

Technical Paper:  
School Facility Condition Assessment Data  
Update for 2016 Assessment Year

Fall 2017

Ontario Ministry of Education

# OVERVIEW

This paper provides context to the Ministry of Education's release of school condition data collected through the School Condition Assessment Program. This program began in 2011 and is directed at identifying the renewal needs of all eligible publicly funded schools in the province. Eligible schools are those that are open and operating, not slated to close and are five years or older. Each year, since the inception of the program, roughly 20% of the provincial portfolio of schools have been assessed. The final set of eligible facilities for cycle one of the program were assessed in 2015. The ministry began a new five-year assessment cycle in 2016.

The program consists of independent, third-party facility assessors conducting a non-invasive inspection of school facilities over a five-year period. The assessment team is comprised of two engineers; one with expertise in building design and construction and the other with expertise in building systems (e.g. mechanical and electrical).

During the assessment of the site and building, the assessors are required to identify renewal events (repair or replacement) that should be completed in a five-year window. The assessments are non-invasive and include site features, building structure, building envelope (exterior walls and roofs), interior components or finishes, mechanical, fire and life safety, and electrical systems.

The assessment team is not responsible for assessing the facility against the current building code, but is required to note violations where they are noticed. The assessment team does not conduct energy, environmental or accessibility audits. Elements that are out of scope include portables, solar photovoltaic panels and other solar energy collectors, the appropriateness of room space, small sheds, play equipment/structures, score boards, goal posts, and flag poles. Asbestos abatement is also out of scope.

Where a visual evaluation is impossible, assessors may recommend that school boards conduct additional studies. In such cases, renewal needs will generally take into consideration the costs of undertaking the additional study, but not needs identified by additional studies.

It should be noted that the assessments are a snapshot in time as of the date of inspection. The renewal needs and facility condition index (FCI), if revisited, can naturally vary from the time of assessment for many reasons:

- Useful life of building components can naturally vary due to weather, use and maintenance. These factors could accelerate or decelerate the amount of renewal work required over the original five-year assessed period.
- Investments made by a board to address renewal needs after the assessment period could help reduce the amount of renewal work that needs to be carried out over the five-year assessed interval. If the building were reassessed during this time, this could potentially reduce the FCI if all other renewal needs remain unchanged or improved.
- Changes in the cost of building components from the time of assessment (e.g. change in exchange rate and commodity prices).

# FIELD DEFINITIONS

## WEIGHTED AGE

The Ministry determines a weighted average age for each school building to better reflect the school building’s age. The age of the original building and all permanent additions are weighted by their respective gross floor area. The example below demonstrates how the weighted average ages are calculated.

<b>Example: School Age Calculation</b>			
Construction History	Age	Gross Floor Area (GFA)	Age x GFA
Original Construction	40	1,000	40,000
Addition	20	1,500	30,000
Addition	10	3,000	30,000
Demolition	40	-500	-20,000
Addition	2	500	1,000
<b>Total</b>		<b>5,500</b>	<b>81,000</b>
<b>Weighted Average Age</b>		$81,000/5,500 = 14.73$	

## GROSS FLOOR AREA (GFA)

Total floor area of a school building, in m<sup>2</sup>, as reported by a board to the Ministry.

## AVERAGE DAILY ENROLMENT (ADE)

Total elementary and/or secondary enrolment in the building for the 2016-17 school year, as reported in the Ministry’s Education Financial Information System (EFIS). For elementary schools, the Average Daily Enrolment is calculated as the number of pupils enrolled in Kindergarten, and Grades 1 through 8. For secondary schools, it is calculated as the number of pupils enrolled in Grades 9 through 12, excluding students 21 years of age and older.

To reflect the fact that renewal needs are calculated on a per building basis, the ADE published through this data release represents the ADE of the full building. In the case of shared buildings (i.e. multiple schools occupying a building), the ADE for each school was added up to reflect the total building ADE.

The calculation of average daily enrolment is governed by O. Reg. 217/16: Calculation of Average Daily Enrolment for the 2016-17 School Board Fiscal Year.

## ASSET REPLACEMENT VALUE

The asset replacement value is calculated using the Ministry benchmarks for new construction. It calculates the value of the replacement school based on the current reported capacity of the building.

Asset Replacement Value

$$= (\text{On-the-Ground Capacity} \times \text{Area per Pupil} \times \text{Construction Benchmark} \\ \times \text{Geographic Adjustment Factor}) + \textit{Replacement Value for Child Care}$$

For facilities assessed between 2011 and 2015, child care spaces were not factored in the facility replacement value. Starting in 2016, under the second assessment cycle, the replacement value for existing child care spaces was added to the facility replacement value.

Asset Replacement Value for Child Care

$$= \text{Number of Child Care Spaces (assuming 26 pupil places per room)} \\ \times \text{Elementary Area per Pupil} \times \text{Elementary Construction Benchmark} \\ \times \text{Geographic Adjustment Factor}$$

Note that replacement values are not provided for facilities that are used primarily for special education or continuing education programming or have temporary accommodations attached (port-a-packs and relocatable modules) to the main building. While these facilities were assessed, the standard Ministry formula is not applicable to these unique sites.

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## ON-THE-GROUND CAPACITY (OTG)

The Ministry has identified categories of instructional space. Each category has a designated room capacity (this differs for elementary and secondary instructional space). Room capacity ratings are closely associated with the student to teacher class sizes ratios that have been set by the Ministry for funding purposes. The sum of a school's designated room capacity ratings is the school's total capacity.

Instructional space includes classrooms, art rooms, science rooms, computer labs and special education classrooms. Operational space, defined as space not available for instructional purposes, is not assigned a capacity rating. This includes staff rooms, washrooms, mechanical spaces, hallways, change rooms, staff meeting rooms and kitchens and academic storage area.

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## VARIABLE - AREA PER PUPIL (APP)

The variable APP is the area, measured in square meters, required for each student in a school. This standardized space benchmark was developed in collaboration with the Expert Panel on Capital Standards in June 2010. It guarantees that all schools, regardless of size, will have the facilities available to provide students with a reasonably equitable range of programs and services.

The variable area per pupil ensures that a higher area benchmark can be used for smaller elementary and secondary schools to off-set the lack of economies of scale due to the size of the project. Therefore, a 300 pupil place elementary school will have a higher per pupil area benchmark (i.e. 125.8 ft<sup>2</sup> or 11.69 m<sup>2</sup> per pupil) than a 500 pupil place elementary school (111.3 ft<sup>2</sup> or 10.34 m<sup>2</sup> per pupil).

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## CONSTRUCTION BENCHMARK

For the 2015 calendar year, the Ministry funded school construction projects based on construction cost benchmarks of \$1,921.46 per m<sup>2</sup> for elementary schools and \$2,096.16 per m<sup>2</sup> for secondary schools. These construction benchmarks were applied to the full 2011-15 assessment cycle, as the replacement values were normalized at the end of the cycle.

For the 2016 calendar year, construction cost benchmarks were increased to \$1,999.09 per m<sup>2</sup> for elementary schools and \$2,180.84 per m<sup>2</sup> for secondary schools. These construction benchmark were applied to all 2016 assessments.

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## GEOGRAPHIC ADJUSTMENT FACTOR (GAF)

The GAF is a cost index used by the Ministry to identify and recognize regional variations in the construction and renewal costs of school facilities. It was first introduced in 1997 and subsequently revised in 2011. The revised 2011 GAF is based on 114 geographic locations that sufficiently represent the differences in costs across the province. Within these 114 cost regions, the GAF ranges from 1.0 (for the lowest cost region) to 1.8 (for the highest cost region). Some school boards may have multiple GAFs in their jurisdiction.

## RENEWAL NEEDS

A school's renewal needs are collected through non-invasive condition assessments that are conducted in eligible schools once per every five-year cycle. The assessments identify renewal events (repair or replacement) that should be completed in a five-year window. Note that renewal dollars included in this dataset reflect the five-year needs identified at the time of assessment (e.g. if a facility was assessed in 2011, total renewal needs from 2011, 2012, 2013, 2014 and 2015 are added). These numbers have been used to establish a baseline and can naturally vary from the time of assessment.

Renewal needs are broken down in the following four categories: Structure, Interior, Services, and Site & Other. These categories are closely aligned with UniFormat ii (Level 1 – Major Building Elements), which is a standard for classifying major building components that are common to most buildings.

Note that for the 2011-15 assessment cycle, as the assessment cycle occurred over five years, the total renewal needs were adjusted for inflation. The inflation adjustment was based on Statistics Canada's Construction Price Index for Institutional Structures.

## STRUCTURE

This category includes renewal needs associated with the substructure and shell (building envelope):

- Substructure: foundations, drainage and basement construction (walls and moisture protection)
- Shell (building envelope): floor construction, exterior walls, windows and doors, and roof systems (coverings, openings and construction)
- This section is consistent with major building elements in category A and B of UniFormat ii Level 1.

## INTERIORS

This category includes renewal needs associated with the interiors of a school:

- Partitions and interior doors: fixed and retractable partitions, doors (frames and hardware)
- Fittings and finishes: wall, floor and ceiling finishes
- This section is consistent with major building elements in category C of UniFormat ii Level 1.

## SERVICES

This category includes renewal needs associated with building systems and services key to operating a building:

- Electrical and plumbing
- HVAC systems
- Fire protection and conveying (e.g. elevators/lifts)
- This section is consistent with major building elements in category D of UniFormat ii Level 1.

## SITE & OTHER

This category includes renewal needs associated with the surrounding school site and fixed equipment/furnishings.

- Site utilities: water supply, storm and sanitary sewers, electrical utilities (distribution systems and lighting), and security and communication systems
- Site features: service and pedestrian tunnels, roadways, parking and pedestrian paving.
- Fixed equipment and furnishings: fixed auditorium seating and walk in refrigeration systems (primarily in secondary schools).
- This section is consistent with major building elements in category E, F and G of UniFormat ii Level 1.

## FACILITY CONDITION INDEX (FCI)

The FCI is a standard benchmark that is used to compare the relative condition of a group of buildings. It compares a facility's total five-year renewal needs to the cost of rebuilding the facility.

$$\text{FCI} = \frac{\text{Five year of renewal needs (year of assessment plus four (4))}}{\text{Asset Replacement Value (based on Ministry Construction Benchmarks)}}$$

In general, the higher the FCI, the more renewal needs and therefore the poorer condition of the building. For the education sector, estimated costs for the next 5 year period are used as the standard period to calculate the FCI.

For example, if it costs an estimated \$1 million to rebuild a facility but \$100,000 to repair it, then the FCI would be 10%.

Note that a school board may choose, for various reasons, to use an FCI over an interval of time that is not consistent with the Ministry's 5-year baseline (based on the scope of the assessment program). The interval can be, for example, longer (e.g. 10 years) or shorter (e.g. 3 years). A board may also choose to use a different time interval (e.g. for a facility assessed in 2012, the Ministry's 5-year FCI would capture the renewal needs during the years 2012 to 2016, but a board may opt to have the 5-year (or longer) interval begin from the current year – i.e. 2016 to 2020).

## ASSESSMENT YEAR

The assessment year field indicates what year the site was last assessed. Sites that are marked as “Not Assessed” were either:

- Not open and operating during the assessment cycle or are slated to close
- New schools (less than five years of age)

## SHARED FACILITY

This column identifies school facilities used by two, or more, schools boards for elementary/secondary programming in the 2016-17 school year. If marked yes under this field, this facility will be listed twice by building ID (once under each board).

## SCHOOL CONDITION IMPROVEMENT INVESTMENT

These columns identify investments made at a school through the School Condition Improvement (SCI) program as of the 2011-12 school year, which is when the program was launched. All investment data has been supplied by school boards to the Ministry. Investments reflect projects that are either complete or in progress. Where investments are below \$10,000 they are noted as “Less than \$10,000”. Investments are presented in two categories:

- Structure and Services
- Interiors, Site & Other

Note that the Ministry is presently only capturing investments made through the School Condition Improvement program, and this data does not reflect investments made through other sources of capital funding.