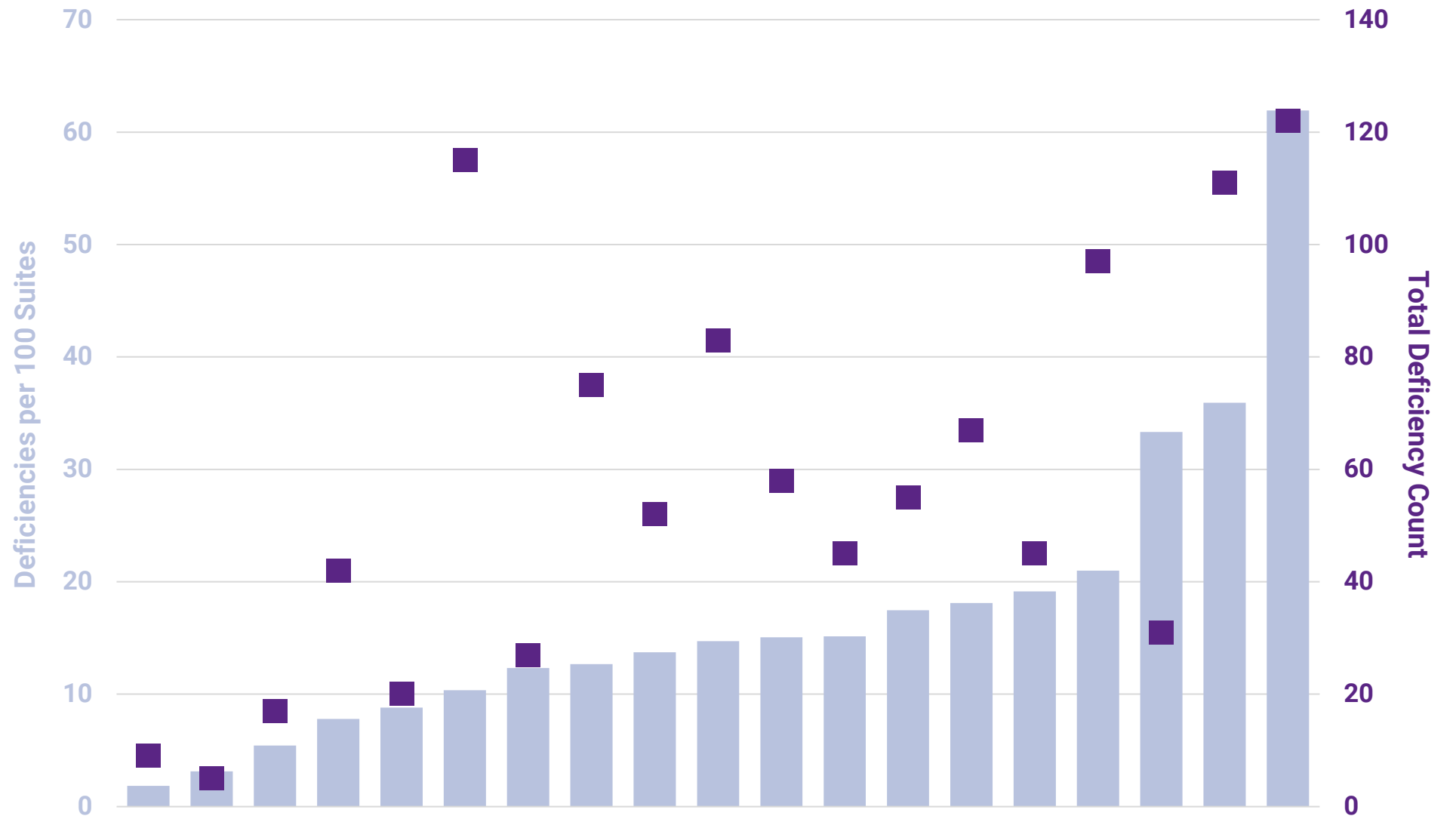


Figure 9. EQ 2021 Fully Commissioned Deficiency Count per Building

# Looking Forward


We thank you for taking the time to read about some of our work in 2021, and hope that our annual reports have provided some valuable insight on the green building sector in the Greater Toronto Area and across the entire industry.

With upcoming changes to the Toronto Green Standard and more industry-wide emphasis on energy, sustainability and wellness, we're likely to see a shift away from conventional fossil-fuel systems, moving us towards a low-carbon future.

Going forward we will continue to keep reporting on our findings and explore the unanswered questions to help drive the industry towards net-zero.

 [eqbuilding.com](http://eqbuilding.com)

 [linkedin.com/company/eq-building-performance-inc./](https://www.linkedin.com/company/eq-building-performance-inc/)

 [instagram.com/eqbuilding/](https://www.instagram.com/eqbuilding/)





# Appendix I - Additional Data



## Technical Definitions

**EUI**  
Energy Use Intensity - The sum of all energy used on site (i.e. electricity, natural gas, and district heating and cooling), minus any Site Renewable Energy Generation, and divided by the total floor area.

**TEDI**  
Thermal Energy Demand Intensity - The amount of heating energy delivered to the project building for space and ventilation conditioning that is outputted from any and all types of heating equipment, divided by the total floor area.

**GHGI**  
Greenhouse Gas Intensity - The total greenhouse gas emissions associated with the utility energy use on site divided by the total floor area.

**TGS**  
Toronto Green Standard - Tier 1 development standards are mandatory for all Toronto projects while Tier 2 is an optional higher standard with a financial incentive.

**SB-10**  
Supplementary standard to the building code which addresses Part 3 energy requirements.

**Absolute Targets**  
Describes programs/performance which does not refer to a baseline reference building. It evaluates the performance of the building design in isolation.

**Relative Performance**  
Describes programs/performance relative to a baseline reference building. This could include references to the Ontario Building Code or other underlying codes such as NECB or ASHRAE.

## Technical Acronyms

**AHU**  
Air Handling Unit

**ASHRAE**  
American Society of Heating, Refrigerating, and Air-Conditioning Engineers

**BAS**  
Building Automation System

**ERV/HRV**  
Energy Recovery Ventilator / Heat Recovery Ventilator

**ESG**  
Environmental, Social, Governance

**EV**  
Electric Vehicle

**HVAC**  
Heating, Ventilation & Air Conditioning

**MURB**  
Multi-Unit Residential Building

**NECB**  
National Energy Code of Canada for Buildings

**OBC**  
Ontario Building Code

# Appendix I - Additional Data



## Sustainability

Table A-1: Portfolio Performance of EQ Certified Buildings (LEED and TGS Tier 2)

Metric	Units	2018	2019	2020	2021
Green Roof	% of Available Roof	59%	48%	45%	<b>27%</b>
Irrigation Intensity	L/m <sup>2</sup> of Site Area	8.1	2.4	4.7	<b>5.8</b>
Indoor Water Use Intensity	L/m <sup>2</sup>	1172.5	1030.6	1045.0	<b>1450.9</b>
Energy Use Intensity (EUI)	ekWh/m <sup>2</sup>	197.1	235.5	176.0	<b>203.9</b>
Greenhouse Gas Intensity (GHGI)	kg CO <sub>2</sub> e/m <sup>2</sup>	24.3	28.6	20.7	<b>24.1</b>
Bicycle Parking	Spaces per Suite	0.76	1.04	1.03	<b>1.01</b>
EV Charging Capacity	% of Parking Stalls	13%	12%	3%	<b>9%</b>
Landfill Intensity	kg/m <sup>2</sup>	13.6	20.3	31.0	<b>35.9</b>
Waste Intensity	kg/m <sup>2</sup>	94.6	119.8	131.2	<b>177.4</b>
Diversion Rate	%	86%	83%	76%	<b>80%</b>



# Appendix I - Additional Data



## Energy

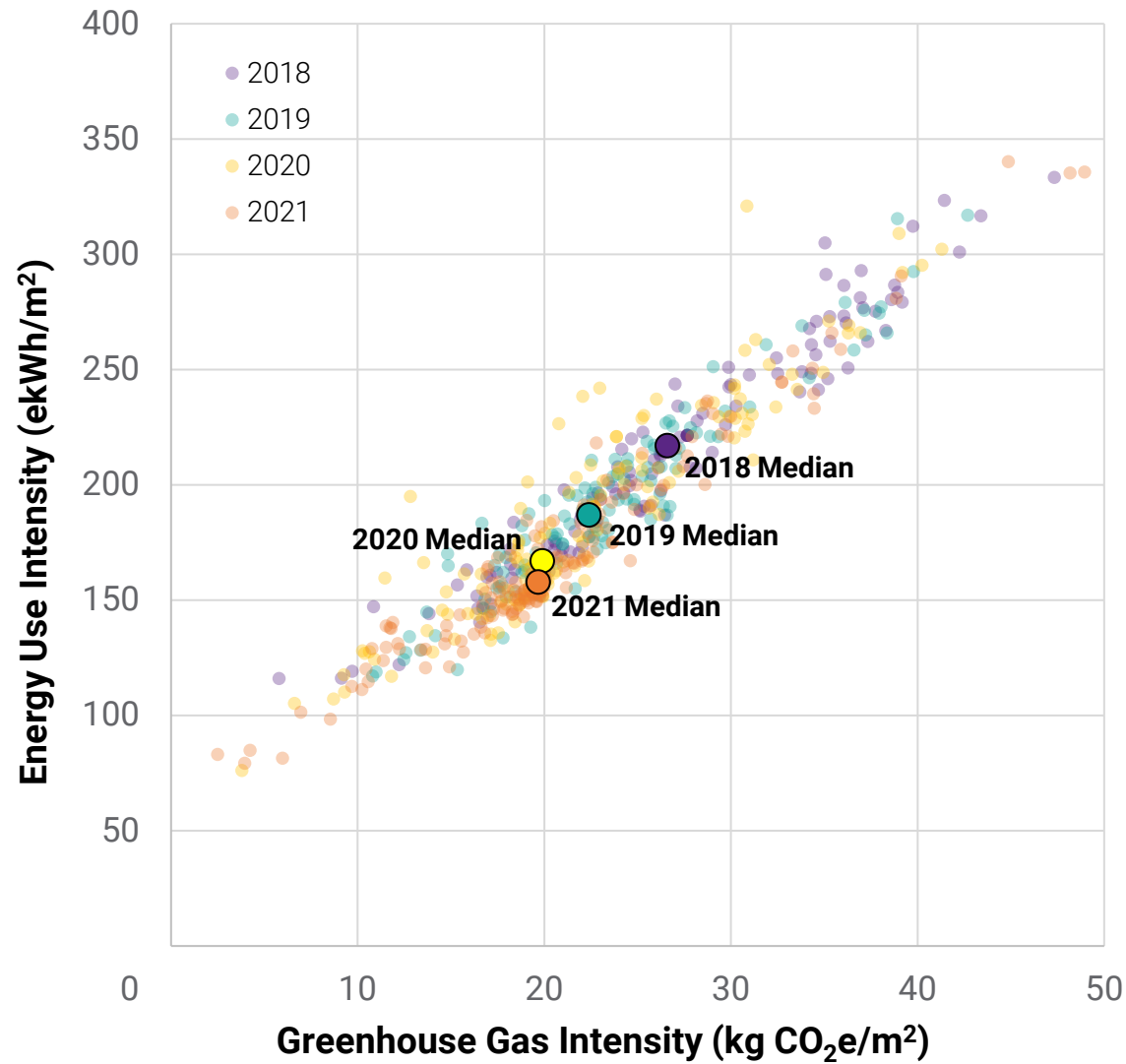


Figure A-1: EQ MURB Modelling Database

Table A-2: EQ MURB Modelling Database Median Performance

	Units	2018	2019	2020	2021
Energy Models	-	131	135	152	<b>169.0</b>
Median EUI	ekWh/m <sup>2</sup>	216.5	188.7	167.8	<b>157.8</b>
Median GHGI	kg CO <sub>2</sub> e/m <sup>2</sup>	26.6	22.6	20.0	<b>19.7</b>

Table A-3: EQ MURB Modelling Database Project Count Breakdown

TGS v3 Tier	2018	2019	2020	2021
Non-Compliant	111	98	77	<b>66</b>
Tier 1	16	30	64	<b>82</b>
Tier 2	4	7	10	<b>16</b>
Tier 3	0	0	1	<b>5</b>

# Appendix I - Additional Data



## Commissioning

Table A-4: EQ Total Deficiency Counts

Deficiency	2018		2019		2020		2021	
	Count	%	Count	%	Count	%	Count	%
Terminal HVAC Units	139	24%	111	21%	171	20%	<b>191</b>	<b>22%</b>
Pipes, Ducts, Accessories	49	8%	72	14%	121	14%	<b>85</b>	<b>10%</b>
Fans	69	12%	73	14%	110	13%	<b>58</b>	<b>7%</b>
Sensors, Controls, BAS	61	11%	40	8%	102	12%	<b>142</b>	<b>16%</b>
Miscellaneous Heaters	38	7%	42	8%	58	7%	<b>45</b>	<b>5%</b>
Pumps	37	6%	47	9%	57	7%	<b>63</b>	<b>7%</b>
AHU	53	9%	43	8%	47	6%	<b>56</b>	<b>6%</b>
Heating Plant	33	6%	24	4%	33	4%	<b>34</b>	<b>4%</b>
ERVs	27	5%	0	0%	32	4%	<b>66</b>	<b>7%</b>
Cooling Plant	24	4%	17	3%	23	3%	<b>15</b>	<b>2%</b>
Electrical	0	0%	0	0%	20	2%	<b>92</b>	<b>10%</b>
Metering	11	2%	1	0%	17	2%	<b>6</b>	<b>1%</b>
Other	37	6%	58	11%	54	6%	<b>27</b>	<b>3%</b>
Total Deficiency Count	578	100%	528	100%	845	100%	<b>880</b>	<b>100%</b>
Number of Buildings	20		24		31		<b>30</b>	



# Appendix I - Additional Data



## Commissioning

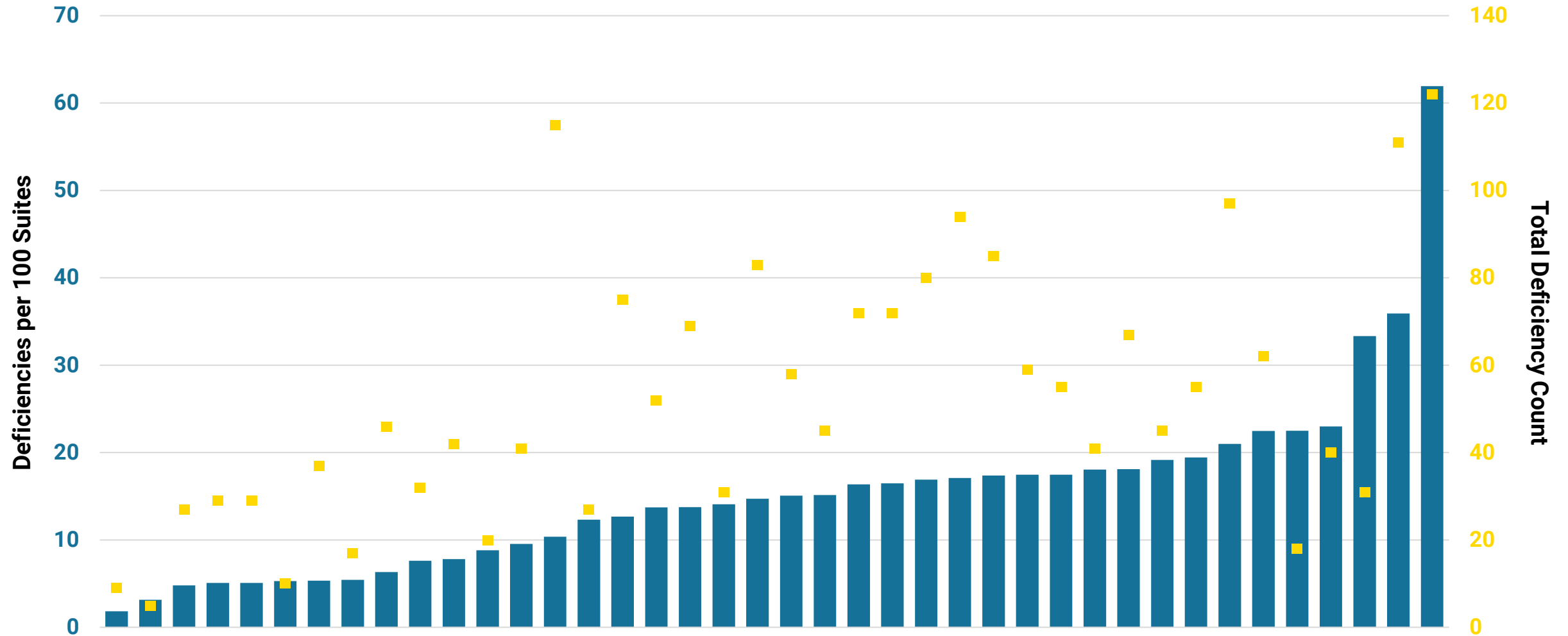


Figure A-2: EQ Fully Commissioned Deficiency Count per Building (2019 to 2021)

# Appendix II - References & Methods



## Carbon Factors

Carbon emission factors for electricity and natural gas in Ontario were obtained from [SB-10](#).

## Development (pg. 4)

The data in this section of the report is sourced on the [Application Information Centre](#) on the City of Toronto website. Site Plan Applications first submitted in 2021 were reviewed in order to conduct this analysis. A total of 297 unique applications met this criteria. This data was used to create the map of new proposed development in the City of Toronto.

For Figure 1, the relevant Site Plan Application energy modelling report and Toronto Green Standard (TGS) checklists were reviewed and the consultant listed on each was noted. Where neither of these documents was listed or the consultant was unclear, the consultant was categorized as unknown. Of the 297 submitted applications, 24 were not subjected to the requirements of TGS, and 75 did not list any consultant at the time of the production of this report.

Figure 2 was determined from the GFAs from Site Plan Applications from the City of Toronto, and categorized by usage and if EQ was the consultant on file. Project addresses were also obtained from these Site Plan Applications.

## Sustainability (pg. 7, 8, 9)

Performance metrics are based on LEED and TGS project statistics. Only projects that achieved certification in 2021 were included in the performance metrics.

## Energy (pg. 10, 11)

Energy and carbon intensity data was pulled from EQ's internal database which tracks the performance of all of our modelled projects.

For Figure 7, the modelling requirements for TGS v3 absolute performance targets have some notable deviations from building code, most notably by requiring full thermal bridging accounting and design outdoor air rates to be modelled. To fairly compare Toronto absolute performance projects to projects outside of Toronto, the building permit models have been used. This ensures that all projects evaluated follow the same modelling rules, even though they were initially designed under different requirements.

## Commissioning (pg. 12, 13)

Data presented in Figure 8 is based on deficiency reports prepared through site visits during 2021. Figure 9 was prepared based on projects with commissioning services completed in 2021, and may include deficiency counts from reports in previous years as well.

## Image Sources

Pg. 4 – Base Map of Toronto obtained from Google My Maps.

Pg. 5 – Image of Balmoral Recreation Centre obtained from [here](#).

Pg. 5 – Image of 2 Tecumseth obtained from [here](#).

Pg. 5 – Image of Studio Bottega obtained from BDP Quadrangle.

Pg. 6 – Image of Gordie Howe International Bridge obtained from [here](#).

Pg. 7 – Image of 18 Erskine (E18HTEEN) obtained from [here](#).

All other images are royalty-free and were obtained from [Unsplash](#).



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