

**EQ** | BUILDING  
PERFORMANCE

**2022 CORPORATE  
SUSTAINABILITY REPORT**

PUBLISHED: 22 August 2023



## 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.

## 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.*

**10**

**Fully Commissioned Buildings, over  
195,000 m<sup>2</sup>**

**8**

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

# Looking Back

2022 was one of our busiest years to date at EQ Building Performance, as we continued to make progress in our mission to guide the creation of responsible buildings. Our Sustainability team helped clients achieve several new green building certifications, including Ontario's very first Energy Star certified Multifamily High-Rise building, Delmanor Aurora. Our Energy team guided clients through the City of Toronto's Green Standard version 4, which came into effect in May, and our Commissioning team expanded their work in restoring optimal performance on a number of existing buildings.

We are seeing continued interest in health and well-being standards like Fitwel and WELL. Many of our clients have been investigating how to reduce the operational carbon emissions of their buildings, but there has been a growing interest in the impacts of embodied carbon. This is likely in response to Toronto's demonstrated leadership in zero carbon planning.

I continue to be impressed by the passion and commitment of our employees to make a meaningful impact through their work and help craft a better future. As always, I would like to thank our many clients and partners for entrusting us to help them achieve their project goals. We look forward to seeing what steps our industry takes next.

Craig McIntyre  
President



# Highlighted Projects

## 880 Eastern

**Client:** TAS

**Property:** Multi-Family Residential

**GFA:** 13,417 m<sup>2</sup>

**EQ's Role:** Energy Modelling and Sustainability Consulting

880 Eastern is a mid-rise residential building in the east end of Toronto. Its thoughtful design from inception has been focused on a blend of wellness and energy efficiency best practices. EQ has conducted several studies around massing, façade design, and mechanical systems and how they impact the project's wellness, sustainability, and energy efficiency goals.

Most recently, EQ completed a large zero carbon study in partnership with SVN Architects which looked at the pathways to zero carbon from both an operational and embodied carbon lens.



## Delmanor Communities Aurora

**Client:** Delmanor Seniors Communities

**Property:** Seniors Housing

**GFA:** 24,545 m<sup>2</sup>

**EQ's Role:** Project Management, Energy, and Commissioning

Delmanor Communities Aurora is the first community to successfully achieve certification under the ENERGY STAR® for Multifamily High-Rise program in Canada. To achieve certification, Tridel partnered with EQ and Building Knowledge Canada to meet all energy and envelope program requirements.



## Stone Abbey

**Client:** Windmill Developments

**Property:** Residential Condo + Townhomes

**GFA:** 3,205 m<sup>2</sup>

**EQ's Role:** Energy Modelling

Stone Abbey is a residential development in Ottawa, ON pursuing Platinum certification in LEED v4 for Homes & Midrise. The design effortlessly blends into its surrounding parks and heritage buildings. The project is minimizing its impact on the environment by implementing an on-site geothermal plant and high-performance building envelope which help maximize the number of energy points received to achieve LEED Platinum.



# 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 2022 we helped a number of projects achieve their target certifications, as well as work with new teams to set their sustainability goals.

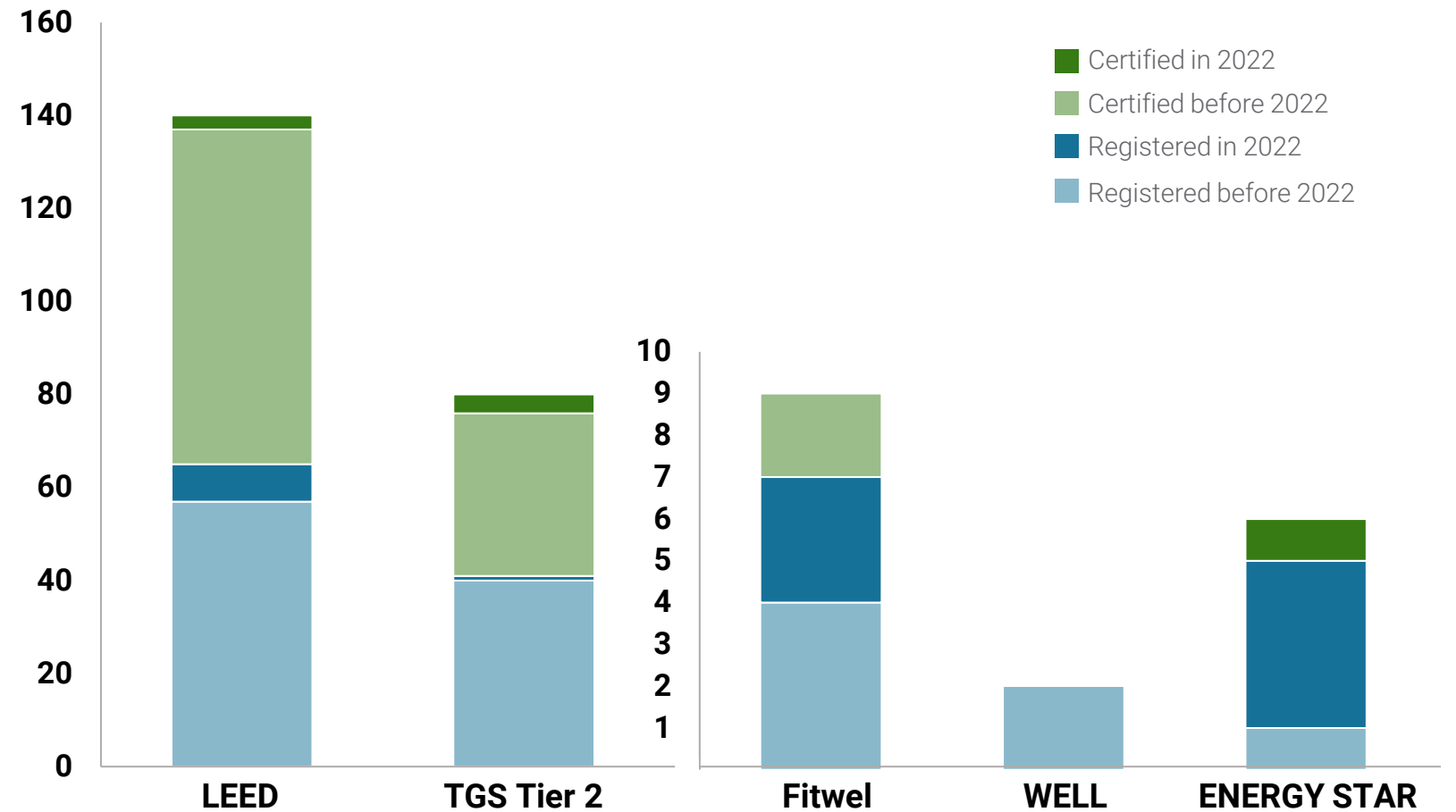


Figure 1. EQ Total Certifications and Registrations

# Performance Metrics

## Ecology

**Green Roof**  
 2022 - 16% of available roof  
 2021 - 27% of available roof

## Waste

**Landfill Intensity**  
 2022 - 20.2 kg/m<sup>2</sup>  
 2021 - 35.9 kg/m<sup>2</sup>

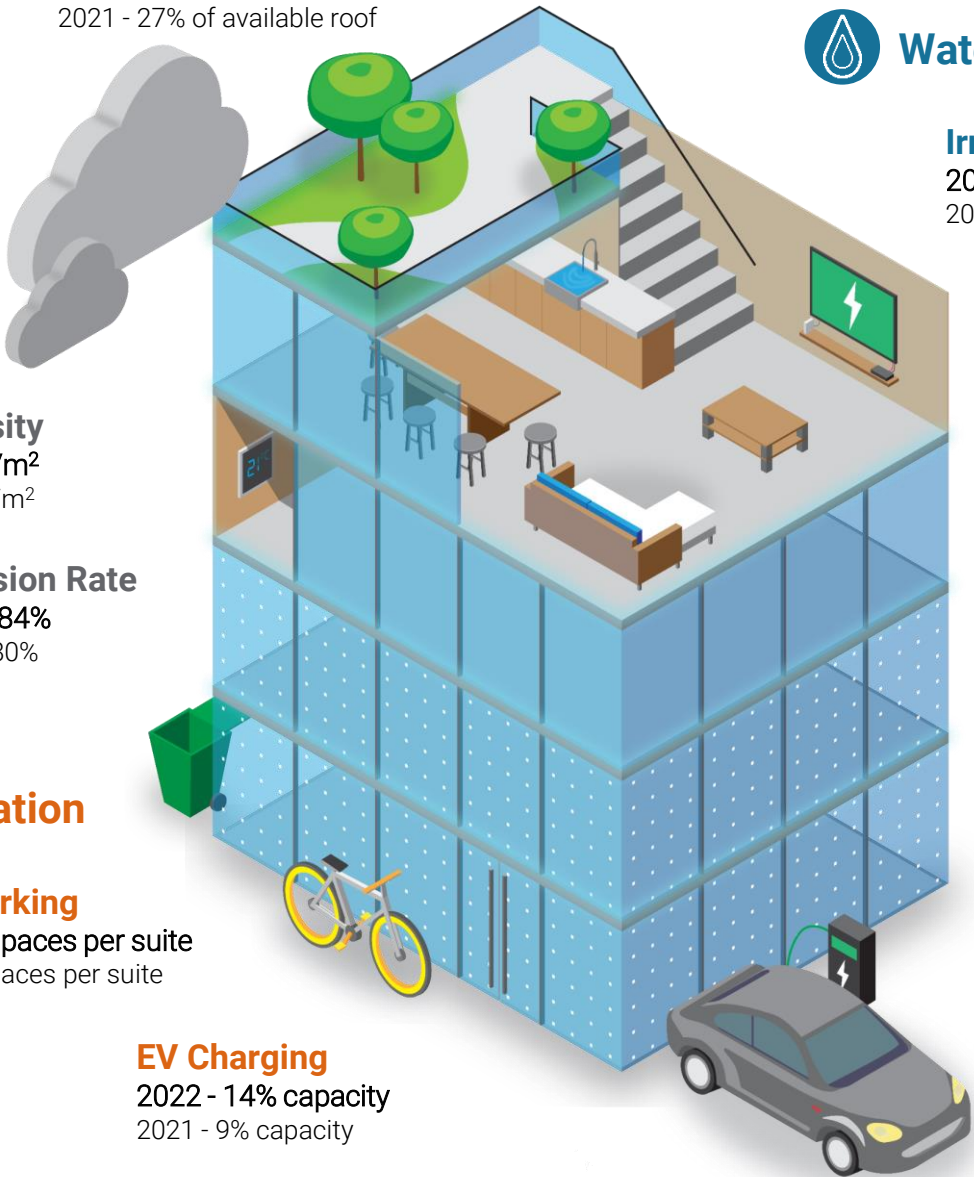
**Waste Intensity**  
 2022 - 124.2 kg/m<sup>2</sup>  
 2021 - 177.4 kg/m<sup>2</sup>

**Diversion Rate**  
 2022 - 84%  
 2021 - 80%

## Transportation

**Bicycle Parking**  
 2022 - 1.05 spaces per suite  
 2021 - 1.01 spaces per suite

**EV Charging**  
 2022 - 14% capacity  
 2021 - 9% capacity



## Water

**Irrigation Intensity**  
 2022 - 5.6 L/m<sup>2</sup> Site Area  
 2021 - 5.8 L/m<sup>2</sup> Site Area

**Indoor Water Use Intensity**  
 2022 - 1471 L/m<sup>2</sup>  
 2021 - 1451 L/m<sup>2</sup>

## Energy

**EUI**  
 2022 - 198.6 kWh/m<sup>2</sup>  
 2021 - 203.9 kWh/m<sup>2</sup>

**GHGI**  
 2022 - 21.1 kg CO<sub>2</sub>e/m<sup>2</sup>  
 2021 - 24.1 kg CO<sub>2</sub>e/m<sup>2</sup>

In 2022 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 2022.

**Total Floor Area Certified in 2022:  
 89,000 m<sup>2</sup>**

# Waste Not, Want Not



While total waste intensity was previously increasing year over year, 2022 saw a welcomed reduction in waste intensity. Overall diversion rates have stayed relatively flat over the past five years, though are currently on an upward trend.

Even though the introduction of a new compliance path on waste reduction 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.

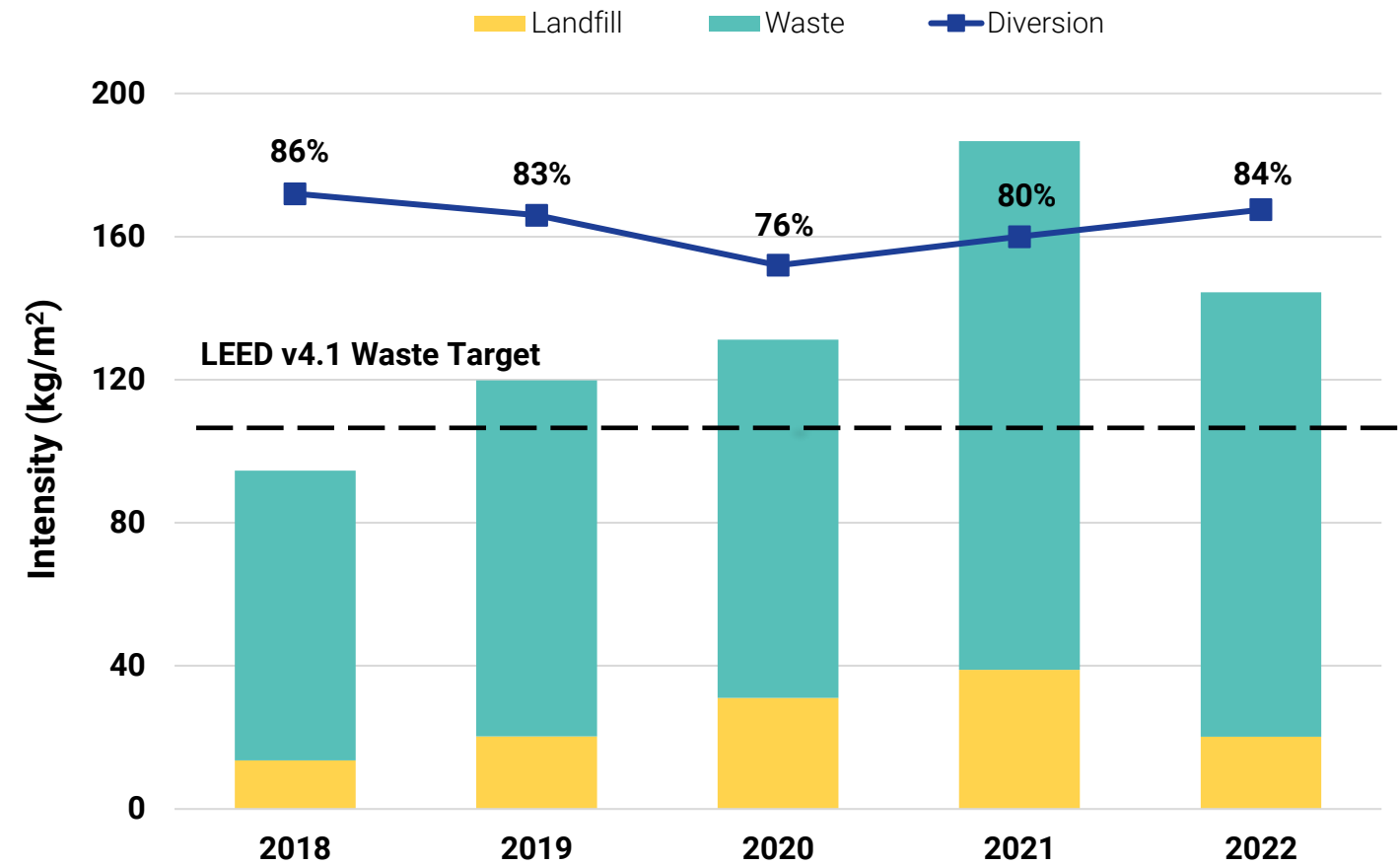


Figure 2. Year-Over-Year Waste Analysis

# Energy & Carbon

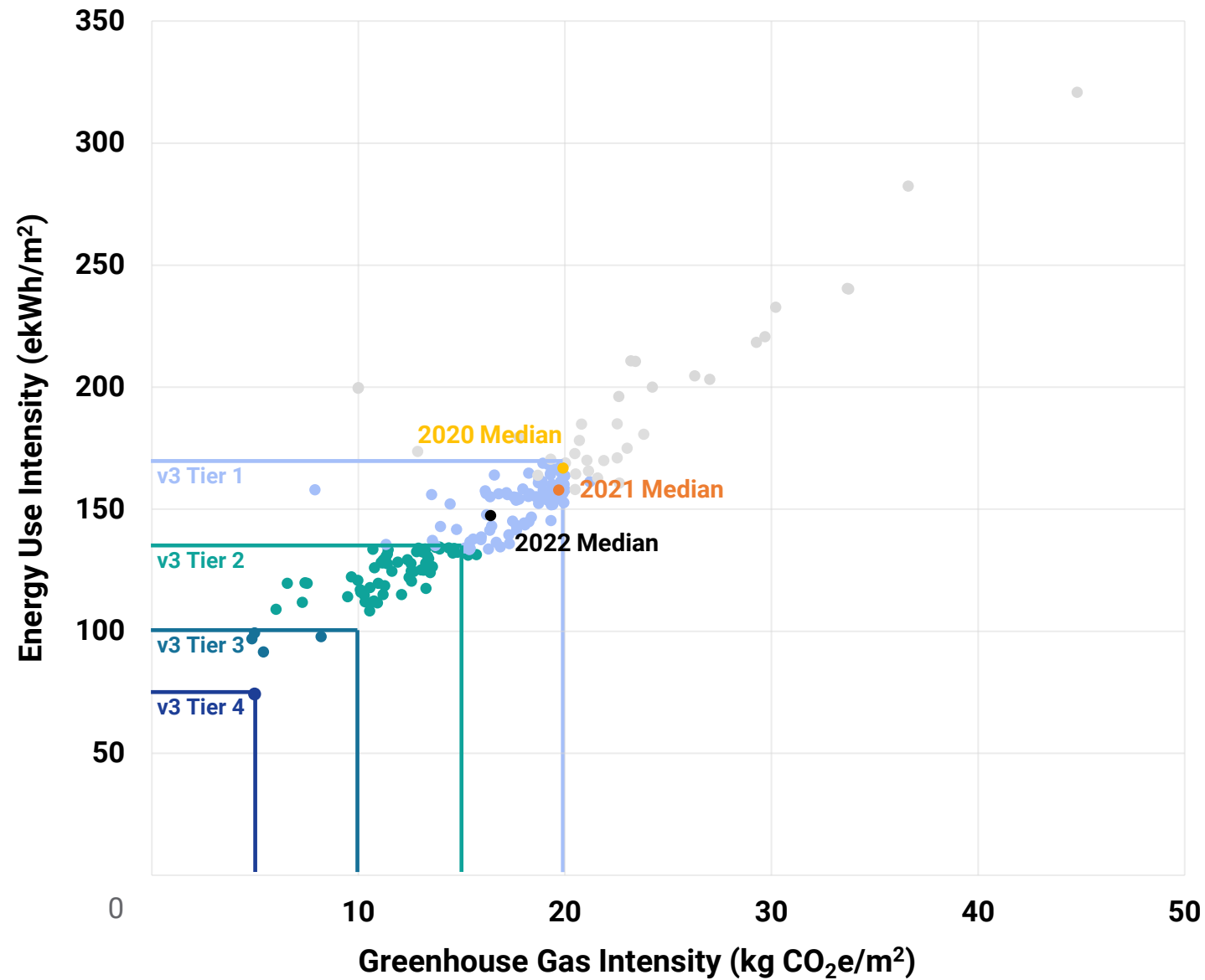


Figure 3. EQ 2022 MURB Modelling Database (Absolute Performance)

In 2022 our energy team completed an impressive amount of work, contributing nearly 150 new MURB projects to our internal database.

On May 1<sup>st</sup>, 2022, TGS v4 was put into effect, bringing with it more stringent energy targets. Since its inception, there has been a notable shift towards lower energy consumption and greenhouse gas emissions.

Figure 4 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 2022.

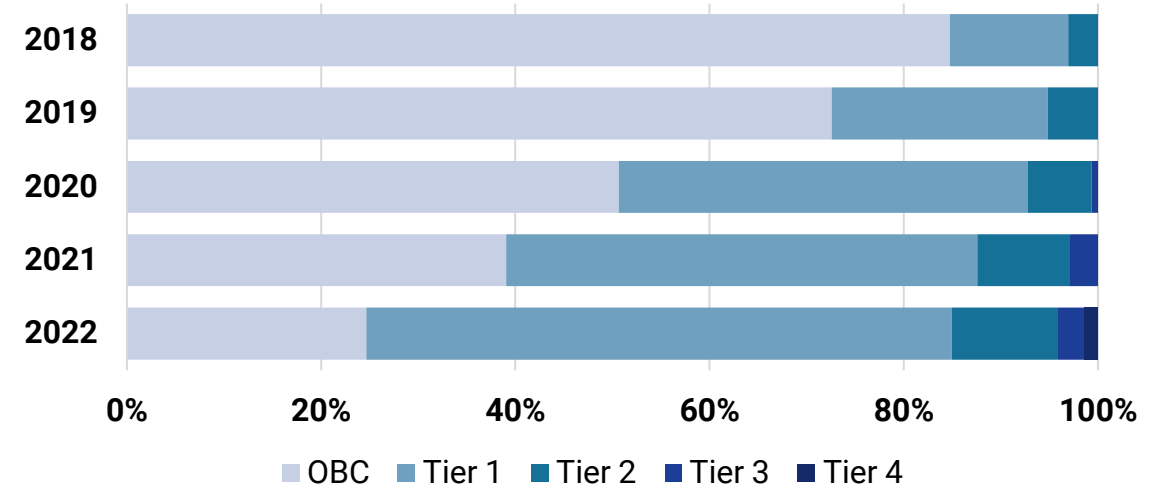


Figure 4. EQ MURB Modelling Database Performance Distribution



# 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 of projects have progressed to building permit. As such, we are now able to compare performance to buildings outside of the City of Toronto as well.

When compared to projects outside Toronto, TGS v3 projects subject to absolute metrics showed a notable performance improvement while those subject to relative metrics did not.

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.

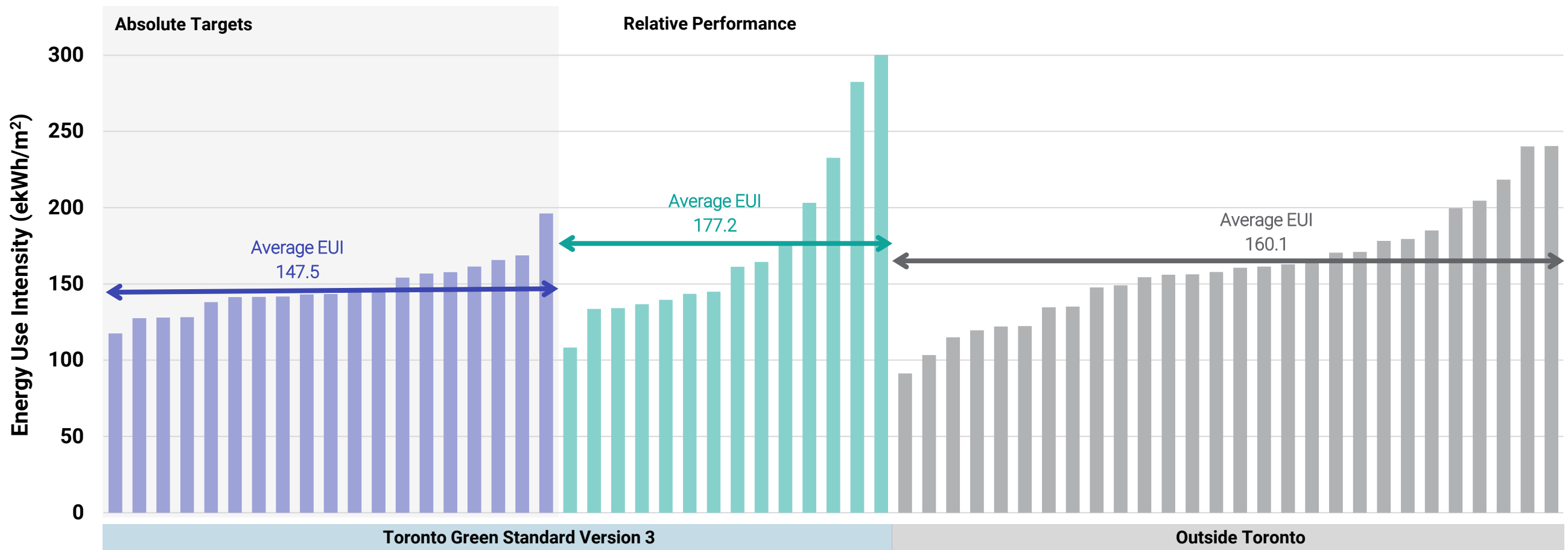


Figure 5. EQ 2022 MURB Modelling Database (Building Permit-Stage Models)

# 2022 Commissioning Outcomes

In 2022, EQ's commissioning team identified over 550 deficiencies across 34 buildings and worked collaboratively with on-site teams to deliver better buildings. Most deficiencies were observed for HVAC systems and controls and are directly tied to building energy performance, occupant comfort, and operability improvements.

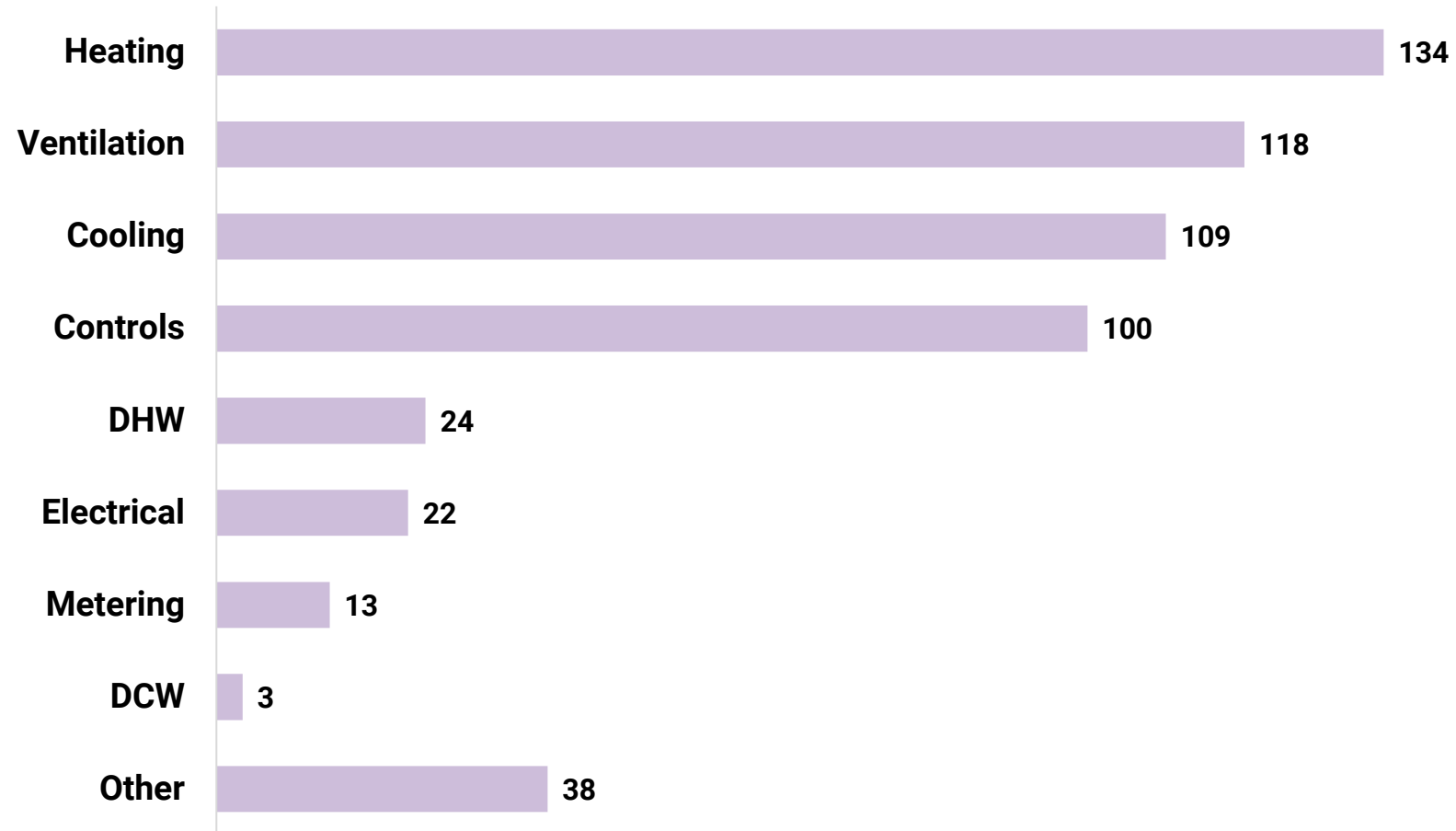


Figure 6. EQ 2022 Commissioning Deficiency Breakdown

# Commissioning – Expanding Impact

Over the course of the year, EQ's commissioning team has seen uptake in scope expansion requests across client portfolios, providing us with opportunities to increase our impact. Three key areas where we're seeing growth are:

## 1. Ongoing and Monitoring-Based Commissioning

Most buildings will lose up to 30% of their efficiency in the first three years of operation<sup>1</sup>. Ongoing and monitoring-based commissioning provide a means to continually monitor and improve building performance over time. Using a combination of utility and performance data trending as well as on-site testing and verification, issues are identified, and corrective action taken to limit performance drift. These services are of particular interest to our purpose-built rental clients and those pursuing LEED v4.

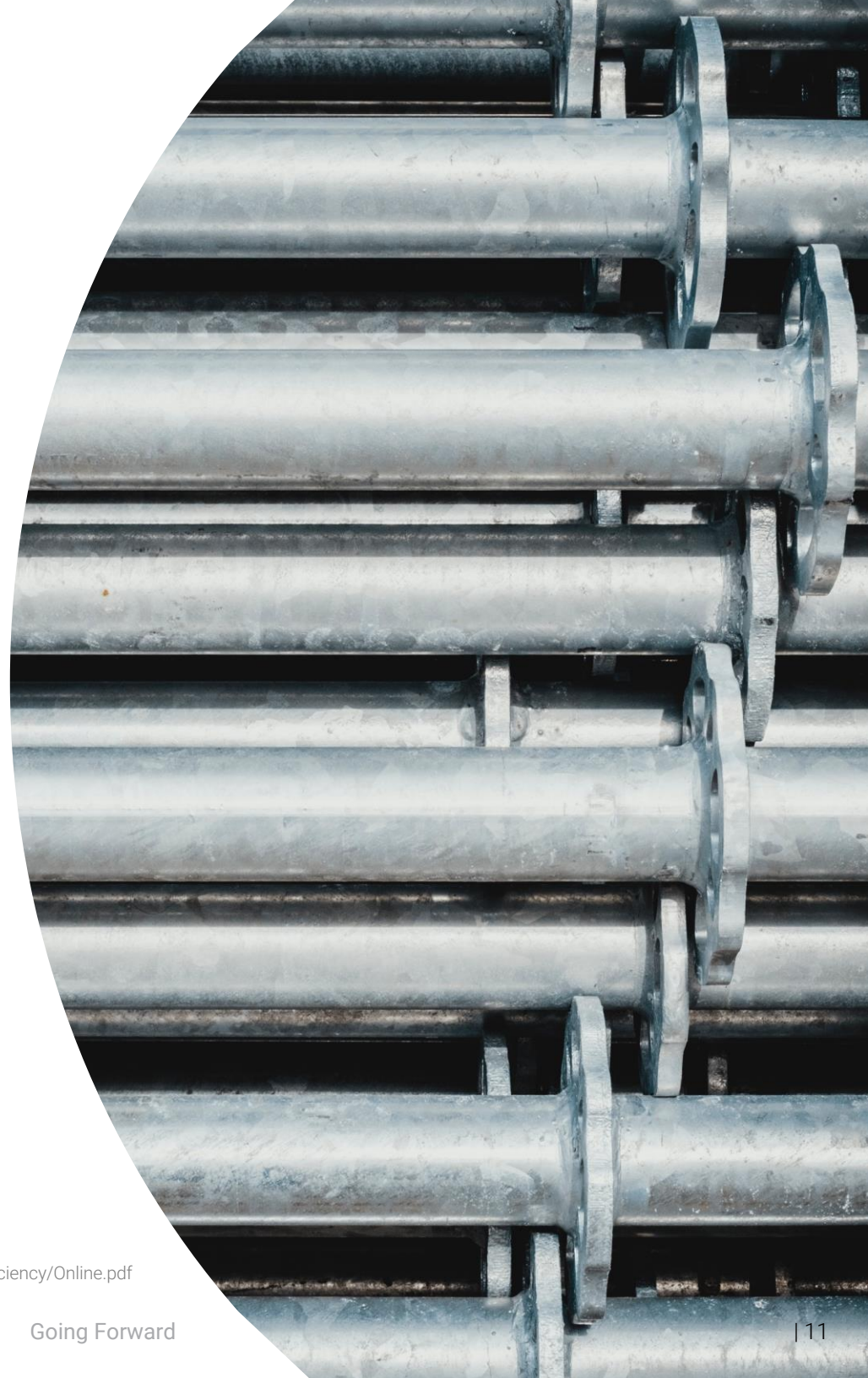
## 2. Existing Building Commissioning

Commissioning can be especially impactful in existing buildings and retrofit projects. Many low-cost/no-cost improvements can be identified to correct performance drift and optimize ongoing operations. These services are of particular interest to clients upgrading existing occupied buildings and to those seeking to participate in utility incentive programs.

## 3. Integrated Testing of Life Safety Systems

At its core, commissioning is an inter-disciplinary process that addresses gaps between traditionally separated scopes of work. In the past year, more clients than ever have expressed interest in full-building integrated systems testing to observe life safety mechanical and electrical systems responses under normal, power loss, and fire alarm conditions. These services are of particular interest to clients with new construction and major renovation projects.

<sup>1</sup> J. L. Newman, "Optimizing Efficiency: High-Performance Strategies for New and Existing Buildings," 02 June 2015. [Online]. Available: <http://www.nfmt.com/highperformance/pdf/OptimizingEfficiency/Online.pdf>



# Looking Forward

Thank you for taking the time to read about some of our recent industry insights and work we completed in 2022. We hope that you are as excited as we are about the pace and magnitude of the changes our industry is making with respect to both building performance and carbon emission reductions.

The CAGBC's LEEDv4.1 O+M standard is primarily focused on building performance and requires building owners and managers to both measure and monitor performance on an ongoing basis. This helps improve understanding of how to best operate buildings and find ways to optimize the performance of existing buildings.

The most recent version of the City of Toronto's Green Standard now sets embodied carbon limits for structural and envelope elements on higher tier buildings. We expect that this will lead to more thoughtful use of construction materials and less carbon intensive material choices.

The CMHC's MLI Select program has been providing developers with strong financial incentives to pursue high performance and low carbon targets. This helps the industry to choose to build better buildings sooner than they perhaps otherwise would have.

There are certainly many difficult problems to be solved in the creation of truly responsible buildings. We will continue to apply our collective efforts to this challenge and share our findings along the way.

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

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

 [instagram.com/eqbuilding/](https://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+3 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	2022
Green Roof	% of Available Roof	59%	48%	45%	27%	<b>16%</b>
Irrigation Intensity	L/m <sup>2</sup> of Site Area	8.1	2.4	4.7	5.8	<b>5.6</b>
Indoor Water Use Intensity	L/m <sup>2</sup>	1172.5	1030.6	1045.0	1450.9	<b>1471</b>
Energy Use Intensity (EUI)	ekWh/m <sup>2</sup>	197.1	235.5	176.0	203.9	<b>198.6</b>
Greenhouse Gas Intensity (GHGI)	kg CO <sub>2</sub> e/m <sup>2</sup>	24.3	28.6	20.7	24.1	<b>21.1</b>
Bicycle Parking	Spaces per Suite	0.76	1.04	1.03	1.01	<b>1.05</b>
EV Charging Capacity	% of Parking Stalls	13%	12%	3%	9%	<b>14%</b>
Landfill Intensity	kg/m <sup>2</sup>	13.6	20.3	31.0	35.9	<b>20.2</b>
Waste Intensity	kg/m <sup>2</sup>	94.6	119.8	131.2	177.4	<b>124.2</b>
Diversion Rate	%	86%	83%	76%	80%	<b>84%</b>

# Appendix I - Additional Data



## Energy

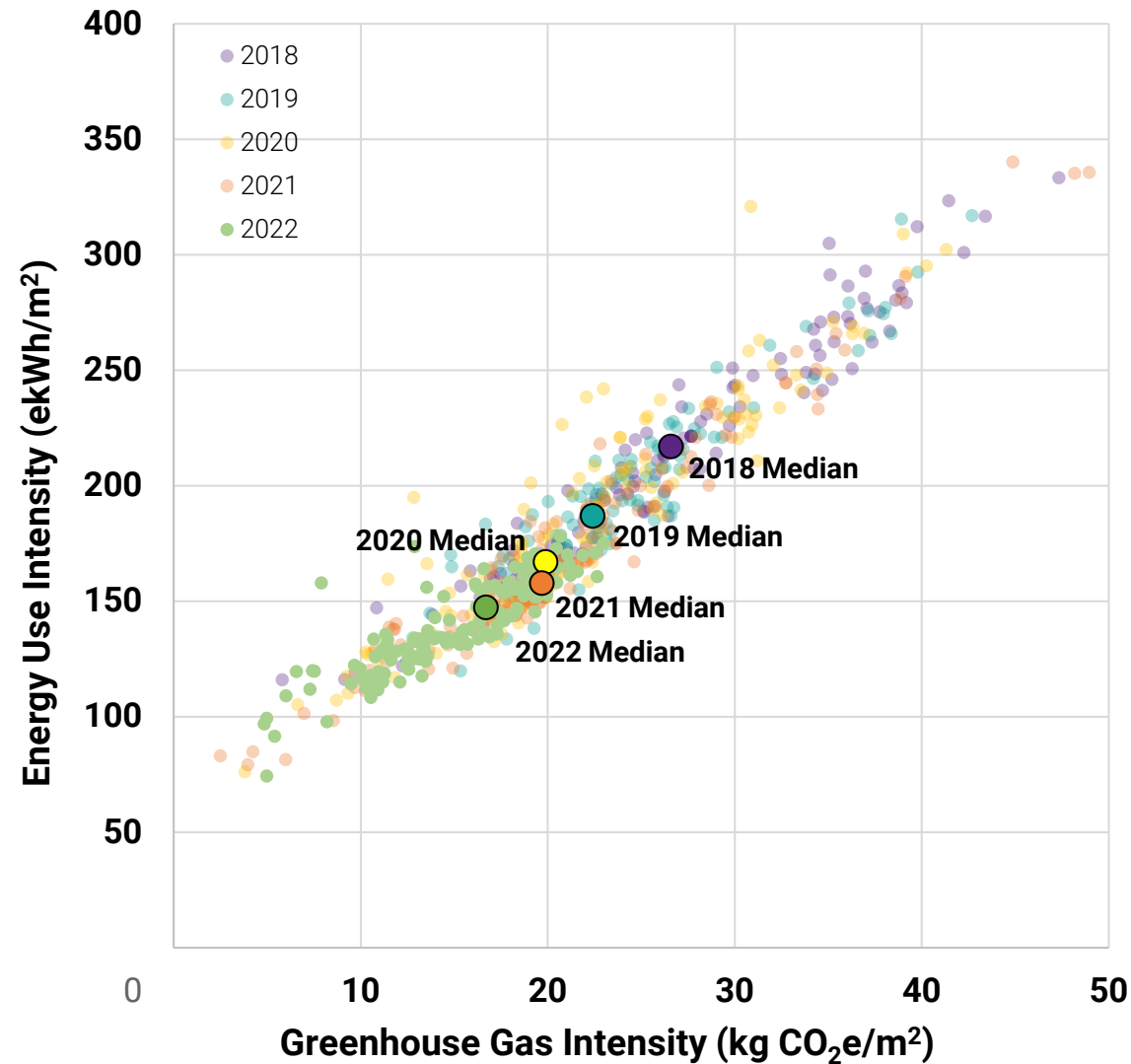


Figure A-1: EQ MURB Modelling Database

Table A-2: EQ MURB Modelling Database Median Performance

	Units	2018	2019	2020	2021	2022
Energy Models	-	131	135	152	169	<b>193</b>
Median EUI	ekWh/m <sup>2</sup>	216.5	188.7	167.8	157.8	<b>147.3</b>
Median GHGI	kg CO <sub>2</sub> e/m <sup>2</sup>	26.6	22.6	20.0	19.7	<b>16.7</b>

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

TGS v3 Tier	2018	2019	2020	2021	2022
Non-Compliant	111	98	77	66	<b>36</b>
Tier 1	16	30	64	82	<b>88</b>
Tier 2	4	7	10	16	<b>16</b>
Tier 3	0	0	1	5	<b>4</b>
Tier 4	0	0	0	0	<b>2</b>

# Appendix I - Additional Data



## Commissioning

Table A-4: EQ Total Deficiency Counts

Deficiency	2018		2019		2020		2021		2022	
	Count	%	Count	%	Count	%	Count	%	Count	%
Heating	164	28%	154	29%	224	26%	215	24%	<b>134</b>	<b>24%</b>
Ventilation	156	27%	127	24%	207	25%	193	22%	<b>118</b>	<b>21%</b>
Cooling	117	20%	105	20%	156	18%	151	17%	<b>109</b>	<b>19%</b>
Controls	61	11%	40	8%	102	12%	142	16%	<b>100</b>	<b>18%</b>
DHW	23	4%	32	6%	47	6%	40	5%	<b>24</b>	<b>4%</b>
Electrical	0	0%	0	0%	20	2%	92	10%	<b>22</b>	<b>4%</b>
Metering	11	2%	1	0%	17	2%	6	1%	<b>13</b>	<b>2%</b>
DCW	9	1%	12	2%	18	2%	15	2%	<b>3</b>	<b>1%</b>
Other	37	6%	58	11%	54	6%	27	3%	<b>38</b>	<b>7%</b>
Total Deficiency Count	<b>578</b>	<b>100%</b>	<b>528</b>	<b>100%</b>	<b>845</b>	<b>100%</b>	<b>880</b>	<b>100%</b>	<b>561</b>	<b>100%</b>
Number of Buildings	20		24		31		30		34	



# Appendix I - Additional Data



## Commissioning

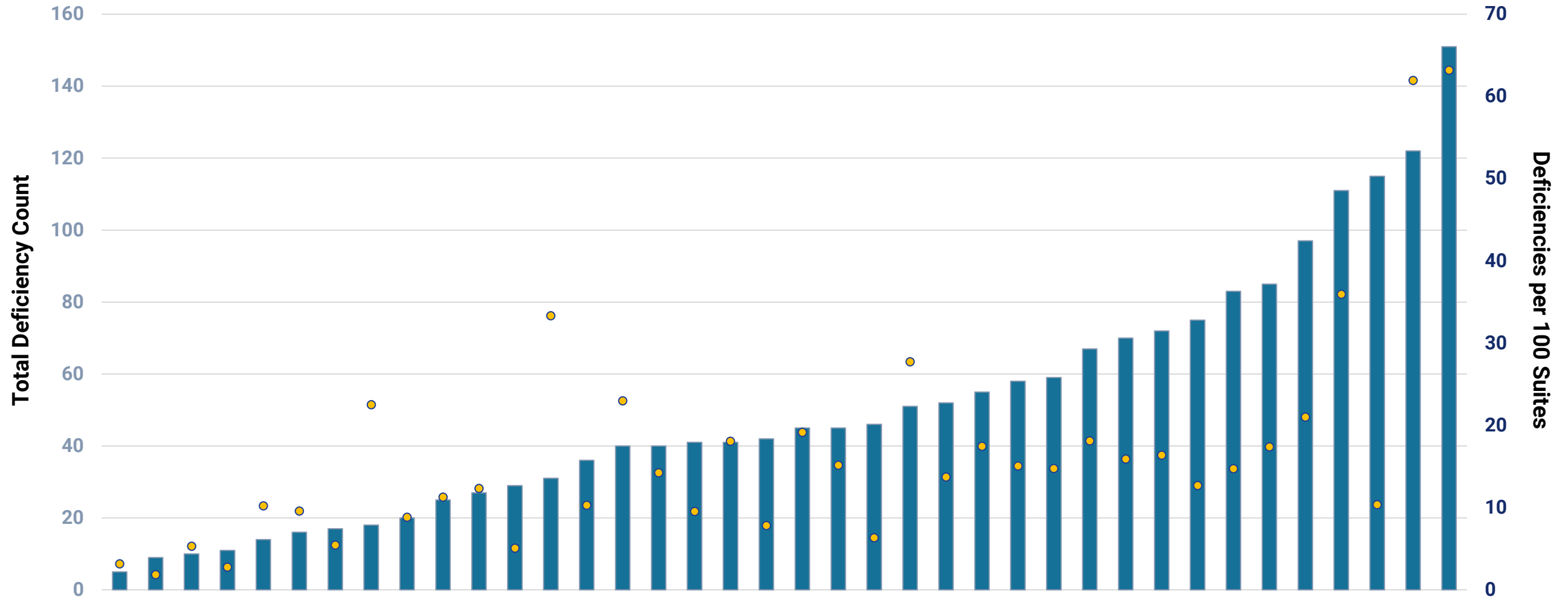


Figure A-2: EQ Fully Commissioned Deficiency Count per Building (2020 to 2022)

# Appendix II - References & Methods



## Carbon Factors

Carbon emission factors for electricity (0.05 kgCO<sub>2</sub>e/kwh) and natural gas (1.899 kgCO<sub>2</sub>e/m<sup>3</sup>) in Ontario were obtained from [SB-10](#).

## Sustainability (pg. 5, 6, 7)

Performance metrics are based on LEED and TGS project statistics. Only projects that achieved certification in 2022 were included in the performance metrics.

## Energy (pg. 8, 9)

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

For Figure 5, 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. 10)

Data presented in Figure 6 is based on deficiency reports prepared through site visits during 2022.

## Image Sources

Project images obtained from project teams.

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

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