

Capital Needs Analysis

Federation of Ontario Public Libraries

Report Highlights

Why Libraries? Why Now?

- Safe, accessible, and vibrant public libraries are at the heart of **strong communities**.
- Public libraries provide **critical services** and support to individuals, families, businesses, and communities.
- **Ontario's public library infrastructure is in crisis and needs immediate attention.** Half of all libraries across the province were built prior to 1976 and many are deteriorating, unable to keep pace with changing consumer needs, technological advances, and accessibility requirements.

What is the Price Tag?

- The estimated public library capital infrastructure obligation in Ontario is **\$1.4 billion at present**.
- If not properly addressed, this obligation will grow to **\$2.1 billion by 2021**.

How Can We Be Sure?

- The Federation of Ontario Public Libraries commissioned a comprehensive Capital Needs Analysis in 2011 to create a database and methodology to assess needs and quantify the public library infrastructure obligation. This report will also inform future phases of work by the Federation and other stakeholders in the public library sector.

What Should We Do?

- The Federation on Ontario Public Libraries supports the creation of an **ongoing sustainable senior government funding program** designated exclusively for the proper maintenance, renewal, renovation, rehabilitation and expansion of Ontario public libraries. We must **work together** to encourage all levels of government to support the proper funding of Ontario's public library facilities, now and into the future.



Federation of Ontario Public Libraries

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Capital Needs Analysis

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Executive Summary

A. Overview

The state of public library infrastructure in Ontario is in crisis and needs immediate attention. A lack of consistent government funding has contributed to the deterioration of hundreds of public library facilities across the province, many of which require complete re-purposing or redevelopment in order to meet changing consumer needs, technological advances, and accessibility requirements. The extent of the current public library capital infrastructure obligation is \$1.4 billion, rising to \$2.1 billion by 2021.

This finding should concern all levels of government. Safe, accessible, and vibrant public libraries are at the heart of strong communities. Public libraries provide critical services and support to individuals, families, businesses, and communities, yet municipalities are often hard pressed to prioritize library facilities above other funding pressures. The Federation of Ontario Public Libraries believes that the best way to address this crisis is to create an ongoing sustainable senior government funding program designated exclusively for the proper maintenance, renewal, renovation, rehabilitation and expansion of Ontario public libraries.

This Capital Needs Analysis of Ontario public library facilities was commissioned by the Federation of Ontario Public Libraries to place a dollar value on the library infrastructure obligation in Ontario. In doing so, this study:

- captures the condition of existing Ontario public library facilities by creating and implementing a mechanism to identify and categorize library facilities in Ontario;
- clarifies gaps and opportunities by focusing on areas such as Accessibility for Ontarians with Disabilities Act (AODA) requirements, environmental standards, and future capacity;
- identifies an order of magnitude capital cost estimate for repairing or replacing the existing facility stock;
- identifies the current and/or future shortfall in library space provision, and the associated capital costs;
- builds understanding of the current state of public library infrastructure in Ontario; and
- assists stakeholders (federal and provincial governments, Association of Municipalities of Ontario, etc.) in planning capital investment in Ontario public library facilities to the year 2021.

The Federation's Research and Development Task Force served as the steering committee for this assignment and advice was also sought from the Federation's Board of Directors. A Consulting Team consisting of Monteith Brown Planning Consultants, The JF Group, and MacLennan Jaunkalns Miller Architects developed the study methodology, administered the survey, and reported in its analysis.

B. About the Survey

To achieve the project objectives, a process was designed to collect reliable and valid data using appropriate research methodology and an online survey. The survey was distributed to every library system in Ontario in order to collect data specific to each main/central and branch library, including age, size, ownership, condition, and past renovations, as well as the status of physical accessibility improvements within each library system. This information was then cross-referenced with population data in order to correlate the data by geographic region, community size, and First Nations communities. The survey was open between August 12, 2011 and October 5, 2011. The Federation diligently followed up to encourage library systems across the province to participate in this initiative.

A total of 235 online survey responses (out of 321) were received, representing 73% of all library systems in Ontario. These 235 library systems account for 832 library facilities and serve approximately 98% of Ontario's total population (responses were received from 100% of communities with populations exceeding 25,000), indicating that the majority of non-participating systems were from very small communities. Using the base data established through the survey, this study captures the infrastructure obligation not only for the responding library systems, but also uses assumptions to identify requirements for those that were unable to complete the survey.

C. Key Observations

Below are some of the primary findings from the online survey (see Appendix for more results):

- The median age of owned library facilities is 36 years (built in 1975). 64% of facilities are over 25 years old.
- The 832 library facilities provide a total gross floor area of 7.59 million square feet.
- The province-wide per capita provision ratio is 0.58 square feet per capita (estimated for 2011).
- 108 libraries (13%) are leased from a (non-municipal) third party.
- 372 libraries (53% of owned libraries) were identified as having undergone a major renovation in the past (65% of known renovations have occurred in since 2000 and 83% since 1990). This was one of several factors that was used to determine current repair and replacement costs.
- 145 library facilities (17%) do not have accessible public entrance for persons with physical disabilities, 219 library facilities (26%) do not have accessible public washroom for persons with physical disabilities, and 74 library facilities (9%) do not provide public access between levels for persons with physical disabilities.
- 24 library systems (10%) have an inadequate distribution of service outlets (i.e., residents are required to travel more than 30 minutes to reach the nearest public library¹).
- 85 library systems (36%) were able to quantify their library space needs to the year 2021 (totalling an additional 1,548,683 square feet).

To inform future assessments, it is recommended that the Federation adopt a mechanism to maintain an up-to-date database of the number and physical state of library facilities throughout the province.

¹ Ontario Public Library Guidelines Monitoring and Accreditation Council. 2007. [Ontario Public Library Guidelines Fourth Edition\) For Municipal and County Public Libraries.](#)

D. The Capital Infrastructure Obligation

The total capital infrastructure obligation for public libraries in Ontario – between 2011 and 2021 – is estimated to be between \$1.85 billion and \$2.12 billion. This is broken down as follows:

- **Currently, the capital infrastructure obligation for Ontario’s public libraries is estimated at \$1.37 billion** (\$1,367.2 million). Of this amount, \$1,196.3 million is associated with the repair and replacement of existing library facilities, including accessibility improvements. The current space shortfall can be addressed at an estimated cost of \$170.9 million, including the conversion of temporary public library structures into permanent structures.
- **By 2021, this province-wide public library capital infrastructure obligation will grow by \$479.8 to \$756.6 million.** \$479.8 million of this can be directly attributed to population growth over the next ten years (including new public library construction and repair of these new facilities); existing funding streams (e.g., Development Charges) may address a portion of these requirements. In addition, should sufficient funding not be available to repair and/or replace existing public libraries in a timely manner, then up to \$276.8 million of additional funding would be required to maintain the existing stock of public libraries for another ten years, bringing this total to \$756.6 million by 2021.

Capital Obligation for All Public Libraries in Ontario

	Capital Obligation
Current Space Shortfall (2011)	\$113.0 million
Repair & Replacement of Existing Facilities (2011)	\$1,142.7 million
Accessibility Upgrades for Existing Facilities (2011)	\$53.6 million
Conversion of Temporary Facilities (2011)	\$57.9 million
Total Current Obligation (2011)	\$1,367.2 million
Future Space Requirements, based on population growth (2012-2021)	\$448.0 million
Repair of Future Facilities (2012-2021)	\$31.8 million
Total Future Obligation (2012-2021)	\$479.8 million
Repair & Replacement of Existing Facilities if existing facilities are <u>not</u> properly repaired/replaced (2012-2021)	\$276.8 million
Total Obligation (2011-2021)	\$1,847.0 million to \$2,123.8 million

Notes:

The current space shortfall should be interpreted as a minimum as it is based on “point-in-time” data and a guideline of 0.6sf/capita applied across the entire Province (rather than individual library systems).

Costs are based on the input from the survey and extrapolated across all public library facilities in Ontario.

All costs are in 2011/2012 dollars; they are not adjusted for inflation.

Totals may not add due to rounding.

To identify these order of magnitude cost estimates relating to the current and future infrastructure obligation, an approach was established to quantify the repair/replacement and accessibility upgrade costs of existing infrastructure, as well as the costs associated with any current and future gap in space provision. The details of this approach are described briefly below and in greater detail in the Appendix.

For estimating repair and replacement costs, a formula was developed and applied to existing library buildings that are owned by local municipalities and/or library systems. This approach began by calculating a generic replacement cost for each facility (estimated at \$440 per square foot based on current building sizes; this benchmark accounts for construction, site development, and soft costs and is based on recent library projects in Ontario). Using various multipliers and discounts, the formula then takes into account a series of factors, such as building age, condition, heritage value, and timing and nature of past renovations. These factors were essential to identifying a repair and replacement cost that – at a high level – is unique to each facility. The results for each location were then summed to determine the Province-wide capital repair and replacement costs.

The costs to make existing facilities physically accessible were identified separately from their overall repair and replacement costs. Generic costs for installing accessible public entrances, accessible public washrooms, and elevators were applied to each library facility that was lacking these amenities, as reported through the survey.

For facilities that were not captured in the survey database (estimated to be 260 facilities serving a total of 2% of Ontario's population), a provision rate of 0.69sf/capita (the average for small communities, as determined through the survey) was applied to estimate the amount of library space associated with these buildings. Standard percentages were then applied to determine the repair/replacement and accessibility improvement costs.

For library facilities identified as temporary, a standard cost of \$440/sf has been applied, with the assumption that permanent space is required currently or in the near future.

In order to determine the current shortfall of library space, a guideline of 0.60 square feet per capita was applied against the 2011 population and supply figures. This guideline has been supported by many within the library sector for several years as a minimum standard for calculating space needs. Given the evolving role and focus of libraries in modern society, it is recommended that the Federation consider reassessing the validity of the 0.60 square feet per capita guideline as part of a future initiative. Nevertheless, for the purposes of this study, the findings suggest a gap in infrastructure provision at present (the current Province-wide provision level is 0.58 square feet per capita). This space shortfall is then applied to the benchmark of \$440/sf in order to identify the total capital cost to mitigate the current gap in space provision.

In identifying future needs (to the year 2021), the anticipated population growth between 2011 and 2021² was examined and applied against the planning guideline of 0.6sf/capita. This figure was then applied to the recommended cost benchmark to identify the total order of magnitude cost for additional library infrastructure between 2011 and 2021. An analysis of future funding sources is beyond the scope of this analysis.

² Ontario Ministry of Finance. 2011. [Ontario Population Projections Update, 2010-2036](#).

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Appendix

Note: This Appendix should be read in conjunction with the Executive Summary.

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1. Study Goals

The following goals describe the desired end results for the study:

1. To place an order of magnitude dollar value on the current library infrastructure obligation in Ontario (system-wide, and by size of community and region).
2. To identify how this library infrastructure obligation is forecasted to change by 2021.
3. To establish appropriate metrics and capture objective data that can be used to estimate library facility conditions and capital requirements.
4. To leverage existing data (e.g., population, facility size, facility age, accessibility, etc.) to supplement the analysis, where appropriate.
5. To establish and implement a robust methodology that utilizes reasoned lifecycle assumptions regarding library infrastructure based on age and type of construction.
6. To minimize the amount of effort required from each library system participating in this study, while still encouraging meaningful and useful input.
7. To achieve an online survey response rate of 75% or greater, representing 90% or more of Ontario's population.
8. To generate awareness of the Federation's position regarding the infrastructure issue amongst Ontario library systems.
9. To complete the project by December 2011 and to present the study findings at the 2012 Ontario Library Association Conference.

It is also our hope that the database created through this project can provide information that is useful in long-term planning for other future initiatives. The data collected for this project has been compiled, tabulated and analyzed so that it may be useful for library managers, board members, and other senior decision-makers. With that being said, the database represents a “snapshot in time”, and periodic updates will be required to extend the usefulness of this information to other projects. As such, we strongly recommend that the Federation adopt a mechanism to maintain an up-to-date database of the number and physical state of library facilities throughout the province.

We are not aware of similar library infrastructure studies in other Canadian provinces. The closest comparator may be a study completed for the sport and recreation sector in Ontario (2006/07). Led by Parks and Recreation Ontario, the “Infrastructure Renewal Strategy for Recreation in Ontario” found that hundreds of major municipal recreation facilities were at or beyond their useful life and were likely candidates for imminent capital rehabilitation at an estimated price tag of \$5 billion. This strategy likely played a role in recent Federal and Provincial infrastructure funding programs, including the Recreation Infrastructure Canada (RInC) program in 2009. Many funds were also directed toward capital projects for recreation (and libraries) through the recent Building Canada Fund and Infrastructure Stimulus Fund.

2. Online Survey Process

The following describes the key steps and achievements in the survey process:

- 1) The survey was drafted by the Consulting Team and reviewed by the Research and Development Task Force in late July 2011. The draft survey was then placed online using a survey hosting service.
- 2) Following this, the survey was pre-tested with approximately five library systems across Ontario. Feedback was received on the survey’s content, format, and clarity. Minor modifications were then made to the survey.
- 3) On August 12, 2011, the Federation emailed all library systems in Ontario (addressed to the CEOs/Chief Librarians) notifying them of this project, its importance, and how to participate in the survey. This email contained a list of the survey questions (to allow respondents to start planning their responses), as well as a link to the online survey. Digital and hard copy surveys were also made available for any libraries that did not wish to complete the survey online. Due to restrictions with the online survey, the four largest library systems in Ontario were contacted directly to complete parts of their submission through a spreadsheet. The survey was promoted through the Federation’s website and social media, as well as follow-up emails to non-participating libraries.
- 4) An initial deadline of approximately 5 weeks was given for completion of the survey (September 14, 2011). 180 responses were received by this initial deadline, representing approximately 57% of the sample.
- 5) Following this initial deadline, emails and personal telephone calls were placed to non-participating libraries to induce response, with a firm final deadline of October 5, 2011. A total of 235 responses (out of 321) were received by this final deadline, representing approximately 73% of the sample. A cross-reference to population data indicates that these 235 library systems serve approximately 98% of Ontario’s total population (the majority of non-participating systems were from very small communities, mostly in northern Ontario).

- 6) Throughout the active survey period, the submissions were monitored by the Consulting Team and those respondents that did not complete the survey properly (e.g., ambiguous or incomplete survey data) were followed up with by the Consulting Team to complete their responses. Multiple entries were merged to eliminate any double-counting. This task continued throughout October 2011, during which the survey data was being analyzed.

A Steering Committee comprised of representatives from the Federation of Ontario Public Libraries' Research and Development Task Force was created to provide advice regarding sector specific issues and to offer appropriate direction to the project. The Federation's Board of Directors was also consulted to provide strategic advice and high-level guidance to the project. A Consulting Team consisting of Monteith Brown Planning Consultants, The JF Group, and MacLennan Jaunkalns Miller Architects developed the study methodology, administered the survey, and reported in its analysis. Administrative oversight being provided by the Federation's CEO and Librarian-Administrative Assistant.

3. Observations

Breakdown of Responses

A total of 315 public library systems were asked to participate in this study; 235 responses were received (73%).

- The responses account for facilities that serve 98% of Ontario's population, ranging from 92% in the Northwest and Northeast, to 99% in the GTA and Southwest.
- Responses were received from 100% of communities with populations exceeding 25,000. Conversely, only 73% of communities with populations below 5,000 responded to the survey.
- 47% of First Nations communities responded to the survey.

The following table illustrates the range of systems that responded to the survey.

Table 1:
Summary of Responses to the Capital Needs Analysis by Region, Community Size, and Type of Community

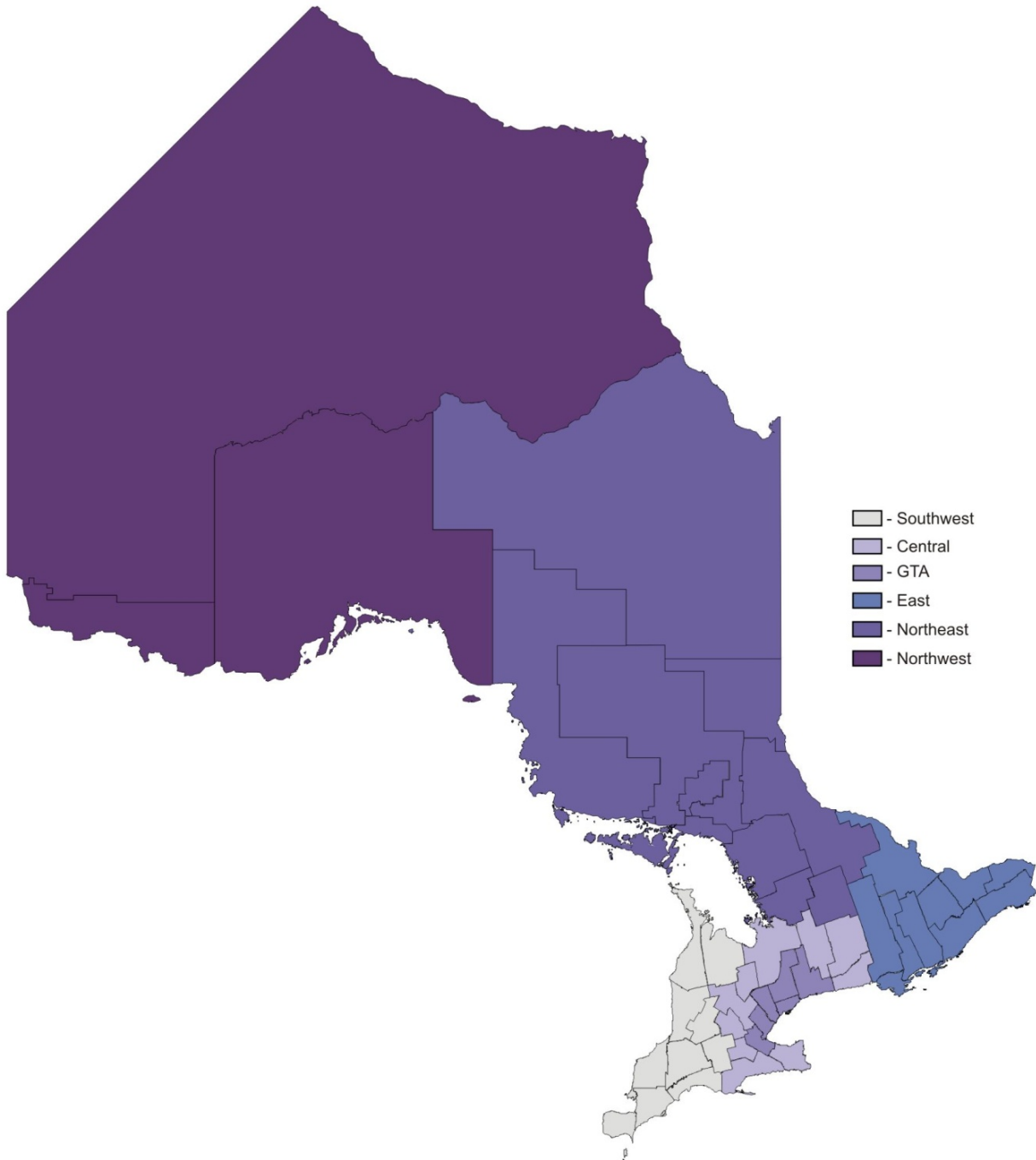
	Library Systems Responding	Estimated 2011 Population of Responding Systems*	Percent Capture of Ontario Population	Library Facilities	Square Feet	Square Feet per Capita* (2011)
Sorted by Region (see map on the following page)						
Northeast	62	504,547	92%	93	356,047	0.71
Northwest	17	182,877	92%	26	143,681	0.79
East	42	1,650,387	93%	141	899,192	0.54
Central	64	2,834,705	98%	208	1,771,671	0.62
GTA	24	6,262,257	99%	196	3,396,848	0.54
Southwest	26	1,594,269	99%	168	1,018,806	0.64
Total	235	13,029,041	98%	832	7,586,245	0.58
Sorted by Community Size**						
Very Small	88	227,045	73%	116	297,033	1.31
Small	35	287,345	80%	59	198,921	0.69
Medium	44	785,903	86%	90	552,033	0.70
Midrange	43	2,541,643	100%	220	1,535,401	0.60
Large	18	2,975,012	100%	150	1,580,015	0.53
Largest	7	6,212,093	100%	197	3,422,842	0.55
Total	235	13,029,041	98%	832	7,586,245	0.58
Sorted by Type of Community						
First Nations***	21	26,404	47%	26	68,724	2.60
Not First Nations	214	13,002,637	98%	806	7,517,521	0.58
Total	235	13,029,041	98%	832	7,586,245	0.58

*Including population of all contracting communities. All population figures are 2011 estimates. The population data is based on the 2006 Census of Canada (source: Statistics Canada), adjusted for net undercoverage (3.69%), and extrapolated to current year figures based on "Ontario Population Projections Update, 2010-2036" published by the Ontario Ministry of Finance (2011). Population data from the 2011 Census is expected to be released in February 2012, at which point the Federation may wish to update portions of this report.

** Very Small (population below 5,000), Small (5,000 – 9,999), Medium (10,000 – 24,999), Midrange (25,000 – 99,999), Large (100,000 – 249,999), Largest (250,000+)

*** Although there was a lower than average response rate among First Nations libraries, several emails and personal telephone calls were placed to all non-participating libraries to encourage their response. Some small library systems had difficulty responding due to their part-time hours, lack of building data, and limited internet connectivity (hard copies were also available).

Map of Geographic Regions



Library Space & Ownership

- The 832 library facilities provide a total gross floor area of 7.59 million square feet, for an average library size of 9,118 square feet.
- The province-wide per capita provision ratio is 0.58 square feet per capita (estimated for 2011). The space to population ratio is best in the Northwest and Northeast, and poorest in the GTA and the East.
- Of the 832 library facilities, 217 were characterized as central or main libraries and 615 were listed as branch libraries. There were also a total of 9 bookmobiles across the Province.
- 29 libraries (3%) were identified as temporary or interim facilities.
- 439 libraries were identified as being in stand-alone buildings (not attached to another use), compared to 284 libraries within multi-use (shared space) complexes; this question was not asked of leased spaces
- 108 libraries are leased from a third party and 706 are owned by the local/regional municipality, first nation, or local services board (18 were unknown).

Facility Age, Condition & Renovations

- The median age of owned library facilities is 36 years (built in 1975). 16% of facilities have been built in the past ten years, 20% are 11 to 25 years old, 35% are 26 to 49 years old, and 29% are 50 years of age or older. The large majority of facilities (64%) are over 25 years old.
- 372 libraries (53% of owned libraries) were identified as having undergone a major renovation in the past.
- The most common renovation was interior rehabilitation (38% of owned libraries), followed by building expansion (24% of owned libraries), and roof replacement (21% of owned libraries).
- Most known renovations were undertaken within the past ten years. In general, it appears that respondents were less likely to be aware of the details of renovations that occurred in the more distant past.
- 93 libraries (11%) were identified as being a designated heritage building (in whole or in part).
- Respondents were asked to rate the physical condition of each library and its building systems on a scale of 1 to 10 (where 1 is poor and 10 is excellent). The average rating was 6.87 (this rating was 6.92 for owned libraries and 6.53 for leased libraries). In terms of geographic region, the highest rating was in the Southwest (7.42) and lowest in the East (6.10). The average rating in First Nations communities was 5.45.

Physical Accessibility

- 145 library facilities (17%) do not have accessible public entrance for persons with physical disabilities, as per the definition provided.
- 219 library facilities (26%) do not have accessible public washroom for persons with physical disabilities, as per the definition provided.
- 253 libraries have public areas on multiple floors; of these 74 (9% of all libraries) do not provide access between levels for persons with physical disabilities, as per the definition provided.

Gaps & Future Space Needs

- 24 library systems (10%) indicated that there are persons residing within their community that are required to travel more than 30 minutes to reach the nearest public library service outlet³. This standard is indicative of an inadequate distribution of service outlets. Half of the 24 communities are in Northeast and Northwest Ontario.
- 114 library systems (49%) indicated that they have undertaken a planning process within the past five years to examine their current and future space requirements. 85 (36%) of these systems identified a need for 1,548,683 square feet of additional space to meet future requirements to the year 2021. Half of these needs are from 10 individual library systems.

Data tables for key attributes are shown below and on the following page.

Data by Region, Community Size, and Community Type

Table 2

Region	SqFt		Library Systems	2011 Population (Resident & Contract)			Central	Branches	Total Locations	
		%			%	SF/Cap				%
Northeast	356,047	4.7%	62	504,547	3.9%	0.71	62	31	93	11.2%
Northwest	143,681	1.9%	17	182,877	1.4%	0.79	17	9	26	3.1%
East	899,192	11.9%	42	1,650,387	12.7%	0.54	38	103	141	16.9%
Central	1,771,671	23.4%	64	2,834,705	21.8%	0.62	56	152	208	25.0%
GTA	3,396,848	44.8%	24	6,262,257	48.1%	0.54	22	174	196	23.6%
Southwest	1,018,806	13.4%	26	1,594,269	12.2%	0.64	22	146	168	20.2%
Total	7,586,245	100.0%	235	13,029,041	100.0%	0.58	217	615	832	100.0%

Note: Population includes contracting municipalities/local service boards. 2011 estimates are interpolated from the Ontario Ministry of Finance Projections (2010-2036).

Table 3

Community Size	SqFt		Library Systems	2011 Population (Resident & Contract)			Central	Branches	Total Locations	
		%			%	SF/Cap				%
Very Small (Below 5,000)	297,033	3.9%	88	227,045	1.7%	1.31	87	29	116	13.9%
Small (5,000 – 9,999)	198,921	2.6%	35	287,345	2.2%	0.69	32	27	59	7.1%
Medium (10,000 – 24,999)	552,033	7.3%	44	785,903	6.0%	0.70	42	48	90	10.8%
Midrange (25,000 – 99,999)	1,535,401	20.2%	43	2,541,643	19.5%	0.60	33	187	220	26.4%
Large (100,000 – 249,999)	1,580,015	20.8%	18	2,975,012	22.8%	0.53	16	134	150	18.0%
Largest (250,000+)	3,422,842	45.1%	7	6,212,093	47.7%	0.55	7	190	197	23.7%
Total	7,586,245	100.0%	235	13,029,041	100.0%	0.58	217	615	832	100.0%

Note: Population includes contracting municipalities/local service boards. 2011 estimates are interpolated from the Ontario Ministry of Finance Projections (2010-2036).

Table 4

Community Type	SqFt		Library Systems	2011 Population (Resident & Contract)			Central	Branches	Total Locations	
		%			%	SF/Cap				%
First Nations	68,724	0.9%	21	26,404	0.2%	2.60	21	5	26	3.1%
Not First Nations	7,517,521	99.1%	214	13,002,637	99.8%	0.58	196	610	806	96.9%
Total	7,586,245	100.0%	235	13,029,041	100.0%	0.58	217	615	832	100.0%

Note: Population includes contracting municipalities/local service boards. 2011 estimates are interpolated from the Ontario Ministry of Finance Projections (2010-2036).

³ Ontario Public Library Guidelines Monitoring and Accreditation Council. 2007. Ontario Public Library Guidelines Fourth Edition) For Municipal and County Public Libraries.

Table 5

Region	Known Renovations	Heritage Building	Multi-use	Stand-alone	Own	Lease	Permanent	Temporary	Avg. Condition Rating (0-10)
Northeast	38	4	42	33	74	17	89	4	6.40
Northwest	12	2	11	12	21	3	24	2	6.35
East	56	22	41	76	112	24	130	7	6.10
Central	92	28	76	108	180	24	197	8	7.17
GTA	92	20	57	113	169	26	191	5	6.94
Southwest	82	17	57	97	150	14	165	3	7.42
Total	372	93	284	439	706	108	796	29	6.87
%	44.7%	11.2%	39.3%	60.7%	86.7%	13.3%	96.5%	3.5%	
Don't Know / No Response / NA	460	739	109		18		7		

Table 6

Community Size	Known Renovations	Heritage Building	Multi-use	Stand-alone	Own	Lease	Permanent	Temporary	Avg. Condition Rating (0-10)
Very Small (Below 5,000)	48	4	63	38	94	19	108	10	6.41
Small (5,000 – 9,999)	33	7	23	30	51	3	53	0	7.63
Medium (10,000 – 24,999)	40	17	27	55	76	12	87	7	6.88
Midrange (25,000 – 99,999)	80	34	67	128	195	24	213	5	6.81
Large (100,000 – 249,999)	65	7	53	73	125	19	140	5	7.34
Largest (250,000+)	106	24	51	115	165	31	195	2	6.64
Total	372	93	284	439	706	108	796	29	6.87

Table 7

Community Type	Known Renovations	Heritage Building	Multi-use	Stand-alone	Own	Lease	Permanent	Temporary	Avg. Condition Rating (0-10)
First Nations	7	2	18	7	24	0	22	3	5.45
Not First Nations	365	91	266	432	682	108	774	26	6.91
Total	372	93	284	439	706	108	796	29	6.87

Table 8

Region	No Accessible Entrance	No Accessible Washroom	Multi-level, not Accessible	Inadequate Distribution	Recent Needs Study	Additional SF requested to 2021
Northeast	20	27	14	10	24	50,316
Northwest	5	5	5	2	8	36,908
East	32	39	8	3	20	239,050
Central	49	77	15	5	30	402,784
GTA	13	16	7	2	18	673,625
Southwest	26	55	25	2	14	146,000
Total	145	219	74	24	114	1,548,683
%	17.4%	26.3%	8.9%	10.2%	48.5%	20.4%
Don't Know / No Response / NA	687	613	180	808	718	

Table 9

Community Size	No Accessible Entrance	No Accessible Washroom	Multi-level, not Accessible	Inadequate Distribution	Recent Needs Study	Additional SF requested to 2021
Very Small (Below 5,000)	27	36	19	12	33	51,204
Small (5,000 – 9,999)	8	19	4	6	13	62,378
Medium (10,000 – 24,999)	22	27	8	1	26	187,320
Midrange (25,000 – 99,999)	61	82	30	1	23	402,634
Large (100,000 – 249,999)	7	37	7	2	13	428,283
Largest (250,000+)	20	18	6	2	6	416,864
Total	145	219	74	24	114	1,548,683

Table 10

Community Type	No Accessible Entrance	No Accessible Washroom	Multi-level, not Accessible	Inadequate Distribution	Recent Needs Study	Additional SF requested to 2021
First Nations	8	13	6	2	5	18,670
Not First Nations	137	206	68	22	109	1,530,013
Total	145	219	74	24	114	1,548,683

Data by Age of Facility

Table 11

Age of Facility	SqFt		Central	Branches	Total Locations		Known Renovations	Heritage Building	Multi-use Stand-alone	
0-5 years (2006-2011)	534,270	7.6%	16	48	64	8.9%	6	1	33	31
6-10 years (2001-2005)	613,445	8.7%	16	34	50	6.9%	6	0	32	18
11-25 years (1986-2000)	1,554,215	22.0%	40	103	143	19.8%	38	2	69	74
26-49 years (1962-1985)	2,971,552	42.1%	64	189	253	35.0%	151	9	95	158
50+ years (1961 or earlier)	1,379,411	19.6%	59	154	213	29.5%	171	74	55	157
Total	7,052,893	100.0%	195	528	723	100.0%	372	86	284	438
Don't Know / No Response / NA	533,352		22	87	109			7		110

Note: Responses are for only for facilities that are "owned" (excluding leased facilities).

Table 12

Age of Facility	Permanent Temporary		Avg. Condition Rating (0-10)
0-5 years (2006-2011)	64	0	9.67
6-10 years (2001-2005)	49	1	8.46
11-25 years (1986-2000)	138	4	7.31
26-49 years (1962-1985)	246	5	6.46
50+ years (1961 or earlier)	211	2	6.06
Total	708	12	6.93
Don't Know / No Response / NA		112	6.51

Note: Responses are for only for facilities that are "owned" (excluding leased facilities).

Data by Facility Condition Rating

Table 13

Condition Rating	SqFt		Central	Branches	Total Locations		Known Renovations	Heritage Building	Multi-use Stand-alone	
1 (Poor)	151,963	2.0%	12	16	28	3.4%	4	3	11	14
2	88,485	1.2%	5	16	21	2.5%	6	2	6	9
3	289,758	3.8%	12	27	39	4.7%	14	3	10	23
4	166,248	2.2%	9	43	52	6.3%	17	6	20	23
5	712,986	9.4%	17	57	74	8.9%	39	14	25	40
6	638,059	8.4%	18	73	91	10.9%	49	19	26	50
7	1,349,191	17.8%	39	107	146	17.5%	83	21	45	83
8	1,994,325	26.3%	43	108	151	18.1%	71	12	50	87
9	1,135,139	15.0%	29	89	118	14.2%	50	6	39	59
10 (Excellent)	1,060,091	14.0%	33	79	112	13.5%	39	7	52	51
Total	7,586,245	100.0%	217	615	832	100.0%	372	93	284	439
Don't Know / No Response / NA							460	739		109

Note: Responses are for only for facilities that are "owned" (excluding leased facilities).

Table 14

Condition Rating	Own Lease		Permanent	Temporary
1 (Poor)	25	3	26	2
2	13	6	17	4
3	33	6	36	2
4	42	9	48	4
5	64	9	70	3
6	76	14	87	4
7	126	18	142	4
8	132	14	146	4
9	96	20	114	1
10 (Excellent)	99	9	110	1
Total	706	108	796	29
Don't Know / No Response / NA		18		7

Note: Responses are for only for facilities that are "owned" (excluding leased facilities).

Data by Major Renovation Type

Table 14

Major Renovations	2005-present	2000-2004	1995-1999	1990-1994	1985-1989	1980-1984	pre-1980	Don't know	Total / % of Total	No Known Renovation
Building expansion/addition	57	29	19	14	15	13	20	6	173 23.9%	659
Interior rehabilitation (extensive, more than 50%)	112	64	43	18	12	7	13	5	274 37.8%	558
HVAC replacement (complete)	62	29	25	8	5	2	2	6	139 19.2%	693
Electrical service/lighting replacement (complete)	75	17	11	4	4	3	4	6	124 17.1%	708
Window replacement (extensive, more than 50%)	43	23	15	2	3	4	4	8	102 14.1%	730
Roof replacement (complete)	82	35	16	2	3	3	3	10	154 21.3%	678
Exterior re-cladding (extensive, more than 50%)	21	12	5	4	1	2	4	3	52 7.2%	780
Foundation improvements (extensive, more than 50%)	18	4	4	3	1	2	3	1	36 5.0%	796

Note: Responses are for only for facilities that are "owned" (excluding leased facilities). Multiple renovations were identified for several facilities.

4. Approach to Defining the Infrastructure Obligation

This section describes the approach taken to identify the current and future order of magnitude cost estimates for facility repair/replacement and accessibility upgrade costs of existing infrastructure, as well as the costs associated with any current and future gap in space provision.

Identifying Repair and Replacement Costs

The following process and formula has been applied to each location within the database (results for individual buildings have not been published) in order to estimate capital repair and replacement costs based on current building footprints. The results for each location are then summed to determine the Province-wide capital repair and replacement costs; these have also been split out by region and community size.

Formula

Generic replacement cost (1) X Age factor (2) X Heritage factor (3) X Condition factor (4) – Renovation factor (5) = Final Repair/Replacement Cost (6)

A number of assumptions were created to extrapolate the capital asset repair and replacement cost to public library facilities across Ontario. Described in the following text, the assumptions provide a basis to estimate the current order-of-magnitude costs and potential future requirements. It also bears noting that the cost estimates do not include any expansions or significant upgrades, beyond those that would address major physical accessibility constraints (which are addressed separately).

Note: 'Temporary' and 'leased' facilities are excluded from this formula and are accounted for separately.

1. Identify generic replacement cost

- This is based on the current size of each location and a standard cost of \$440/sf.
- This cost is representative of the current market rate (2011/12) for new construction, based on average conditions. It includes building and site construction and soft costs (e.g., fees, expenses, fixtures, furnishings, etc.), but excludes collections (e.g., books,

materials, databases, etc.), computer equipment, land acquisition costs, and administrative/ financing costs.

2. Discount for the age of the structure

- The age category classifications have been employed to determine the capital funding required to sustain or to restore facilities to a state-of-good-repair. In most cases, a facility's age influences its cost of operation and can be used to determine the funds required to maintain the building in good repair. Normally, facilities become more expensive to operate as they age as lifecycle improvements are required to renew or replace building system components as they wear out (e.g., HVAC, roof, windows, etc.). For many facilities, they will reach an age where outright replacement is more cost feasible than undertaking major renovations. This is particularly relevant to facilities that are unable to offer sufficient service to residents as a result of changing demands for library design and physical accessibility. As a rule of thumb, the funds required for capital conservation and improvements over the life of a facility are estimated to be approximately equal to the facility's initial capital cost.
- The following categories have been used, along with their respective discounts:
 - 0-5 years (2006-2011) = 95%
 - 6-10 years (2001-2005) = 90%
 - 11-25 years (1986-2000) = 70%
 - 26-49 years (1962-1985) = 50%
 - 50+ years (1961 or earlier) = 0%
- These discounts were applied against the generic replacement costs identified in Step 1.
- It should be noted that, while age is a primary determinant in the actual lifespan of a building, the initial construction quality, building traffic, and the level of ongoing maintenance will also affect building condition.

3. Add multiplier if heritage structure

- A 10% surcharge was added to any facilities designated as heritage structures to account for the added expense of dealing with repairs to such structures.
- This surcharge was added to the result of Step 2.

4. Account for condition

- Age and heritage value are not the only determinants of replacement and repair costs. To better account for the specific condition of each location, a rebate has been applied to buildings in better than average condition and a surcharge has been applied to buildings in worse than average condition.
- The average building condition across the entire database was 6.87 out of 10, with 1 being poor and 10 being excellent. For each point below the average (7), a 5% surcharge was applied (e.g., 6 = 5%, 5 = 10% ... 1 = 30%). For each point above the average (7), a 5% rebate was applied (e.g., 8 = -5%, 9 = -10%, 10 = -15%). This multiplier was then factored against the result of Step 3.

5. Discount for renovations

- Facilities that have undergone major renovations (defined in the survey as being more than 50%) were credited back amounts commensurate with the type of major renovation and the time period in which they were undertaken. If there are no known renovations to a building, no discounts were applied.
- The survey solicited responses to a number of different renovation types. Based on a typical building component profile, the following percentages have been applied:
 - Building expansion = 35%
 - Interior rehabilitation = 16%
 - HVAC replacement = 9%
 - Electrical replacement = 8%
 - Window replacement = 6%
 - Roof replacement = 4%
 - Exterior re-cladding = 15%
 - Foundation improvements = 7%
- Further, each renovation was discounted based on the time period in which it was undertaken; the older the renovation, the greater the current repair cost should be due to lifecycle considerations. The following age discounts were applied against each relevant renovation:
 - 0-6 years (2005-2011) = 95%
 - 7-11 years (2000-2004) = 90%
 - 12-21 years (1990-1999) = 70%
 - 22-31 years (1980-1989) = 50%
 - 32 years or more (1979 or earlier) = 0%
- The total renovation discounts were subtracted from the result of Step 4. This range can be quite variable depending on the type of renovation and when it was completed.

6. Derive Final Repair/Replacement Cost

- Application of Steps 1 through 5 derived a final repair/replacement cost that is unique to each facility, based on its size, age, heritage value, condition, and recent renovations. These values were totalled to derive a Province-wide capital repair and replacement cost for owned library infrastructure.
- As discussed further below, additional steps were required to factor in physical accessibility improvements, leased space, temporary facilities, and current and future gaps in space requirements.

The following are three examples illustrating how this formula was applied (for illustration purposes only).

Table 15: Repair and Replacement Cost Estimation Process - Examples

	Example 1 New facility, excellent condition	Example 2 Old facility, average condition	Example 3 Old facility, poor condition
Size (sf)	10,000	10,000	10,000
Age	0-5 years (2006-2011)	50+ years (pre-1962)	50+ years (pre-1962)
Heritage Structure	No	Yes	No
Condition (out of 10)	10 (excellent)	7 (average)	2 (poor)
General Scope of Renovations	None	Many / within 5 yrs	Few / 1980's
Step 1 (sf x \$440)	\$4,400,000	\$4,400,000	\$4,400,000
Step 2 (age factor)	95%	0%	0%
<i>Running Total</i> →	<i>\$220,000</i>	<i>\$4,400,000</i>	<i>\$4,400,000</i>
Step 3 (heritage factor)	100%	110%	100%
<i>Running Total</i> →	<i>\$220,000</i>	<i>\$4,840,000</i>	<i>\$4,400,000</i>
Step 4 (condition factor)	85%	100%	125%
<i>Subtotal 1</i> →	<i>\$187,000</i>	<i>\$4,840,000</i>	<i>\$5,500,000</i>
Step 5 (renovation factor)*	n/a	79.25%	17.5%
<i>Subtotal 2</i> →	<i>\$0</i>	<i>\$3,835,700</i>	<i>\$962,500</i>
Subtract subtotal 2 from subtotal 1: Final Repair/ Replacement Cost	\$187,000	\$1,004,300	\$4,537,500

* The renovation discount is dependent on the type of renovations and when they were completed.

Identifying Costs associated with Leased Space

The majority of capital costs associated with leased space is generally borne by the landlord, including initial construction, replacement, and major structural repairs. For most leased public library facilities, the landlord is a private sector interest and rent is often categorized as an operating expense. Many public libraries, however, are responsible for leasehold improvements. For this exercise, it was assumed that the libraries that are leasing space have done so by choice (e.g., due to location, adjacencies, cost-benefit, etc.) and that these arrangements will continue. It is further assumed that public libraries are responsible for interior rehabilitation of leased space; as identified earlier, interior rehabilitations typically comprise 16% of a typical building component profile. Renovation data was not collected for leased spaces; therefore, the average derived from owned libraries is used in this calculation (60% of floor space is in need of some form of interior rehabilitation). Excluding temporary facilities (which are addressed separately), the database identified 474,048 square feet of public library space as being leased; accounting for facilities that were not captured in the database, the estimated province-wide total rises to 499,392 square feet of leased space. This figure was multiplied by 60% (the amount of space requiring interior rehabilitation), then by \$440 (the full repair and replacement cost per square foot), then by 16% (the percentage of a typical building component profile that is associated with interior rehabilitations) to derive the dollar amount required to renovate leased public library space across the province (focused on leasehold improvements only).

Identifying Costs associated with Temporary Space

The use of temporary space is typically an indication of a library facility that is in transition, most often a larger and more permanent location. As a result, the allocation of temporary space (owned and leased) was included in the calculation of space needs. To quantify the infrastructure obligation associated with this component, a standard cost of \$440/sf (being the cost for new construction, excluding collections, computer equipment, lands costs, and administrative/financing costs) was applied against the 123,532 square feet of temporary space within the database.

Identifying Accessibility Costs

The costs to make existing facilities physically accessible were identified separately from their overall repair and replacement costs. As discussed previously, the survey collected data on major accessibility components (entrances, washrooms, and multiple levels). Excluded from this analysis were components such as appropriate shelving heights and signage.

To determine the cost to make Ontario's library infrastructure accessible, a focus was placed solely on major components. The following generic costs, which were developed from a set of basic assumptions, were applied to the findings of the survey data:

- Accessible Entrance = \$56,000 (assume \$30,000 for a ramp and \$15,000 for auto sliding entrance doors, plus 25% for soft costs; assume no significant structural modifications)
- Accessible Washroom = \$76,000 (assume a single unisex washroom at 110sf and \$550/sf, plus 25% for soft costs; assume no significant structural modifications)
- Accessible Elevator = \$220,000 (assume 2 floors, \$50,000 per floor, and \$75,000 for a 'renovation installation', plus 25% soft costs)

Costing for Facilities that were not Captured in the Survey Database

Past reports have estimated that there are approximately 1,093 public library facilities in Ontario. The survey collected data on 832 of these, suggesting that about 260 facilities were missed. Approximately 86 library systems did not respond to the survey, with the largest of these systems having a resident population of approximately 20,000; the total population in these non-represented systems was estimated at 342,000 people (2011 estimates). The large majority of non-responding libraries were in very small communities, mostly in Northern Ontario.

If these 260 remaining facilities were located in the 86 remaining communities, this would be an average of three facilities per community, or one facility for approximately every 1,300 people. This data suggests that the facilities that have not been included in the database are likely small structures, which limits the degree of their overall financial impact. Using the database average of 0.69sf/capita for small communities (generally between 5,000 and 9,999 in population), it can be extrapolated that there is a total of approximately 236,000 square feet of space within the 260 library facilities. It bears noting that this is an estimate, and nothing is known about the age, condition, and accessibility of these facilities.

For the purposes of this study, this is felt to be a reasonable estimate, but one that will not make a large impact on the overall infrastructure obligation. To calculate the costs associated with these facilities, standard percentages for repair/replacement, accessibility improvements, and conversion of temporary space for libraries in small communities were applied once they were calculated for the portion of the known supply.

Identifying Costs associated with Current Gaps

The survey collected data on a total of 235 library systems, representing 73% of all library systems across Ontario. When compared against population, however, this represents service to approximately 98% of Ontario's population (13.03 million people). It bears noting that 2011 census population data will not be released until February 2012. In the interim, the Ontario Ministry of Finance Population Projections have been used to create an estimate⁴; this report suggests that the province-wide population will increase by nearly 6% between 2006 and 2011 (from 12.67 million to 13.37 million). Applying this percentage to our dataset, this results in a 2011 provision level of 0.58 square feet per capita. On a community-by-community basis, there are many library systems that operate above and below this threshold.

A number of years ago, the Province of Ontario established a library space planning guide of 0.6 square feet per capita for estimating current and future library space needs. This guideline was most recently supported by the Association of Rural and Urban Public Libraries of Ontario (ARUPLO) in 2005. Although future planning is best done in a way that reflects the specific local needs of a community, this guideline continues to be in use in many municipalities. It is recognized, however, that the changing role of the library and impacts of technology, programming, and accessibility requirements are also placing considerable pressures on library infrastructure. As such, many planners feel that the 0.6sf/capita guideline represents a minimum standard, and there may be merit in developing a new guideline that is more indicative of the role of modern libraries (it is noted that some systems in the United States are using guidelines of 1.0sf/capita). As part of its future work, it is recommended that the Federation reassess the validity of the 0.6sf/capita guideline. Such an assessment is beyond the scope of this analysis.

Based on the observation that the Province-wide library supply (0.58sf/capita) is slightly below the widely accepted planning guideline (0.60sf/capita), **there is currently a gap in infrastructure provision of 256,809 square feet**. This figure was applied to the recommended benchmark of \$440/sf in order to identify the total capital cost to mitigate the current gap in space provision.

Note: All figures in this section have been normalized to account for the exclusion of non-responding library systems (and their populations).

Identifying Costs associated with Future Space Needs (2011-2021)

In identifying future needs (to the year 2021), the anticipated population growth between 2011 and 2021 was examined and applied against the planning guideline of 0.6sf/capita.

⁴ Ontario Ministry of Finance. 2011. Ontario Population Projections Update, 2010-2036.

Population forecasts⁵ suggest that Ontario will grow by 1,696,900 people between 2011 and 2021, representing growth of 12.7%. Application of 0.6sf/capita against this figure results in a need for an additional 1,018,140 square feet of library space. This figure is less than the 1,548,683 square feet requested through the survey (from a total of 85 systems) and is considered to be a conservative estimate.

This figure was then applied to the recommended benchmark of \$440/sf in order to identify the total capital cost to construct the additional library infrastructure that is required to address population growth over the next ten years. All figures are displayed in 2011/12 dollars and assume permanent space owned by the library or municipality (not leased). This analysis does not identify future sources of infrastructure funding.

5. Calculating the Infrastructure Obligation

The total capital infrastructure obligation for public libraries in Ontario – between 2011 and 2021 – is estimated to be between \$1.85 billion and \$2.12 billion. This amount was based on the approach described in the previous section, as well as the assumptions identified in the following table.

Table 16: Capital Obligation for All Public Libraries in Ontario

	Capital Obligation	Assumptions
Current Space Shortfall (2011)	\$113.0 million	Based on 256,809sf at \$440/sf
Repair & Replacement of Existing Facilities (2011)	\$1,142.7 million	Includes 832 permanent/owned facilities within database Includes 223 permanent/owned facilities not in database (estimated at 908sf/facility; total of 202,484sf); uses the average rate from small communities (\$161/sf) A separate calculation accounts for 499,392sf of leased space (including 474,048sf within the database); interior rehabilitation costs only
Accessibility Upgrades for Existing Facilities (2011)	\$53.6 million	Includes 832 facilities within database: Entrance Improvements = 145 facilities Washroom Improvements = 219 facilities Elevator Installation = 74 facilities Includes 260 facilities not in database (using percentages from small communities): Entrance Improvements = 36 facilities Washroom Improvements = 87 facilities Elevator Installation = 18 facilities
Conversion of Temporary Facilities (2011)	\$57.9 million	Includes 123,532sf within database at \$440/sf For facilities not in database, assume 3.5% are temporary = 9 out of 260 facilities; assume 908sf per facility = 8,172sf of temporary space at \$440/sf
Total Current Obligation (2011)	\$1,367.2 million	

⁵ Ontario Ministry of Finance. 2011. [Ontario Population Projections Update, 2010-2036](#).

	Capital Obligation	Assumptions
Future Space Requirements, based on population growth (2012-2021)	\$448.0 million	Based on 1,018,140sf at \$440/sf Note: Existing funding streams (e.g., Development Charges) may be in place to address a portion of these requirements
Repair of Future Facilities (2012-2021)	\$31.8 million	Assume 1,406,654sf of new space (to address current gap, conversion of temporary facilities, and future growth) provided evenly between 2012 and 2021
Total Future Obligation (2012-2021)	\$479.8 million	
Repair & Replacement of Existing Facilities if existing facilities are <u>not</u> properly repaired/replaced (2012-2021)	\$276.8 million	Includes 832 facilities in database and 223 permanent/owned facilities not in database being ten years older; adjustment also made for leased space
Total Obligation (2011-2021)	\$1,847.0 million to \$2,123.8 million	

Notes:

The current space shortfall should be interpreted as a minimum as it is based on “point-in-time” data and a guideline of 0.6sf/capita applied across the entire Province (rather than individual library systems).

Costs are based on the input from the survey and extrapolated across all public library facilities in Ontario.

All costs are in 2011/2012 dollars; they are not adjusted for inflation.

Totals may not add due to rounding.

The following tables identify the current capital obligation for public library facilities in Ontario by region, community size, and community type. This data includes costs associated with the current space shortfall, repair and replacement of existing facilities, accessibility upgrades for existing facilities, and conversion of temporary facilities. An exercise to similarly identify future capital obligations has not been completed due to uncertainty around future growth rates by location, community size and type.

Current Capital Obligation by Region (2011)

Region	\$	%
Northeast	\$76,616,377	6%
Northwest	\$39,347,456	3%
East	\$190,536,258	14%
Central	\$267,677,492	20%
GTA	\$619,428,874	45%
Southwest	\$173,637,569	13%
Total	\$1,367,244,025	100%

Current Capital Obligation by Community Size (2011)

Community Size	\$	%
Very Small	\$51,868,763	4%
Small	\$35,926,772	3%
Medium	\$84,574,295	6%
Midrange	\$273,894,541	20%
Large	\$315,591,898	23%
Largest	\$605,387,757	44%
Total	\$1,367,244,025	100%

Current Capital Obligation by Community Type (2011)

Community Type	\$	%
First Nations	\$8,349,371	1%
Not First Nations	\$1,358,894,654	99%
Total	\$1,367,244,025	100%