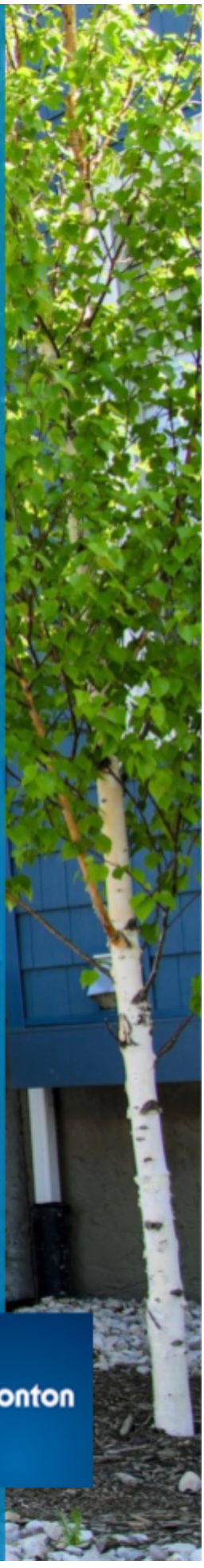
PROGRAM AND SERVICE REVIEW

Property Assessment and Tax Collection Services' Review

February 2019



Edmonton

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INTRODUCTION

The purpose of the Program and Service Review is to evaluate if the services the City provides are advancing Council's strategic goals and whether those services are still a priority for citizens. This is done by examining the relevancy, effectiveness and efficiency of a service through the Service Review Process.

This report is the result of the Service Review Process for the Property Assessment Service and the Tax Collection Service which is identified in the City of Edmonton Service list as part of the external Council and Civic Engagement Category.

PROPERTY ASSESSMENT AND TAX COLLECTION SERVICES' BACKGROUND

Property Assessment and Tax Collection are two distinct City of Edmonton services. They were bundled for the purpose of this review due to the connectivity between services and shared organizational structure.

The City of Edmonton's Service Catalogue describes:

- Property Assessment - A "public service that provides accurate and lawful assessments for tax purposes";
- Tax Collection - A "public service that collects assessed tax from taxpayers".

The Assessment and Taxation Branch in the Financial and Corporate Services Department is responsible for delivering these two services. The branch prepares annual market value assessments for all properties, including amended and supplementary assessments, communicates a fair and accurate assessment base and defends complaints/appeals of the assessments. It also conducts the taxation billing and collects municipal property tax, provincial education taxes, local improvement levies and Business Improvement Area (BIA) levies.

Key Service Statistics

2017 Assessment and Taxation Budgeted FTEs
- 107 Assessment
- 39 Taxation
- 29 Integrated Business & Cust Sol'n
- 6 Branch Manager's Office

181*

2012 Budgeted FTEs were 187
2013-2017 Budgeted FTEs were 189
Growth of approximately 1.1%
*Customer Service Team (8.0 FTEs) moved to Integrated Service Centre in 2017

Assessment Parcels
- 338K in 2012
- 388K in 2017

Growth of approximately 14.8%
Total taxable assessed value on 2017: $170.3B

Assessment Review Board Appeals 2012-2017
- Average of 2,075
- Average of appeals to assessments is .57%

Customer Inquiries
- 2016 - 73,727
- 2017 - 73,629

2017 Operating Budget

Assessment Expenditures	$18.7M
Taxation Expenditures	$3.0M
Net Operating Requirement	$21.7M

Represents 1.03% of City's total expenditures

2017 Taxes Levied
- Approximately $1.5B which is 57% of the entire City operating budget
- Collect Provincial Education Tax of approximately $469M

"The City of Edmonton property assessment and tax system is dictated in large part by the Municipal Government Act (MGA) and its associated regulations. Provincial legislation outlines the assessment method, the parameters of good assessment practice and the scope of the municipality's taxation authority. Even though the City Assessor has to follow

provincial legislation when it comes to assessing property, City Council does have some flexibility in how it implements tax policy through tax rates.

At the basic level, Alberta's tax rates are broken into four assessment classes:

1. Residential
2. Non-Residential
3. Farmland
4. Machinery and Equipment

These four classes delineate how municipalities can divide the tax burden across different property types. Today, approximately 50 per cent of the tax base is collected by the residential assessment class and 50 per cent collected by the non-residential assessment class. In The City of Edmonton, farmland makes up a fraction of a percent and Machinery and Equipment is not taxed".[1] The Assessment Operations section within the Assessment and Taxation Branch is effectively structured between Residential and Non-Residential property types. Residential is led by four Assessor Team Leads providing direction to 27 FTEs in the Assessor classification and four FTEs in the Assessor Assistant classification. Non-Residential is led by eight Assessor Team Leads providing direction to 61 FTEs in the Assessor classification and four FTEs in the Assessor Assistant classification.

Primary cost drivers for these services are:

Assessment:

- Volume of assessment parcels
- Number of Assessment Review Board (ARB) complaints/appeals

Taxation:

- Volume of accounts
- Number of inquiries

There has been a 14.8% growth in assessment parcels, from 338K in 2012 to 388K in 2017. There were 1,493 ARB complaints in 2017 and although the lowest number in the past six years, still represents municipal tax losses of $11.6M. Residential tax losses only make up $93K of that amount with the remainder attributed to the non-residential components. On the taxation side, each assessment parcel is assigned a tax roll number or account, so the growth is similar to the assessment parcel growth over the same timeframe. Customer inquiries remained steady at 73,629, only down one hundred from the previous year.

[1] The Way We Finance - Property Assessment and Taxation White Paper

CONTINUOUS IMPROVEMENT

The Assessment and Taxation Branch has been steadily working on performance measurement and workforce planning over the last number of years. This represents a significant cultural change as employees are tracking time against their "core" and "non-core" (continuous improvement) activities and are being measured against performance benchmarks for the core assessment functions. 2018 will be the first full year of accurately capturing time against the performance benchmarks and there will likely be some adjustments to these benchmarks with better data collection. This increased focus on operational excellence is in-line with the continuous improvement objective of the Program and Service Review. This specific review highlighted areas of improvement that could yield benefits without disrupting the significant culture change that was in progress. The cyclical nature of the business creates peaks and valleys in workloads and the branch aims to make effective and efficient use of its resources to meet its service demands.

Achieving more insight into resource requirements has enabled Assessment Operations to initiate a number of important non-core projects, which has increased collaboration across teams. For example, prior to the end of 2017, the residential unit collaborated with the strategic integration team to use historic inquiry statistics to plan for resourcing during the always-hectic inquiry period. Turning data into information has enabled more efficient allocation of staff and has allowed assessors to handle inquiries and inspections on a city-wide basis rather than on a neighbourhood basis. The Property Assessment and Tax Collection services remain focused on continuous improvement efforts which was highlighted by Rod Risling's comment at the "A&T Live 2017" year-in-review event.

> Rod Risling, Assessment & Taxation Branch Manager:
>
> ***"We are accountable as a branch and as individuals, to the corporation and the citizens of Edmonton, to continuously improve what we do."***

SERVICE REVIEW METHODOLOGY AND FOCUS AREAS

The service review process (Appendix A) begins with scope definition and preliminary analysis, followed by the creation of focus areas. The focus areas refine analysis within a service area to inform recommendations. Focus Areas were presented to an internal governance body (January 2018) and to an external Challenge Panel (February 2018) and received support and validation.

Focus areas for this service review include:

- Optimal mix of assessment staff
- Field inspections process improvement
- Corporate support for legislation change

Focus area analysis and recommendations are framed through the lenses of relevance, effectiveness and efficiency.

ANALYSIS AND RECOMMENDATIONS

Optimal mix of assessment staff

Interviews and analysis undercovered a challenge related to assigning work to the appropriate level of staff. More specifically, the data collection tasks, which typically are the domain of Assessor Assistants, routinely fall to Assessors. Additionally, there is also the belief that Clerks (II & III) could handle these data collection tasks.

The Assessment and Taxation Branch is in its first full year of data collection of their workforce planning initiative. Once a full annual cycle is complete, an enhanced understanding of the volume of assessment work and resources utilized will be available for analysis and evidence-based decision making. The Assessor job classification consists of three levels (Intern, Associate and Assessor) which involve a progression of knowledge, skills, attitudes, experience, and education.

Assessor Progressive Classification Table																
Position Title	Intern Assessor					Associate Assessor					Assessor					
Classification Step	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Position Duties	• Entry level technical work to assess value of land, buildings, structures and property improvements • Assist in preparing, communicating and defending assessments					• Increasing level of technical work to assess value of land, buildings, structures and property improvements • Increasing level of technical work in preparing, communicating and defending assessments					• Full scope of technical work to assess value of land, buildings, structures and property improvements • considerable independence and demonstrate a significant degree of judgement and leadership in the performance of specialized and complex technical work in preparing, communicating and defending assessments					
Position Requirements	• Undergraduate Degree • One year experience in appraisals					• Undergraduate Degree • Two years experience in appraisals • Completion of Real Property Assessment Certificate					• Undergraduate Degree • Four years experience in appraisals • Completion of Real Property Assessment Certificate • Recipient of a recognized Assessor / Appraiser designation					
Top of Step Wages w Benefits	$88,613.42					$102,550.98					$119,974.37					

As an employee develops, they progress through the steps in the classification, therefore it is not possible to control the numbers of staff at any specific level. While the optimal mix of assessment staff is the core of this focus area, consideration must be given to what can realistically be controlled, namely the distribution of work.

The current classification for Clerks would support strict data entry tasks, which is not sufficient to conduct field inspections. Judgement from an assessment professional is required in order to maintain the integrity of a field inspection, therefore, Clerks have been excluded from this analysis.

Analysis:

Data from 2015 - 2017 was used to examine the distribution of field inspection work for the Residential property type. The majority of this work can be accomplished by either the Associate Assessor, Intern Assessor or Assessor Assistant. Non-residential field inspections are more complex and require judgement in distributing the work amongst the varied property types and valuation methods, so that data was excluded from this analysis. It should be noted that during this timeframe there were changes to the internal inspection codes which may have had a limited impact on the findings.

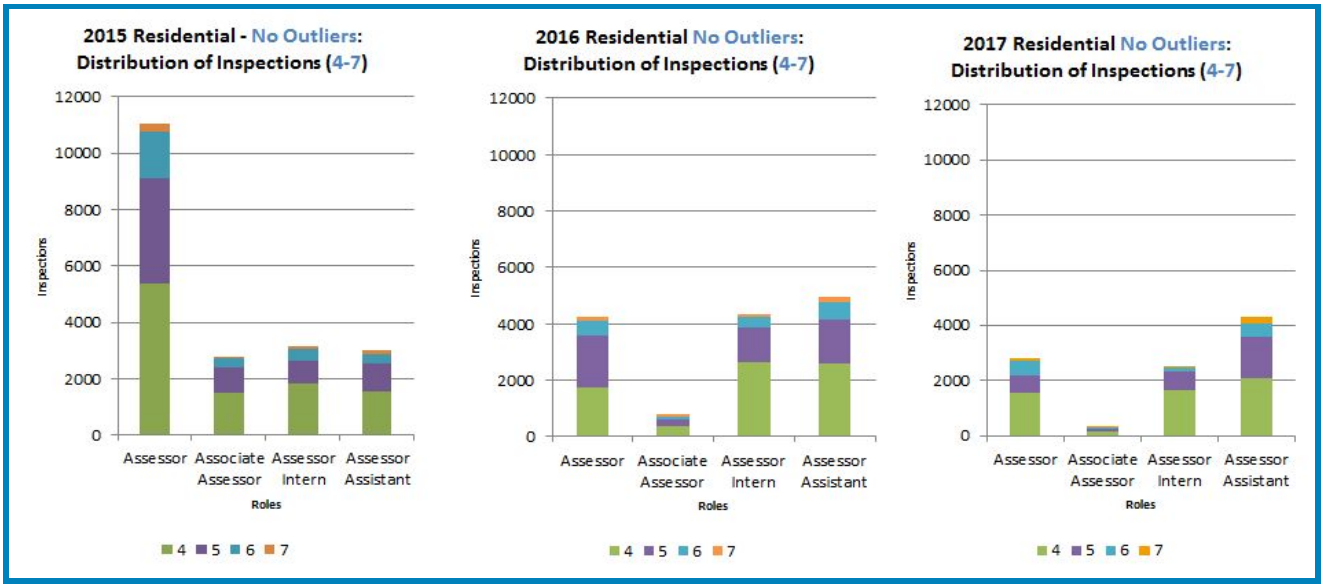
Residential inspections are ranked and defined by "Quality", ranging from "Economy" (quality one) to "Luxurious" (quality nine). See Appendix B for quality classification. After reviewing the dataset provided, it was noted that 95% of inspections are distributed between quality four and quality seven, and as such the focus has been adjusted to reflect this quality distribution. The initial dataset with outliers is provided as reference in Appendix C.

While analyzing the data, outliers were found that skewed the output of the Assessors. These outliers were primarily Pictometry[2] and the Multiple Listing Service (MLS)[3] inspections that do not require site visits, and as a result, take less time than the average inspection. These pieces of data were removed from the data set in order to normalize the effect of outliers which allows analysis to focus on the distribution of more 'typical' field inspections.

[2] Pictometry is the name of a patented aerial image capture process that produces imagery showing the fronts and sides of buildings and locations on the ground.

[3] MLS real estate listings can provide additional data on the property (e.g. fully finished basement)

Figure 1.0



As highlighted in Figure 1.0, Assessment Operations has shifted almost 27% of inspections from Assessors to the Associated Assessors, Intern Assessors and Assessor Assistants. It also shows that the number of inspections performed by Assessors in 2015 was significantly larger than 2016 and 2017. This was partially due to an increase in Pictometry usage in subsequent years which again has been excluded from the data set.

From a financial perspective, while shifting work away from the Assessors is a positive approach, the distribution of inspections can be improved further by assigning more of the lower quality inspections to the Assessor Assistant role. Tables A to D show the basis of this analysis using 2017 data.

The following table indicates the average maximum capacity by year, for each role based on the last three years of data. It is not reasonable to expect that the historical maximum capacity could always be achieved, so a level of 80% was established for the purpose of redistributing work

***Table A**: Historical capacity for each role*

Average Number of Inspections by Role					
	2015	2016	2017	Historical	
Role	Residential (no-outliers)	Residential (no-outliers)	Residential (no-outliers)	Max Capacity per Role	80% Capacity per Role
Assessor	448	173	154	448	358
Associate Assessor	335	120	64	335	284
Assessor Intern	209	224	118	224	179
Assessor Assistant	1016	849	639	1016	812

The following table illustrates the distribution and loaded cost of the inspections that occurred in 2017.

***Table B:** Distribution of residential inspections by role in 2017 and the resultant costs*

Residential 2017 Inspections (No-Outliers)								
Role	Quality				Total	Average Loaded Hourly Rate	Average Hours per inspection	Total Loaded Cost for Inspections
	#4	#5	#6	#7				
Assessor	1543	641	546	109	2,839	$68.10	0.84	$162,402.16
Associate Assessor	184	76	29	17	306	$58.21	0.84	$14,962.30
Assessor Intern	1661	661	164	40	2,526	$50.30	0.84	$106,728.55
Assessor Assistant	2,096	1,508	464	255	4,323	$48.16	0.84	$174,873.48
Total	**5,484**	**2,886**	**1,203**	**421**	**9,994**			**$458,977.38**

The next two tables represent options for redistribution of the field inspection work, all of which respect the 80% average maximum capacity per role.

Option one is a redistribution of the inspections across the roles with no constraints. The assignment of inspections in this option commenced with the more junior progressing to the more senior resources by assigning inspections up to the maximum capacity 80% .

Table C: *Redistribution of work constrained by 80% of max historical average of labour capacity and the total number of residential inspections for each Quality in 2017.*

Number of 2017 Inspections by Quality								
Option 1	**#4**	**#5**	**#6**	**#7**	**Total**	**Loaded Hourly Rate**	**Hours per inspection**	**Loaded Cost for inspections**
Assessor	0	0	0	0	0	$68.10	0.84	$0.00
Associate Assessor	9	227	118	18	372	$58.21	0.84	$18,189.46
Assessor Intern	1608	1000	953	377	3,938	$50.30	0.84	$166,388.28
Assessor Assistant	3867	1659	132	26	5,684	$48.16	0.84	$229,942.81
Total	**5,484**	**2,886**	**1,203**	**421**	**9,994**			**$414,520.65**

Option two is constrained to ensure Associate Assessors only conduct higher quality inspections and Assessor Assistants only conduct lower quality residential inspections with opportunities to provide mentoring across the levels.

Table D: *Redistribution of work constrained by 80% of max historical average of labour capacity and the total number of residential inspections for each Quality in 2017, and more balanced workload.*

Number of 2017 Inspections by Quality								
Option 2	**#4**	**#5**	**#6**	**#7**	**Total**	**Loaded Hourly Rate**	**Hours per inspection**	**Loaded Cost for inspections**
Assessor	0	0	0	0	0	$68.10	0.84	$0.00
Associate Assessor	0	0	825	275	1,100	$58.21	0.84	$53,786.04
Assessor Intern	0	2,686	378	146	3,210	$50.30	0.84	$135,628.92
Assessor Assistant	5,484	200	0	0	5,684	$48.16	0.84	$229,942.81
Total	**5,484**	**2,886**	**1,203**	**421**	**9,994**			**$419,357.77**

Conclusion:

Associate Assessors, Assessor Interns and Assessor Assistants have sufficient knowledge and capacity to complete approximately 97%[4] of the residential inspections without utilizing the services of an Assessor. Depending on the option chosen, a redistribution of field inspection work could result in as much as **$44,000 in non-harvestable savings per annum,** based on 2017 data. See Appendix D for the corresponding percentages of the proposed work distributions.

Recommendation 1		
Assessment Operations redistribute all of the Quality #4 - #7 residential field inspections from Assessors to Associate Assessors, Assessor Interns and Assessor Assistants.		
Impact		
Increased effectiveness as the work is now commensurate with skill levels. The Residential Assessors will be freed up and leveraged for higher value work, possibly to aid with the more complex, non-residential complaints. This should also increase employee satisfaction as staff are assigned appropriate work. The recommendation still allows for junior resources to gain experience on lower quality inspections. Appropriately assigned work also increases the efficiency of the inspection process. The productivity savings are not expected to translate into harvestable savings as no FTE reductions would take place.		
Conditions		
• lower quality inspections directed to Assessor Assistants • higher quality inspections directed to Assessor Interns and Associate Assessors • Assessors should not be assigned routine field inspections		
Relevance	**Effectiveness**	**Efficiency**

[4] Number of residential inspections completed: Quality 4-7 = 9994

Total number of residential inspections completed: Quality 2-9 =10,347

Comparative Ratio: 9994/ 10,347 = 0.966

FIELD INSPECTION PROCESS IMPROVEMENT

The highest volume of inspections is attributed to the residential property type. In comparison, non-residential inspections only make up a third of the residential volume and are spread over a number of different property types (e.g. shopping centres, hotels, offices, industrial, etc.) using different valuation methods e.g. cost approach, income approach or regulated approach. Therefore, this next piece of analysis focused on the repetitive residential property inspection process.

Assessment staff have indicated that the majority of the residential field inspection work is triggered by building permits closing in POSSE, from formal assessment complaints and from 311 inquiries with a typical day being structured as follows:

- **Morning** - office based work including completing paperwork from the previous day's activities and preparing materials for the afternoon site inspections
- **Afternoon** - field based work with staff typically deployed to a dynamic set of addresses, generally in the same geographic region of the City and returning to the office by 3pm to enter the data collected (including photos).

Analysis:

Residential inspection process flows had been mapped recently as part of a continuous improvement initiative. Analysis for the service review focused mainly on examining the non-value added activities or "waste" in these process flows. The Assessment Manager was instrumental in providing time estimates for the tasks within the process flows and for providing weighting, so as to calculate the average time taken to complete a residential inspection as shown in the table below.

***Table F**: Weighted average of inspection time*

Type of Residential Inspection	% Distribution	Avg. Time taken (hrs)	Weighted Avg. (hrs)	Weighted Avg. (mins)
Existing Homes (w/ Permit)	**20%**	**1.04**	**0.208**	**12.48**
Repair/Renov. of Homes (w/o Permit)	**10%**	**1.11**	**0.111**	**6.66**
New Start[5]	**20%**	**0.53**	**0.106**	**6.36**
Supplementary (New Start) Progressive[6]	**50%**	**0.83**	**0.415**	**24.9**
TOTAL			**0.84**	**50.4**

[5] The start of new residential developments

[6] Residential developments still under construction

There are effectively two significant non-value added activities that occur in these process flows. The first is the extra-processing that is required to manually record the data collected during the inspection. As the recorded data is not transformed in any way, it is considered waste (non-value added). This activity occurs in both residential and non-residential inspections, however, the non-residential inspection is typically more complex and requires more time to record the data. Process mapping was not completed for the non-residential inspection types however it is possible to reasonably estimate the average amount of time required for data collection tasks. Again, Assessment Managers were instrumental in providing estimates of nine minutes for residential and 25 minutes for non-residential non-value added activities. A weighted average hourly cost for residential and non-residential inspections was calculated in order to estimate potential savings. See Appendix E for calculations.

Conclusion:

There were 10,347[7] residential inspections in 2017. Removing nine minutes per inspection by implementing mobile technology and utilizing the weighted average of the loaded hourly rate for residential inspections, $57.14, results in estimated **potential savings of $88,000 per annum[8].**

Similarly, using mobile technology for non-residential inspections (3,353 in 2017) would remove up to twenty-five minutes per inspection. Utilizing the weighted average of the loaded hourly rate, $60.12, results in estimated **potential savings of $84,000 per annum[9].**

The Taxation Assessment & Collections System (TACS) is the City's software suite that enables the administration of the City's annual assessment and taxation processes. It is a purpose-built, customized application that maintains 400,000 property tax accounts and has been integrated into several other City software applications. It does not currently have a mobility solution. It is estimated[10] that a **one-time capital cost of $243,000** would be required for detailed analysis, development and deployment. See Appendix F for detailed breakdown. Assessment staff would utilize a check out/check in process for ten tablet computers with cellular connectivity to the application. It is estimated that ongoing **operational costs would amount to $13,500 per annum.** See Appendix G for the calculation.

The second non-value added activity is in regards to travel time and the potential for inefficient routing. Intelligent routing software would provide further benefits to assessment staff by plotting the most efficient route for a list of addresses, however, this was not estimated as mileage costs do not represent a significant amount of the budget. The Open City and Technology Branch has been engaged on this point and have responded with a prototype for the business area to try.

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[7] Includes all residential inspections irrespective of quality

[8] Current distribution calculation: ((10,347*9)/60)*57.14=$88,684

[9] Current distribution calculation: ((3,353*25)/60)*60.12=$83,992.65

[10] Estimates were developed in collaboration with Open City and Technology's TACS Support Team and the Business Systems and Data Analytics Team in Assessment and Taxation

Recommendation 2

Assessment Operations submit a Technology Investment Request (TIR) to the IT Capital Budget process, to develop and implement mobile technology for the assessment function.

Impact

The TIR should include a high level description of requirements, benefits and estimates from the TACS application support team. It should describe the need for detailed business analysis, followed by a reassessment of the development effort to ensure that the business case remains feasible.
Data collection will become more efficient as assessment staff gain the ability to capture data directly in the field. Additionally, information will be available on a real time basis. Mobile technology would decrease the use of paper, as well as reduce the occurence of mistakes made when transcribing notes from paper, making the data collection more effective. Once implemented, there would be net harvestable savings of $550,000 over 5 years or on average, $110,000 per year. A positive return on this investment would occur **after 18 months of operation**. See Appendix G for the calculation.

Conditions

- Confirm capital investment costs is accurate
- Consider full shift of inspections
- Commitment to delete at least 1.5 vacant FTEs after one full year of operation
- Is a simple solution; technology investment does not take away from core work
- Rationalize data inputs

Relevance	Effectiveness	Efficiency

LEGISLATION CHANGE

The assessment and taxation functions are highly regulated by provincial legislation which have a direct impact on internal processes and service delivery. City Council and senior administration supported all of Assessment and Taxation requests for improvement to the legislation.

Significant resourcing was dedicated to the review process of the MGA, Charter, and associated regulations which also required substantial efforts by the City to implement

.

Recommendation 3		
External Relations to advance the further legislative changes in the context of the City's priorities as approved by the Deputy City Manager of Finance and Corporate Services and Deputy City Manager Communications and Engagement.		
Impact		
The Assessment and Taxation Branch should advocate for: • the MGA to be reviewed and revised on an ongoing basis; • the Municipal Assessor to be recognized as content experts and administrators of Provincial legislation and to have direct access to decision makers and legal drafters when changes to the legislation are being contemplated; • the splitting of big policy issues from administrative/minor policy issues to streamline the process and to affect positive change; and • using the Charter as a pilot for provincial legislation changes as the vast majority of legal challenges are in the major cities.		
Relevance	**Effectiveness**	**Efficiency**

SUMMARY COST SAVINGS FOR RECOMMENDATIONS

Summary of the one time revenue/cost to implement, annual savings, identified for each recommendation.

Recommendation	Cost to Implement	Benefit	Net Savings	Comments
#1 - Assessment Operations redistribute field inspections to Associate Assessors, Assessor Interns and Assessor Assistants.	$0	$44,000	$44,000	Assessors would be reassigned to higher value work. Reallocation of savings.
#2 - Assessment Operations submit a Technology Investment Request (TIR) to the IT Capital Budget process, to develop and implement mobile technology for the assessment function.	$243,000	Net savings of $550,000 over 5 years	On average, $110,000 per year	TIR should describe the need for detailed business analysis, followed by a reassessment of the development effort to ensure that the business case remains feasible.
#3 - External Relations to advance the further legislative changes in the context of the City's priorities as approved by the Deputy City Manager of Finance and Corporate Services and Deputy City Manager Communications and Engagement.	$0	$0	$0	

SUMMARY

The implementation of the PSR's three recommendations are expected to improve the relevance, effectiveness and efficiency of the property assessment and tax collection services.

The PSR further recommends that upon approval of the TIR, detailed business requirements be conducted and the business case assessed again to ensure that there is still a reasonable return on the investment.

APPENDIX

APPENDIX A - SERVICE REVIEW PROCESS

The service review process is illustrated as follows:

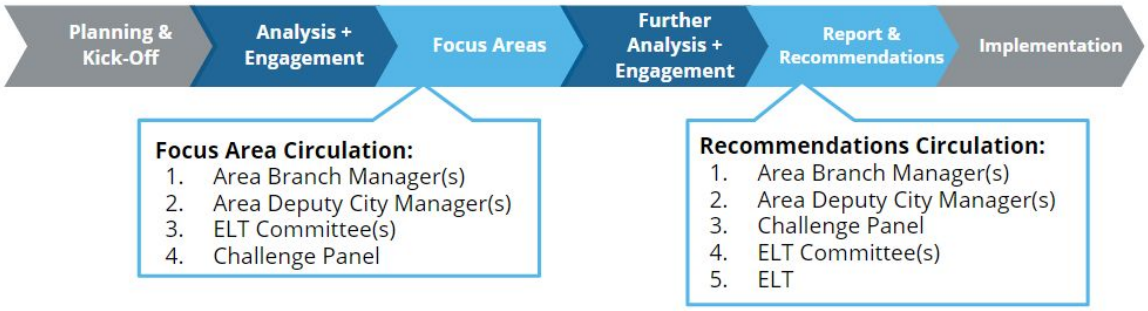


Figure 1: Service Review Process

The Property Assessment and Tax Collection Services' Review included the following engagement and analysis to determine the current state of the service, and evaluate the relevance, effectiveness and efficiency of the service:

Engagement

- Interviewed management and front line staff to understand the services;
- Conducted ride along with staff in the field;
- Observed an Assessment Review Board hearing;

Analysis

- Reviewed supplied information including but not limited to:
    - 2016-2018 Branch Business Plan
    - The Way We Finance - Property Assessment and Taxation White Paper
    - Provincial legislation and guidelines
    - City policies and bylaws
- Conducted high level HR Analysis
- Conducted high level Financial Analysis
- Conducted benchmarking with other municipalities

Discovery and Findings

The Property Tax and Collection Services' Review identified the following key processes, service trends, and cost drivers for consideration in the development of recommendations.

Key Processes

- Property Assessment Notices mail out
- Inquiries
- Complaints
- Tax Notice mail out and tax collection
- Inspections
- Valuations
- Assessment Review Board preparation and defense
- Monthly tax payment program

Service Trends

- Continuous improvement culture with strategic focus
    - Operational excellence
    - Employee excellence
    - Service excellence
- Managing performance
    - Resource utilization
    - Benchmarking
    - Transparent reporting

Cost Drivers

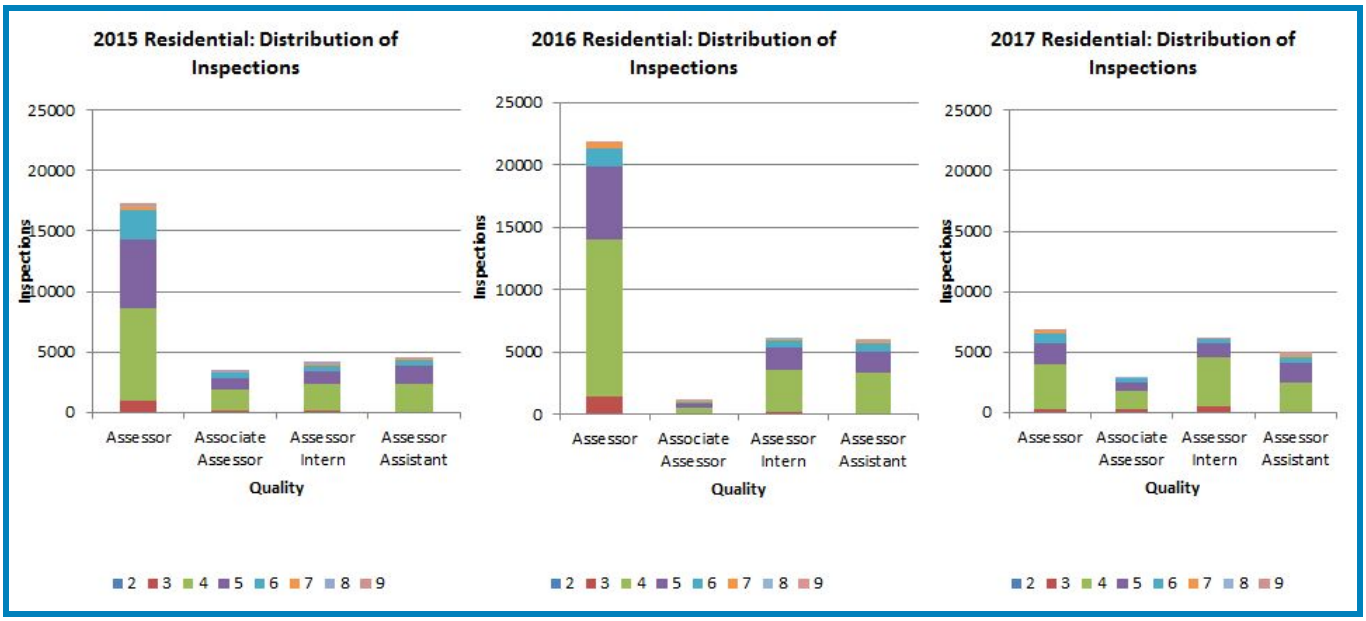
- Personnel makes up majority of service cost
- Volume of accounts
- Assessment Review Board complaints/appeals
- Volume of inquiries

APPENDIX B - QUALITY CLASSIFICATION

Residential Quality Classifications		
Quality 1	***Economy:*** Usually found in old urban neighbourhoods or rural areas, this class represents low-cost housing that seldom meets building requirements. It is basically square or rectangular and the interior has an inadequate floor plan of small rooms with limited or no hallways. Materials and workmanship are economy grade with little attention given to exterior or interior finishing.	Complexity
Quality 2	***Substandard:*** This class includes low to moderate cost housing where building requirements are only occasionally satisfied. It is basically square or rectangular and the interior has a simple floor plan of relatively small rooms with limited or no hallway. Finishing materials are substandard quality and no attention is given to decorative features.	
Quality 3	***Fair:*** This class satisfies present demands for moderate cost energy efficient housing. The exterior usually has a common style and is basically square or rectangular. It has an adequate floor plan, finishes are fair to average quality materials, and there is little or no attention given to decorative features.	
Quality 4	***Standard:*** This quality represents average project housing that meets building requirements for the era. The exterior is a typical style that is generally rectangular and may include entry porches or verandas. The floor plan is functional, and finishes are normally limited to standard quality pre-manufactured materials with a minimum number of decorative features	
Quality 5	***Semi-custom:*** This quality represents above average housing exceeding building requirements for the era. More attention to the exterior details such as breaks in the roof line may be evident. Architectural design is used in living areas of all "move up" home construction. The floor plan is functional with a sense of spaciousness. Finishes are generally upgraded with a mixture of standard and better quality materials with decorative features. A minimum number of interior construction features may be encountered.	
Quality 6	***Custom:*** This quality represents good housing exceeding building requirements for the era. It may be contract built. The exterior has an attractive style and often there are breaks in the roof line. The floor plan is functional, with an open design concept creating a sense of spaciousness. Architectural design is used in living areas of all "move up" home construction. Finishes are of good quality materials and workmanship. A number of interior features will be present.	
Quality 7	***Good custom:*** This class represents good to expensive quality, energy efficient housing that is normally custom or contract built and, on occasion, may be constructed under the supervision of an architect. Large verandas or covered entrance ways are common with large or stylish columns. The exterior style may be innovative and breaks in the roof line are common. The interior design often shows originality, includes built-in features and has spacious rooms. A number of interior features will be present. Attention to detail is evident. Finishes in this quality are normally the best pre-manufactured or good to expensive materials.	
Quality 8	***Expensive:*** This quality represents unique design and style in housing exceeding building requirements for the era. It may be contract built under the supervision of an architect and is commonly built on large sites in prime residential neighborhoods. The exterior often has large window areas and a unique roof style. Exterior finishes are selected for their attractiveness and durability, and may consist of limited amounts of costly ornamentation. The interior design is innovative with a considerable number of built-in features. Rooms are usually spacious and often includes special purpose rooms. Decorative features and finishes are normally selected from expensive materials and attention to detail is evident.	
Quality 9	***Luxurious:*** This quality represents the ultimate in housing exceeding building requirements for the era. It is contract built under the supervision of an architect. It is situated on large exclusive sites, and is characterized by an abundance of large windows and a unique roof style. The exterior is innovative with finishes selected for attractiveness and durability including costly ornamentation. The interior design is unique and exquisite to meet individual specifications and taste. Rooms are spacious and floor plans include special purpose rooms including many built-in features. Finishes are of luxurious quality materials and may be imported. Decorative features and workmanship is the highest quality with elaborate detail.	

APPENDIX C - 2015 - 2017 DATASET WITH OUTLIERS

This is the original dataset for inspections for the Residential property type. It included Multiple Listing Service (MLS) and Pictometry inspection types, both of which do not require a site visit to complete. Therefore, they have been identified as "outliers" for the purpose of this analysis.



APPENDIX D - PERCENTAGES OF PROPOSED DISTRIBUTIONS OF WORK BY QUALITY

Percentage of Inspections by Quality				
Option 1	**#4**	**#5**	**#6**	**#7**
Assessor	0%	0%	0%	0%
Associate Assessor	0%	8%	10%	4%
Assessor Intern	29%	35%	79%	90%
Assessor Assistant	71%	57%	11%	6%
Percentage of Inspections by Quality				
Option 2	**#4**	**#5**	**#6**	**#7**
Assessor	0%	0%	0%	0%
Associate Assessor	0%	0%	69%	65%
Assessor Intern	0%	93%	31%	35%
Assessor Assistant	100%	7%	0%	0%

APPENDIX E - WEIGHTED AVERAGE HOURLY COST FOR INSPECTION

The following table establishes the weighted average hourly cost for residential and non-residential inspections in order to calculate potential savings.

2017						
			Residential Inspections (no-outliers)		Non-Residential Inspections (no-outliers)	
Roles	Hourly Rate	Loaded Hourly Rate	Number of Employees	Extended Loaded Hourly Cost	Number of Employees	Extended Loaded Hourly Cost
Assessor	$55.73	$68.10	19	$1,293.90	36	$2,451.60
Associate Assessor	$47.29	$58.21	5	$291.05	10	$582.10
Assessor Intern	$40.53	$50.30	22	$1,106.60	20	$1,006.00
Assessor Assistant	$38.71	$48.16	7	$337.12	6	$288.96
Average per FTE				$57.14		$60.12

APPENDIX F - MOBILITY ESTIMATE DETAILED BREAKDOWN

Mobility Development and TACS Integration		
Data Pickup/TACS Integration	**Time (weeks)**	**Cost**
Business Analysis and Specification		
Business Analyst	3	$10,800.00
Systems Architect	2	$10,000.00
Software Development		
Developer	16	$64,000.00
Sub-Total	**21**	**$84,800.00**
Integrated Mobile Apex Drafting Tool	**Time (weeks)**	**Cost**
Business Analysis and Specification		
Business Analyst	2	$7,200.00
Systems Architect	2	$10,000.00
Software Development		
Developer	12	$48,000.00
Sub-Total	**16**	**$65,200.00**
Mobile Connectivity with TACS and Pictometry/GIS	**Time (weeks)**	**Cost**
Business Analysis and Specification		
Business Analyst	4	$14,400.00
Systems Architect	4	$15,000.00
Software Development		
Developer	12	$64,000.00
Sub-Total	**20**	**$93,400.00**
Grand Total	**57**	**$243,400.00**
Mobility Development and TACS Integration Summary	**Time (weeks)**	**Cost**
Business Analysis and Specification		
Business Analyst	9	$32,400.00
Systems Architect	8	$35,000.00
Sub-Total	**49**	**$67,400.00**
Software Development		
Developer	40	$176,000.00
Sub-Total	**40**	**$176,000.00**
Grand Total	**57**	**$243,400.00**

APPENDIX G - 5 YR SAVINGS PROJECTION FOR MOBILITY

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Costs						
One Time Capital	-$243,000.00					
Annual Savings		$172,000.00	$172,000.00	$172,000.00	$172,000.00	$172,000.00
Annual Costs		$13,500.00	$13,500.00	$13,500.00	$13,500.00	$13,500.00
Net	-$243,000.00	-$84,500.00	$74,000.00	$232,500.00	$391,000.00	**$549,500.00**
Monthly Savings	14,333					
Monthly Costs	1,125					
Tablet Lease	725					
SIM cards	50					
Data Usage Cap	350					
Months to Breakeven	-18					
On average savings per year	$109,900.00					