The Corporation of the City of Stratford
Infrastructure, Transportation and Safety Committee
Open Session
AGENDA

Date:	Monday, August 12, 2024
Time:	7:10 P.M.
Location:	Council Chamber, City Hall
Committee Present:	Councillor Nijjar - Vice Chair Presiding, Mayor Ritsma, Councillor Beatty, Councillor Biehn, Councillor Briscoe, Councillor Henderson, Councillor Hunter, Councillor McCabe, Councillor Sebben, Councillor Wordofa
Staff Present:	Joan Thomson - Chief Administrative Officer, Tatiana Dafoe - City Clerk, Taylor Crinklaw - Director of Infrastructure Services, Neil Anderson - Director of Emergency Services/Fire Chief, Karmen Krueger - Director of Corporate Services, Kim McElroy - Director of Social Services, Tim Wolfe - Director of Community Services, Dave Bush- Director of Human Resources

To watch the Committee meeting live, please click the following link:
https://video.isilive.ca/stratford/live.html
A video recording of the meeting will also be available through a link on the City's website https://calendar.stratford.ca/meetings following the meeting.

Pages

1. Call to Order

The Vice Chair Presiding to call the Meeting to Order.

Councillor Burbach provided regrets for this meeting.

2. Disclosure of Pecuniary Interest and the General Nature Thereof

The *Municipal Conflict of Interest Act* requires any member of Council declaring a pecuniary interest and the general nature thereof, where the interest of a member of Council has not been disclosed by reason of the member's absence from the meeting, to disclose the interest at the first open meeting attended by

the member of Council and otherwise comply with the *Act.*

Name, Item and General Nature of Pecuniary Interest

3. Sub-committee Minutes

6 - 26

Sub-committee minutes are attached for background regarding the discussion held at the July 24, 2024 Sub-committee meeting.

4. Delegations

4.1 Request for Delegation by Robert Ritz regarding the Erie Street Parking Lot Surface Treatment Report

Robert Ritz has requested to speak to the Erie Street Parking Lot Surface Treatment Report ITS24-016. Robert Ritz will be providing new information following his July 24, 2024 delegation to the Infrastructure Transportation and Safety Sub-committee.

Motion by
THAT Robert Ritz be heard.

5. Report of the Manager of Climate Change Programs

5.1 Community Climate Action Plan (ITS24-015)

27 - 99

This item is also listed for consideration on the August 12, 2024, Regular Council reconvene agenda.

Staff Recommendation: THAT the Community Climate Action Plan (CCAP) be adopted;

THAT staff be directed to:

- Identify and advance actions in CCAP that can be implemented within the existing staffing capacity and budget resources;
- Include CCAP programs and supporting resources required for consideration in the 2025 multi-year budget process;

AND THAT staff be authorized to continue to explore potential funding

Motion by
Sub-committee Recommendation: THAT the Community Climate Action Plan (CCAP) be adopted;

THAT staff be directed to:

- **Identify and advance actions in CCAP that can be implemented within the existing staffing capacity and budget resources;**

- **Include CCAP programs and supporting resources required for consideration in the 2025 multi-year budget process;**

AND THAT staff be authorized to continue to explore potential funding opportunities through senior levels of government.

6. Report of the Fire Chief

6.1 Repair or Replace Fire Utility Vehicle (ITS24-014) 100 - 102

This item is also listed for consideration on the August 12, 2024, Regular Council reconvene agenda.

Staff Recommendation: THAT the repair of the fire utility vehicle in the amount of $28,025 be authorized.

Motion by
Sub-committee Recommendation: THAT the repair of the fire utility vehicle in the amount of $28,025 be authorized.

6.2 Procure New Fire Apparatus using Canoe Procurement Group (ITS24-017) 103 - 108

This item is also listed for consideration on the August 12, 2024, Regular Council reconvene agenda.

Staff Recommendation: THAT staff be authorized to use the Canoe procurement group to proceed with the procurement process to purchase a Pierce Quintuple Combination Pumper fire apparatus.

Motion by
Sub-committee Recommendation: THAT staff be authorized to use the Canoe procurement group to proceed with the procurement process to purchase a Pierce Quintuple Combination Pumper fire apparatus.

7. Report of the Events Coordinator

7.1 Request for an exemption to Noise Control By-law 113-79 for the Stratford Lantern Parade event (ITS24-013) 109 - 111

This item is also listed for consideration on the August 12, 2024, Regular Council reconvene agenda.

Staff Recommendation: THAT direction be given on the noise exemption requested by the Playmakers! Theatre School for the Stratford Lantern Parade event on Saturday, October 19, 2024, from 8:00 a.m. to 11:00 p.m. from the following provisions:

- Unreasonable Noise [Schedule 1 clause 8];
- The operation of loudspeakers and amplification of sound [Schedule 2 clause 2];
- Loading and unloading [Schedule 2 clause 4].

Motion by
Sub-committee Recommendation: THAT approval be granted to Playmakers! Theatre School for an exemption to Noise Control By-law 113-79 for the Stratford Lantern Parade event occurring on Saturday, October 19, 2024, from 8:00 a.m. to 11:00 p.m. from the following provisions:

- **Unreasonable Noise [Schedule 1 clause 8];**
- **The operation of loudspeakers and amplification of sound [Schedule 2 clause 2];**
- **Loading and unloading [Schedule 2 clause 4].**

8. Report of the Project Manager

8.1 Erie Street Parking Lot Surface Treatment (ITS24-016) 112 - 231

This item is also listed for consideration on the August 12, 2024, Regular Council reconvene agenda.

Staff Recommendation: THAT Council authorize staff to proceed with the design and issuing a tender for the resurfacing of the Erie Street Parking Lot at this time.

Motion by
Sub-committee Decision: THAT Council authorize staff to proceed with the design and issuing a tender for the resurfacing of the Erie Street Parking Lot at this time;

THAT the matter with respect to the Erie Street Parking Lot project be referred to staff to investigate alternative options for the site;

AND THAT staff be directed to report back with alternative options for the consideration of Council at a future meeting.

9. For the Information of Committee

9.1 Department Update

A copy of the update is available on the City's website on the "Engineering Division" page.

9.2 Advisory Committee/Outside Board Minutes

No Advisory Committee or Outside Board minutes were provided to Committee.

10. Adjournment

Meeting Start Time:
Meeting End Time:

Motion by
Committee Decision: THAT the Infrastructure, Transportation and Safety Committee meeting adjourn.

The Corporation of the City of Stratford
Infrastructure, Transportation and Safety Sub-committee
MINUTES

Date:	July 24, 2024
Time:	4:30 P.M.
Location:	Council Chamber, City Hall
Sub-committee Present:	Councillor Burbach - Chair Presiding, Councillor Nijjar - Vice Chair, Councillor Beatty, Councillor Hunter, Councillor McCabe
Staff Present:	Joan Thompson – Chief Administrative Officer, Neil Anderson - Director of Emergency Services/Fire Chief, Audrey Pascual - Deputy Clerk, Miranda Franken - Council Clerk Secretary, Sadaf Ghalib - Manager of Climate Change Programs, Nick Sheldon - Project Manager, Jeremy Witzel – Manager of Public Works, Brent Raycroft – Fleet Supervisor
Also present:	Members of the Public and Media

1. Call to Order

The Chair called the Meeting to Order.

Land Acknowledgment

Moment of Silent Reflection

Respectful Workplace Policy Statement

2. Disclosure of Pecuniary Interest and the General Nature Thereof

The *Municipal Conflict of Interest Act* requires any member of Council declaring a pecuniary interest and the general nature thereof, where the interest of a member of Council has not been disclosed by reason of the member's absence

from the meeting, to disclose the interest at the first open meeting attended by the member of Council and otherwise comply with the *Act.*

Name, Item and General Nature of Pecuniary Interest
No disclosures of pecuniary interest were made by a Member at the July 24, 2024 Infrastructure, Transportation and Safety Sub-committee meeting.

3. Added - Adoption of the Addendum/Addenda to the Agenda

Motion by Councillor Hunter
THAT the Addenda to the Infrastructure, Transportation and Safety Sub-committee meeting dated July 24, 2024 be added to the Agenda as printed.

Carried

4. Delegations

4.1 Added - Request for Delegation by Robert Ritz regarding the Erie Street Parking Lot Surface Treatment

Motion by Councillor Nijjar
THAT Robert Ritz be heard.

Carried

Sub-committee Discussion: Robert Ritz requested to address Sub-committee regarding the Erie Street Parking Lot Surface Treatment. Highlights of the presentation included:

- restoration could be further reduced if a major development takes place in a year or two, focusing now on safety of the lot to avoid falls etc.;
- proposing a 5 story building with 5 story underground parking with units above being residential;
- proposed building to retain surface parking behind the Wellington Street stores, a walkway on the east side of the building;
- underground parking to be set back 10-12 ft allowing for service to the stores and access to the buildings;
- the Erie lot being 5-7 ft lower on one end of the lot;

- section of the parking garage to be built beneath the existing Erie Street sidewalk, after construction the sidewalk to be rebuilt and retuned to the current slope;
- single wide parking garage entrance and double wide exit to offset traffic congestion after high traffic events and allowing an aisle for turning;
- the parking levels to create the natural existing slope with the bottom being level and top sloped from one end to the other end of the lot;
- proposal originally presented to Planning and Heritage Sub-committee in 2021, at that time the speaker working with a developer willing to take on construction costs, interest rates and supply costs being lower;
- in 2021 the speaker spoke to an owner of Wellington Street store for mutually beneficial solution to easement, with proposal to move the easement to a revised location designed to allow delivery trucks or fire truck to drive around the building to service stores along Wellington Street;
- recently spoke to two Wellington Street building owners who are developing upper floors of their buildings and are both in support of the proposal;
- primary goal of the proposal to provide 250 additional parking spots;
- to fund the project City credit would be used however property taxes and increased parking, offering dedicated purchased parking spots would cover the costs with no increase to the tax levy;
- proposing a developer would do this work if the City gave the land to the developer with the developer payment of the land being in development of the parking lot;
- possible for a developer to buy land near the core at a cost of less than $5 million and build with surplus land however Erie Street being a prime location and one level of parking costing $5 million;

- the 2021 proposal being denied as the City was considering publicly funded, elevated parking lot on the Grand Trunk Revival site (GTR);
- at GTR site parking should be under the buildings to create public parking at no cost to the tax payer and saving the cost of elevated structure;
- proposing the City trade public parking for land by requiring buildings built on the GTR site provide double the parking required for the buildings;
- creating parking spaces in the Erie lot being most important as spaces will be lost in the GTR development;
- noted parking rate has not changed since the initial proposal, and rates could be raised in discussion with merchants with possible trades of free parking in front of stores in the interim;
- the Erie Street lot being centrally located to event spaces and downtown;
- benefits of the proposal including additional housing, 24 hour parking with opportunities for reserve parking, long term parking, dedicated parking and pay per hour parking for locals and visitors;
- signage for Erie Street businesses to be posted on building facade.

The Chair noted the speaker was overtime and allowed an additional minute.

- the speaker being happy to work with the City to prepare an RFP and having no issue releasing designs or the work done;
- interest rates having doubled since 2021 and construction costs being up by a 3rd.

Discussion on this matter occurred between Sub-committee and the speaker. Highlights of the discussion included:

- clarification the project to be funded by exchanging the land for the underground parking lot;

- the developer providing the construction financing and the City purchasing the lot from the developer with this cost offset through property taxes for the building and fees for both sold dedicated spaces and rented parking spaces;
- the project being an income generator that will self finance with the goal being no increase to tax levy;
- the speaker knowing a developer who would be interested in reviewing numbers if the City is interested;
- a member noted the BIA reviewing the viability of more retail space in the downtown;
- speaker noting concerns being raised with lower floor space of the proposed building being used for retail;
- a preference being collaboration to exchange specific retail spaces with residential spaces and looking at possibilities on upper level of Festival Square.

4.2 Added - Request for Delegation by Bill James-Abra, Climate Momentum, regarding the Community Climate Action Plan

Motion by Councillor McCabe
THAT Bill James-Abra be heard.

Carried

Bill James-Abra requested to address Sub-committee in support of the Community Climate Action Plan. Highlights of the presentation included:

- speaking on behalf of Climate Momentum which the speaker co-founded in 2019;
- critical need for municipally led action on Climate Change and emphasizing the community support for this leadership;
- the Climate Action Plan being an opportunity to "collaboratively transition to a lower carbon future" as stated in the report;
- noted July 16th, 2024, Toronto received 31 days of rain in one hour, the average usual July rainfall, damages estimated by the Insurance Bureau of more than $1 billion, being a repeat of a rainfall in July 2013 also costing $1 billion in damages;

- noted at this time 25,000 people evacuating town of Jasper and the National Park, travelling west into British Columbia as the east escape route is blocked;
- noted BC currently fighting 430 forest fires;
- noted June 2021 over 5 days, BC experienced the deadliest weather event in their history being a heatwave, over 600 heat related deaths, most over age of 70, with lower incomes, living alone in non air conditioned homes with temps over 35 degrees;
- a person doesn't have to be an environmentalist, just pragmatic being that it is impractical to regularly fund damages for billion dollar floods, evacuations of communities and 911 systems being overwhelmed;
- quoted the President of Climate Risk Institute of Ontario "the impacts of climate change are very apparent right now, are very stark and can be expected to continue in the future";
- this information can hold people back and immobilize them by the need for action;
- the Community Climate Action Plan provides the strategic direction and community engagement needed to make the plan work;
- the community is in support noting national and local polls indicate over 70% of people are very worried about climate change and 75% of Canadians want government leadership on climate action;
- first steps being the Climate Emergency Declaration of February 2020, brought forward by 2 students from the Eco Club at Stratford District Secondary School;
- followed by the 2021 Council adoption of the Greenhouse Gas Reduction Plan and hiring of the Manager of Climate Change Programs;
- this report being the next step and there being a critical need for the municipality to lead with this plan with the community ready to support the leadership.

5. Report of the Manager of Climate Change Programs

5.1 Community Climate Action Plan (ITS24-015)

Staff Recommendation: THAT the Community Climate Action Plan (CCAP) be adopted;

THAT staff be directed to:

- Identify and advance actions in CCAP that can be implemented within the existing staffing capacity and budget resources;
- Include CCAP programs and supporting resources required for consideration in the 2025 multi-year budget process;

AND THAT staff be authorized to continue to explore potential funding opportunities through senior levels of government.

Sub-committee Discussion: The Manager of Climate Change Programs reviewed the management report, highlighting the following:

- the report being 18 months in the making;
- noted the approval of the plan and the presentation require no budget commitment and any budget requests related to the CCAP (Community Climate Action Plan) to be presented to Council during the annual budget process subject to approvals and grant opportunities;
- community driven plan, developed for all members and sectors of the community;
- work done to facilitate and administer the plan will directly benefit the community over the next 30 years resulting in a thriving, resilient community;
- engagement sessions of surveys, workshops and one on one's attended by community, with predominant interest in retaining local energy dollars in Stratford, making Stratford attractive for visitors, tourists and young families, attracting new and innovative industry, supporting job creation, and adding diversity of housing options;
- support for embracing the three pillars of sustainability: social, environmental and economic impacts

- road path to CCAP being 2020 Climate Emergency Declaration, 2021 milestone targets for emissions reduction, attained milestone in 2023 development of Corporate Emissions Plan;
- on track for upcoming milestones of CCAP endorsement and milestones of 2030, 2040 and 2050;
- CCAP being comprehensive approach for both mitigation and adaptation;
- Corporate Emissions Plan includes road maps and strategies for mitigation corporate wide for all assets and considers energy conservation and management, aiming for 100% cost recovery;
- Stratford being among the 2,359 jurisdictions internationally committed to just transition to address climate action for citizens;
- our approach being consistent at regional and national level and consistent with provincial mandates, federal direction and UN Sustainable development goals;
- since CEEP (Community Enhancement Employment Program) endorsement 2023 implementation of climate lens for all corporate operations for example procurement policies and municipal budget process now containing a tool to help decision makers and staff understand the impact of new purchase decisions regarding emissions, cost savings etc.;
- focus on retrofitting buildings and upgrading fleet with aim for 100% to cost recovery;
- significant dent being made in corporate emissions trajectory with 2022 achievement of an 18% green house gas reduction and cost savings from fuel switching
- annual reporting and monitoring to continue the process and report to Council;
- key policy drivers being the Planning Act section 2, Provincial Policy Statement 2020 section 1.8, the Official Plan section 5.10 Sustainability Strategy and the Government of Canada's commitment to the Paris Agreement;

- Stratford Provincial Plan review working in tandem with the CCAP and could be implemented to promote density and compact communities;
- CCAP being developed in 3 phases with process initiated by a gap analysis and needs assessment conducted by staff in 2023;
- the three phases being Assessment of Needs and Opportunities, Identifying and Evaluating Strategies and Preparing the CCAP;
- securing approved grant funding for the end of 2024, all work to be approved by September 1, 2024;
- CCAP including framework for guiding programs and initiatives at local level;
- energy transition helping all citizens save money monthly and over time, helping promote energy security and protection against volatile energy markets, keeping energy money local which can be directed towards other projects enhancing the community;
- CCAP will enable and make eligible access to additional funding through government sources and other organizations with shovel ready projects and programs;
- climate cognizant companies to be attracted to Stratford and improved air quality, human health and build community resilience;
- co-benefits of climate action to help to tackle energy poverty;
- in Stratford 26% of households paying more than 6% of after-tax income on home energy, expected to increase in future years;
- energy retrofits can offset energy poverty;
- CCAP includes elements related to the community and not elements addressed as part of the Corporate Emissions Plan;
- community generated emissions being 43% transportation, building sector being comparable emissions and energy usage equating to approximately 10 tones of C02 per capita;
- natural gas, diesel and gasoline accounting for half of energy usage and electricity being the other half;

- "business as usual scenario" or doing nothing translating to cost burden of $700-1100 million for the community or $15,000-23,000 per capita by 2050;
- low-carbon scenario energy savings translates to $230-500 million in cumulative savings of $7.3 Billion for the community in 2050;
- CCAP offers opportunity to reduce emissions in several sectors concurrently and attain reductions to get near zero;
- traditional, centralized energy system in 2022 the community spent $230 million and by 250 the expenditure expected to increase to $7-11 hundred million or considering a family of four, an energy cost burden of $15-23,000 for the individual in 2022 rising to $60,000 in 2050, using a conservative estimate;
- a low carbon scenario being energy generated locally through alternate energy sources and storage options like wind, solar and geothermal where possible, district energy and renewable natural gas;
- less than 20% of energy dollars remaining in Stratford whereas an energy transition being 80-95% energy dollars retained in the local economy;
- with these investments, 2032 onward annual savings are projected to increase as energy focus investments turn into savings;
- 7 program areas accommodate more than 15 actionable initiatives helping to build more climate resilient, low carbon economy with largest opportunities noted in transportation and building sectors and scalable actions noted for neighborhood growth and clean energy transition;
- detailed initiatives identified within the CCAP for homes and buildings, low carbon neighborhoods, efficient industry, efficient transportation;
- Transportation Master Plan transitioning fleet to low carbon and looking for funding opportunities for this;
- energy supply initiative programs in district energy, heat pump, solar hot water and solar photovoltaic programs;

- program towards zero waste focusing on waste reduction and diversion from landfill and recycling, targeted toward projected population growth;
- governance program recommendation demonstrating municipal leadership which the City is well aligned with;
- opportunity to enhance communication with the community using a variety of techniques including recommendation of a community based group to oversee initiatives, currently under review with staff to be presented at later date;
- managing urban tree cover and enhancing naturalization with installation of native plants and species to increase adaptation and resilience;
- seeking support and looking for funding opportunities which are anticipated to increase with goal of funding not being a burden on the tax payers;
- variety of opportunities from senior levels of government;
- CCAP in place with shovel ready projects placing Stratford in a position to unlock funds and grants;
- objectives to help realize household cost savings within community and for all businesses;
- 2023 approval for $10,000 from Enbridge and $25,000 from the Ministry of Energy and 2024 additional $10,000 from Enbridge, many opportunities;
- plans actioned through integration with land use plans and asset management plans;
- Provincial Policy Statement, containing goals for energy efficiency and planning which must be integrated into land use plans;
- looking for integration into Stratford's Official Plan as well as other documents and policies;
- relying on new and existing partnerships to move forward;

- noted Thunder Bay, Waterloo Region and London as examples for partnerships and collaborations towards eco programs and initiatives.

Members of Sub-committee thanked the Manager of Climate Change Programs noting the possible savings are positive and that the report is important.

Motion by Councillor Hunter
Sub-committee Recommendation: THAT the Community Climate Action Plan (CCAP) be adopted;

THAT staff be directed to:

- **Identify and advance actions in CCAP that can be implemented within the existing staffing capacity and budget resources;**
- **Include CCAP programs and supporting resources required for consideration in the 2025 multi-year budget process;**

AND THAT staff be authorized to continue to explore potential funding opportunities through senior levels of government.

Carried

6. Reports of the Fire Chief

6.1 Repair or Replace Fire Utility Vehicle (ITS24-014)

Staff Recommendation: THAT the repair of the fire utility vehicle in the amount of $28,025 be authorized.

Sub-committee Discussion: The Fire Chief reviewed the management report, highlighting the following:

- the Fire Chief thanked the Fleet Supervisor;
- unit 2 being the call sign for 2019 Dodge Ram used by the Fire Prevention officer;
- the Fire Prevention cell, consisting of 2 officers, performing inspections and issuing permits throughout the city and 2 vehicles being required to service the whole City;

- one vehicle being rear ended causing considerable damage, no one hurt or injured and the other driver being charged;
- the vehicle not having reached the deductible for insurance and considered a write off by mechanic, however the Fleet Supervisor having found a body shop who can source original manufacturer parts (OEM) in a 4-6 week turnaround for $28,025 repair cost;
- the intended lifespan of the vehicle being 2029, notwithstanding vehicles that have exceeded the lifespan and are in continued use;
- a second option being purchasing new with cost being $95,000 due to colour, the vehicle being hybrid and due to lights and sirens, noting some parts can be reused from the other vehicle with the purchase turnaround being 1 year;
- transfer of Fire Dispatch being August 27, meaning the dispatchers being assigned to other positions, one position being the Fire Protection Educator;
- this position providing training, education, and prevention information and requiring a vehicle and an additional vehicle not being available as the reserve vehicle is in use by Fire Inspector;
- repairing of the vehicle taking 4-6 weeks after approval, and repairs could extend the lifetime of the vehicle 10 years past the 2029 scheduled replacement;
- a new vehicle wasn't planned and the cost of $95,000 would come out of reserves;
- to repair the $28,025 would come out of variance, done by amortizing the cost over remaining 5 the years with an increase of the Fire operating budget of just over $5000 annually.

Discussion on this matter occurred between Sub-committee and the Chief of Police. Highlights of the discussion included:

- the body shop anticipates the repair to meet the expected 2029 lifespan and possibly exceed using OEM parts.

Motion by Councillor Nijjar

Sub-committee Recommendation: THAT the repair of the fire utility vehicle in the amount of $28,025 be authorized.

Carried

6.2 Procure New Fire Apparatus using Canoe Procurement Group (ITS24-017)

Staff Recommendation: THAT staff be authorized to use the Canoe procurement group to proceed with the procurement process to purchase a Pierce Quintuple Combination Pumper fire apparatus.

Sub-committee Discussion: The Fire Chief reviewed the management report, highlighting the following:

- in 2007 the Corporation purchased Rosenbauer Engine 2, scheduled for replacement in 2027 using Capital Reserve Funds;
- National Fire Protection Agency recommending front line vehicles be in service for 15 years and in reserve services for remaining 5 years;
- this vehicle currently being in front line service for 17 years;
- supply time for custom vehicles prior to covid having a 12-18 month wait and covid creating supply issues with times being 30-42 months for stock vehicles, custom taking longer;
- Engine 2 recently in shop heavy with mechanics identifying heavy rust jacking built up on the frame, noticing hardware breaking and stretching, bolts missing,
- rust jacking being the frame rusting out as it breaks and the metal bowing out, deeming the vehicle unsafe potentially permanently;
- mechanics and fleet supervisor recommending replacement of the unit;
- in 2015 pumper 1, Quintuple Combination Pumper (Quint) being vehicle with pump, hose, ladders, water tank and aerial device, also succumb to rust jacking, this being the last time the City had 2 aerial vehicles in service, as it was replaced with an engine;
- In 2017 the department began undercoating the vehicles to prolong the life and avoid future rust jacking events;

- not replacing Engine 2 would not cause challenges to response, however if a single vehicle required maintenance the division would be reduced to two of the four vehicles and if a vehicle with pump required maintenance the division would be reduced to single water tank and pump for coverage of the whole city;
- should Engine 2 remain in service, mechanics are not confident the vehicle will be safe in one year of being on the road and the vehicle would continue with regular checkups to monitor;
- replacement options being rentals, lease or purchase;
- challenge with rental or lease vehicles being difficulty in sourcing;
- challenge with a purchase being these being almost obsolete, noting Ontario Fire Marshall sent a memorandum to all Fire Chiefs requesting a reserve vehicle as they are difficult to find;
- second hand vehicles are no longer grandfathered and must be brought up to current standards, this being an increase in cost after the purchase of the vehicle;

Councillor Nijjar left the meeting at 5:51 p.m.

- intention being to replace Engine 2 in 2027 with a Quint;
- the department vision being returning to 2015 service level of aerial vehicles at each end of the city for response and ability to provide backup vehicle if a vehicle is out of service;
- noting these have a reach of stream reaching beyond 100 ft after full elevation, quince varying from 78-109 ft;
- staff recommend a Pierce manufacture Quint with extended ladder, no aerial;
- currently have a Pierce as new tower minimizing training time and education required as they are laid out the same way;
- Pierce having emergency vehicle technicians with the shop being in Woodstock and shorter period of 1 day turnaround for repairs, noting the current shop being in Brampton with staff being brought in for overtime as service staff numbers must be maintained;

- bringing emergency technicians to Stratford being faster and less expensive being that Brampton technicians have a $500 flat rate each direction for travel before work being done;
- Pierce considered as reliable and ranked number 1 through Canoe and fire service with a 5.5% rebate if order made through Canoe;
- custom vehicle delivery date would be in 2027-2028 and service technicians not confident Engine 2 will last this long;
- Canoe handles the RFP process allowing the City to deal directly with the manufacturer of choice;
- unprecedented pricing increase of fire service vehicle from current reserves plan of $1.4 million now predicted cost $2.2 million with an increase of approximately $200, 000 by August;
- manufacturer having one stock vehicle to be ready early 2026 with sales exceeding production as stock vehicles are less expensive than custom, staff noting this vehicle was purchased by BC shortly after discussion;
- similar pumper without a ladder costing approximately $1.9-2 million;
- aerial vehicles not available in eclectic or hybrid option;
- requesting a recommendation for procurement in advance of the 2027 scheduled replacement of Engine 2 to ensure service delivery to the city and at best value for money;
- 2025 years and beyond will require an increase transfer to capital reserve funds;
- vehicle identified as Quint in Development Charges Background Study for 2028, being 32.5 % of the purchase price funded through Development Charges being $715,000 at the current price, remaining balance of approximately $1.485 million from Fire Capital Reserves;
- once solution secured, staff will return with an information report outlining any variance or further budgetary considerations;

- Canoe requiring 10% deposit to secure a vehicle to be ready in 2-3 years.

Discussion on this matter occurred between Sub-committee and the Chief of Police. Highlights of the discussion included:

- member requesting analysis of how this issue has occurred with regular maintenance checks and how to avoid this going forward;
- staff referenced Improvements and Enhancements Study identifying City does not have emergency vehicle technicians and so outsourcing is required;
- daily inspections are done by the drivers and to look for anything missing, and in this case a bolt was missing, when cleaned up with grinder they found the bolt snapped off, in clean up found rust jacking;
- without in house professional mechanics we cannot do further analysis;
- vehicle replacement still scheduled for 2025;
- long term leases are offered by some manufacturers however leased vehicles will not be taken back after lease;
- common leasing to own offers are over 36 months to 10 years depending on residual or bloom payment, with average interest rate approximately 7.85%, as example vehicle costing $2.2 million with $400, 000 down payment plus sales tax on downpayment being recoverable over 60 month term, monthly payment of $33,000;
- difference in cost being the interest
- member inquiring if an analysis be done into purchase vehicle with 10 year span, at end of 10 years selling if the resale market is still strong and if not, planning to keep the vehicle to end of expected life cycle;
- Fire capital reserve fund currently at $1.5 million;
- staff noted the current engine was not undercoated prior to 2017, this being initiated when the chief was hired;

- a custom option being a galvanized frame if Council chooses custom, however the turnaround time being longer for custom; and,
- a member noting they would support looking first for a stock vehicle.

Motion by Councillor Hunter
Sub-committee Recommendation: THAT staff be authorized to use the Canoe procurement group to proceed with the procurement process to purchase a Pierce Quintuple Combination Pumper fire apparatus.

Carried

7. Report of the Events Coordinator

7.1 Request for an exemption to Noise Control By-law 113-79 for the Stratford Lantern Parade event (ITS24-013)

Staff Recommendation: THAT direction be given on the noise exemption requested by the Playmakers! Theatre School for the Stratford Lantern Parade event on Saturday, October 19, 2024, from 8:00 a.m. to 11:00 p.m. from the following provisions:

- Unreasonable Noise [Schedule 1 clause 8];
- The operation of loudspeakers and amplification of sound [Schedule 2 clause 2];
- Loading and unloading [Schedule 2 clause 4].

Motion by Councillor McCabe
Sub-committee Recommendation: THAT approval be granted to Playmakers! Theatre School for an exemption to Noise Control By-law 113-79 for the Stratford Lantern Parade event occurring on Saturday, October 19, 2024, from 8:00 a.m. to 11:00 p.m. from the following provisions:

- **Unreasonable Noise [Schedule 1 clause 8];**
- **The operation of loudspeakers and amplification of sound [Schedule 2 clause 2];**

- **Loading and unloading [Schedule 2 clause 4].**

Carried

8. Added - Report of the Project Manager

8.1 Added - Erie Street Parking Lot Surface Treatment (ITS24-016)

Staff Recommendation: THAT Council authorize staff to proceed with the design and issuing a tender for the resurfacing of the Erie Street Parking Lot at this time.

Sub-committee Discussion: The Project Manager reviewed the management report, highlighting the following:

- the Erie Street parking lot being municipally owned and highly used with need for rehabilitation identified in 2014;
- the site having upper and lower lots of above ground parking;
- legal obligations including easements with abutting properties and assigned parking spots for certain property owners adding complications;
- different options under discussion since 1988 including resurfacing, reconfiguring and reconstructing, tiered parking structure and above ground building with underground parking;
- in 2022 and 2023 this item having been on the budget but not completed;
- 2024 budget of $1.5 million being passed to rehabilitate this site and this report being the requested report outlining intentions for this rehabilitation;
- staff recommend rehabilitation as is to do minor repairs to existing storm drainage on site and minor concrete repairs to curb and sidewalk within site limits and not reconfiguration of the site;
- benefits being restoration of the city’s asset to suitable condition, reducing liability of trips and falls of users, maintaining obligation to adjacent property owners, the estimated cost being 50% of the allotted budget and providing level of service suitable to paying users while not restricting future development of this property;

- proposed work being routine work for parking lots and the lot being beyond the life cycle.

Discussion on this matter occurred between Sub-committee and the Project Manager. Highlights of the discussion included:

- members recall concern in budget deliberations regarding rehabilitation work being done and the lot then being dug up for work to begin construction a year later, however the work needing to be done for safety;
- staff recommends rehabilitation at this time with lifespan of more than 25 years;
- member notes this has been discussed many times and Council should be open to other alternatives;
- member noted the decision making process and work will take several years while the parking lot continues to deteriorate.

Motion by Councillor Hunter
Sub-committee Recommendation: THAT Council authorize staff to proceed with the design and issuing a tender for the resurfacing of the Erie Street Parking Lot at this time.

Carried

Motion by Councillor Hunter
Sub-committee Decision: THAT the matter with respect to the Erie Street Parking Lot project be referred to staff to investigate alternative options for the site;

AND THAT staff be directed to report back with alternative options for the consideration of Council at a future meeting.

Carried

9. Department Update

A copy of the update is available on the City's website on the "Engineering Division" page.

10. Advisory Committee/Outside Board Minutes

No Advisory Committee or Outside Board minutes were provided to Sub-committee.

11. Next Sub-committee Meeting

The next Infrastructure, Transportation and Safety Sub-committee meeting is September 25, 2024 at 4:30 p.m. in the Council Chamber, City Hall.

12. Adjournment

Motion by Councillor Beatty

Sub-committee Decision: THAT the Infrastructure, Transportation and Safety Sub-committee meeting adjourn.

Carried

Meeting Start Time: 4:30 P.M.
Meeting End Time: 6:20 P.M.

MANAGEMENT REPORT

Date: July 24, 2024
To: Infrastructure, Transportation and Safety Sub-committee
From: Sadaf Ghalib, Climate Change Program Manager
Report Number: ITS24-015
Attachments: Community Climate Action Plan

Title: Community Climate Action Plan

Objective: To obtain Council approval of the Community Climate Action Plan.

Background: At the November 14, 2023, Regular Council Meeting, Council authorized staff to proceed with the development of a Community Climate Action Plan and retain the services of a technical consultant. Funding support for development of this Plan was provided by the Ministry of Energy, Ontario with the requirement that it be completed and endorsed by Council no later than September 1, 2024, to secure the approved funds.

This report brings forward the Community Climate Action Plan (CCAP) for the consideration of Council for adoption. The development of this document has been informed by the city's latest energy and emissions inventory, community and industry engagement, municipal best practices, and emissions modelling of low-carbon actions to accelerate mitigation efforts toward near-zero emissions by 2050. The CCAP, once adopted, will serve as the overarching plan for the community's energy transition and emission reduction efforts. The Plan is intended to:

1. Advance City priorities such as Council's Climate Emergency Declaration (2021) and Strategic Priorities (2024 – 2027)
2. Inform climate action related to the following areas over the next 30 years:
    a. homes, buildings, and industry
    b. sustainable transportation
    c. neighbourhoods
    d. energy infrastructure and utility systems and
    e. waste management
3. Ensure alignment with federal and provincial energy strategies and related funding opportunities

4. Help reduce community greenhouse gas (GHG) emissions and promote related economic benefits

The CCAP includes seven program areas and more than fifteen actionable programs to help reduce community-wide emissions and build a more climate-resilient, low-carbon community. The largest opportunities for emission reductions have been identified in the transportation and building sectors, and scalable actions noted for neighbourhood growth, clean energy transition, industry transformation, and governance.

Consultation on the preliminary recommendations over Spring 2024 found predominant support for the plan and resulted in creation of a community vision, principles and framing goals that have been incorporated into the CCAP, along with feedback received. Staff recommends adoption and shifting focus to implementation.

Analysis:

Stratford's Community Climate Action Plan

The Community Climate Action Plan (CCAP) is a community plan to address energy usage, reduce GHG emissions and promote economic benefits of energy transition in Stratford. The CCAP is one of two major plans developed by the City to address climate mitigation, the other being the Corporate Energy and Emissions Plan (CEEP) 2023, which focuses on corporate assets and operations.

Primarily aimed at enhancing the resiliency of community assets through climate mitigation, the CCAP sets forth a comprehensive strategy to guide the energy transition, facilitate emission reductions, and enable economic benefits from energy conservation and management. This plan will also help the City in fulfilling its legislative requirements and municipal obligations by showcasing due diligence and proactive measures in reducing community GHG emissions and enabling the energy transition while retaining local energy dollars in the community.

<u>Project Process and Timeline: What We Did</u>

The CCAP was developed in three project phases, as noted below.

Phase 1 – The Baseline Update and Analysis Phase consisted of two main activities:

- Determining an updated baseline (2022) of current energy use, GHG emissions, and utility costs for the community; and

- Creating a business-as-usual (BAU) scenario. The BAU scenario projects what GHG emissions would be in the year 2050 starting with the baseline and incorporating only changes that are currently planned and committed to happen (i.e. currently approved projects, population projections, etc.) with no consideration given to climate impacts.

Phase 2 – Community Engagement Phase involved soliciting feedback from the community including residents, businesses and industry representatives on possible community-driven actions that could be taken to reduce GHGs. Engagement took place in Summer 2023 and Spring 2024 to inform, consult, and involve the community-at-large as well as appropriate stakeholders in plan development.

Phase 3 – The Plan Development Phase included the following:

- Emissions modelling to explore various options for reducing GHGs for a Low-Carbon Scenario to 2050;
- Determining program areas for action planning, and specific programs/initiatives;
- Completing a financial analysis and GHG reduction estimation of the programs identified; and
- Synthesizing the above analyses and developing a draft plan.

Baseline Data Analysis: What We Learned

The baseline data analysis (BAU) was conducted for GHG emissions, energy use and utility costs, briefly described below.

GHG Emissions: BAU revealed that in 2022 approximately 347,000 tonnes of carbon dioxide equivalent (tCO_2e) community emissions were generated in Stratford. Sectors with the largest emissions in Stratford are buildings (46%) and transportation (43%). Emissions from residential (15%) and industrial buildings (15%) comprise the most significant share of all building emissions. Under the BAU scenario, total GHG emissions in Stratford are projected to rise to 416,400 tCO_2e in 2050, projecting an approximate 20% increase.

Energy use: Stratford uses 9 petajoules (PJ) of energy each year (2022), which is projected to increase to 11 PJ of energy by 2050. This amounts to an increase of 22%. In line with community GHG emissions, the majority of this energy use (70%) comes from residential buildings and transportation. The increases in both community emissions and energy use are largely due to continuing population growth in Stratford, which drives emissions growth in the sectors of buildings, transportation, and waste.

Utility costs: Energy costs are, by far, the most escalating factor when projecting community greenhouse gases and energy usage into the future. Community-wide energy costs range from $230 Million in 2022, to between $700 Million (low price range) and $1,100 Million (high price range) in 2050 – an increase of 220% to 400%. This translates to approximately $6,630 per capita in 2022 to more than $15,218 (low price range) to $23,913 (high range) per capita utility cost burden in 2050 (2024-dollar value).

Program Areas and Recommended Actions

A robust suite of community engagement activities helped gather public and stakeholder feedback on GHG reductions and energy conservation. Major themes that emerged from these sessions were synthesized to generate options for program areas and identify feasible, actionable initiatives for the plan. Simulation further helped determine the projected GHG reduction and cost savings for the community.

Priority areas of action were captured within seven 'program areas':

- Efficient Homes and Buildings
- Efficient Industry
- Low-Carbon Neighbourhoods
- Energy Supply and Distribution
- Efficient Transportation
- Towards Zero Waste, and
- Governance

Program areas present fifteen specific programs/initiatives to implement. Refer to Attachment 1 of this report containing the CCAP document, and Implementation Strategy for detailed program areas, anticipated GHG reduction and cost implications.

A key consideration through the process of plan development was to pursue local economic development opportunities through climate action. By eliminating wasted energy and localizing energy production, Stratford can enhance its economy, leading to more local jobs, higher property values and reduced living costs over the long term. Currently, significant energy is wasted due to inefficiencies and conversion losses, resulting in most energy spending flowing out of the local economy. This presents a major economic opportunity for Stratford to retain and recirculate more local energy dollars within the community. Doing so will create local jobs, foster new industries, generate savings for local businesses, and make living more affordable for residents.

Other considerations included evaluating co-benefits of actions. For example, improving energy efficiency can create jobs, save residents money, and increase home comfort. Additional examples include complete communities that provide a range of housing, more employment opportunities, and diversity of amenities and services available within a walkable distance. These communities or neighbourhoods can be more efficient to service with infrastructure and have the potential to reduce community GHG emissions associated with transportation.

Costs of Implementation

The CCAP presents a significant shift in the way our community grows, lives, and prospers. Steering this shift will thus require significant investments from the community, industry, and other stakeholders as well as implementation partners.

CCAP implementation will require additional staff resources and/or an external funded entity to direct efforts and advance initiatives. Long-term costs are difficult to determine at this time and may be dependent on external funding sources. Some preliminary costs are noted in the Implementation Strategy (Attachment 1), and will need funding support from the City, provincial and federal governments, and other funding agencies such as Federation of Canadian Municipalities (FCM).

To facilitate some programs and initiatives, the City's role will be to advocate and work with other agencies and levels of government to achieve program goals; for others, the City will be tasked with facilitating or incentivizing actions through policy and regulatory framework. The same commitment and multi-pronged approach will be required by all members of the community and stakeholders to do their part in promoting and supporting uptake of low-carbon actions.

Subject to Council approval, staff will proceed with incorporating the recommendations from the CCAP in upcoming budgets and operational workplans. Sources of funding will continue to be pursued and projects and initiatives will be presented to Council for consideration annually when preparing future draft budgets.

Co-benefits of Investment in a Low-Carbon Economy

As previously noted, as per BAU, total energy expenditures in the community were $230 Million in 2022. This amount includes money spent on building and transportation fuels: electricity, natural gas, gasoline, and diesel. By 2050, this expenditure is projected to increase, ranging from 220% to 400%. For the average resident this means an energy cost burden of $6,630 in 2022 to increase to around $15,217 (low range) to $23,913 (high range) in 2050.

In contrast, under the Low Carbon Scenario (LCS), community-wide energy expenditures are projected to be between $300 Million (low range) to $500 Million (high range) by 2050, representing a per capita energy expenditure of between $6,521 to $10,869; with approximately 80-95% energy dollars retained in the local economy.

From 2032 onwards, annual savings and revenue begin to increase as energy-focused investments turn into savings. By 2050, community-wide cumulative savings are anticipated to be between $5 Billion to $7.3 Billion. Most programs and initiatives save and/or generate more money than they cost, as does the plan in its entirety.

Another point to highlight is the economic development opportunity. Currently, only about 20% of the energy expenditures by the community remain within Stratford. In

the LCS, the transition from emissions-intensive fossil fuel usage (which is controlled and distributed outside of Stratford) to locally generated electricity and heating, along with average household energy savings, is expected to result in more money being cycled back into the local economy.

Supporting investment and growth in efficient buildings, green industries, and sustainable transportation will position Stratford competitively in the emerging low-carbon economy in Ontario, Canada, and beyond.

Financial Implications:

Financial impact to current year operating budget:
There is no financial impact anticipated on current year operating budget.

Financial impact on future year operating budget:
While there are no immediate financial impacts from adopting the Plan, implementation of the plan will necessarily require additional investment from the City, residents, businesses, and senior levels of government. These will be included in the 2025 budget process upon adoption of the Plan. Should staff be directed to take lead on implementation of specific programs or initiatives from the CCAP, individual projects will be assessed with regards to cost, feasibility, delivery model, cost recovery, and further refined before seeking approval from Council. Staff will also continue to aggressively pursue funding and grant opportunities as well as investigate unique financing approaches to support implementation of the CCAP.

Link to asset management plan and strategy:
The Community Climate Action Plan is not directly linked to the City's asset management plan and strategy, however at a community scale, investments in infrastructure are anticipated to occur. If new corporate assets are added or existing assets refurbished to impact useful life, they will be included in the asset inventory and asset management plan.

Alignment with Strategic Priorities:

Enhance our Infrastructure
This report aligns with this priority as its recommendations inherently support energy transition and emission reductions, ensuring sustainable growth and fostering economic stability.

Work Together For Greater Impact
This report aligns with this priority by emphasizing the importance of building and nurturing community partnerships for successful implementation of the CCAP.

Intentionally Change to Support the Future
This report aligns with this priority as it supports economic growth and encourages innovation.

Alignment with One Planet Principles:

Health and Happiness
Encouraging active, social, meaningful lives to promote good health and wellbeing.

Equity and Local Economy
Creating safe, equitable places to live and work which support local prosperity and international fair trade.

Culture and Community
Nurturing local identity and heritage, empowering communities and promoting a culture of sustainable living.

Land and Nature
Protecting and restoring land for the benefit of people and wildlife.

Sustainable Water
Using water efficiently, protecting local water resources and reducing flooding and drought.

Local and Sustainable Food
Promoting sustainable humane farming and healthy diets high in local, seasonal organic food and vegetable protein.

Travel and Transport
Reducing the need to travel, encouraging walking, cycling and low carbon transport.

Material and Products
Using materials from sustainable sources and promoting products which help people reduce consumption.

Zero Waste
Reducing consumption, reusing and recycling to achieve zero waste and zero pollution.

Zero Carbon Energy
Making buildings and manufacturing energy efficient and supplying all energy with renewables.

Staff Recommendation: THAT the Community Climate Action Plan (CCAP) be adopted;

THAT staff be directed to:

- **Identify and advance actions in CCAP that can be implemented within the existing staffing capacity and budget resources;**
- **Include CCAP programs and supporting resources required for consideration in the 2025 multi-year budget process;**

AND THAT staff be authorized to continue to explore potential funding opportunities through senior levels of government.

Prepared by:	Sadaf Ghalib, Climate Change Program Manager
Recommended by:	Taylor Crinklaw, Director of Infrastructure Services
	Joan Thomson, Chief Administrative Officer

Community

Stratford
ONTARIO CANADA
Dramatically Different!

Table of Contents

Our Road to Net Zero – Mayor's Foreword

The global climate emergency is a significant challenge that requires immediate attention and action at a local level. In 2020, Stratford joined several cities around the world in declaring a Climate Emergency and recognized that the impacts of a changing climate are already being felt in Canada, and across the world – and will continue to intensify, posing acute and lasting risks for communities, businesses, and natural ecosystems. It has prompted a concerted response locally with the development of implementation strategies for the City of Stratford, both as a corporate entity and as a community.

Our Community Climate Action Plan is the new community-wide energy and emissions reduction strategy that addresses mitigation at a city scale while retaining local energy dollars in the community – it is meant to serve as a roadmap that provides strategic direction for the city as we enable a shift to carbon neutrality by 2050.

The climate action goals in this plan are ambitious. As a community, we can collaboratively pave the way for an equitable transition to a low-carbon, healthy, and prosperous future.

Mayor Martin Ritsma

Contributors and Acknowledgements

The City of Stratford would like to recognize the invaluable contributions made to the Community Climate Action Plan by community members, participating industry partners and business representatives, Energy and Environment Advisory Committee, Active Transportation Advisory Committee, Mayor and City Council. Their contributions ensured that this Plan captures the climate action aspirations of the community.

We also want to thank all residents who shared their ideas with the City of Stratford through the online engagement opportunities on EngageStratford, along with everyone who participated in in-person engagement sessions, and workshops.

Lead Authors

Sadaf Ghalib, Climate Change Program Manager – City of Stratford

LURA Consulting

Garforth International Canada

Financial Support

Project funding support provided by the Ministry of Energy, Government of Ontario.

Glossary

Adaptation: The process of adjusting to current or expected changes in climate and its effects. This involves making changes in practices, processes, structures, and policies to minimize damage, take advantage of opportunities, or cope with the consequences of climate change.

Alternative Fuels: Fuels other than conventional fossil fuels such as gasoline and propane. They generally have lower GHG emissions than fossil fuels and can include ethanol, biodiesel, propane, electricity, fuel cells and hydrogen.

Baseline: A scenario illustrating expected energy use and greenhouse gas emissions if no additional plans, policies, programs, and projects are implemented between the present and 2050.

Baseline year: The starting year for energy or emissions projections, from which monitoring and tracking activities can rely on.

Business As Usual (BAU): A scenario of the future that assumes that future developments will be similar to past trends and no new mitigation policies or actions are introduced. Comparing an energy and emissions forecast from implementing specific policies or actions against a BAU scenario reveals the full potential of those policies or actions to reduce energy and emissions.

Carbon Dioxide Equivalent (CO_2e): This term describes different greenhouse gases in a standardized unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of carbon dioxide (CO_2) which would have the equivalent global warming impact.

Corporate Energy and Emissions Plan (CEEP): A document developed as a net-zero strategy for the corporation to achieve climate emergency targets through operations.

Community Climate Action Plan (CCAP): A document for providing long-term direction and short-term actionable strategies for reducing energy consumption and emissions in the community.

Carbon Sequestration: The process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change.

Deep Retrofit: An extensive, holistic overhaul of a building's systems, utilizing best practices with the goal of significantly reducing energy consumption and GHG emissions.

District Energy System: Involves the production and supply of geothermal energy (i.e. heat and cooling) and can also provide electrical energy. Generally, a district energy system moves heat and/or cool energy from a centralized source through a network of pipes to buildings, neighbourhood or community.

Heat Pump: A device that transfers heat energy from a source of heat to a target area using mechanical energy.

Infill Development: Development that takes place on vacant or undeveloped land within an existing community where the existing land is mostly built out. Infill 'fills in' the gaps. Gentle infill can often increase density without changing neighbourhood character, such as allowing secondary suites.

Mitigation: The process of making the impacts of climate change less severe by preventing or reducing the emission of greenhouse gases into the atmosphere.

Greenhouse Gas (GHG): Greenhouse gases including carbon dioxide, methane and even water vapor that occur naturally in the atmosphere, maintaining a temperature through the natural greenhouse gas effect that has been conducive for ecosystems and human civilization to flourish for 10,000 years. Additional GHGs released from burning oil, coal and natural gas for energy and clearing forests for cities and agriculture has enhanced the greenhouse effect, leading to changes in climate.

Net-Zero Emissions: As defined in the Canadian Net-Zero Emissions Accountability Act: anthropogenic emissions of greenhouse gases into the atmosphere are balanced by anthropogenic removals of greenhouse gases from the atmosphere over a specified period.

Low-Carbon Energy System (LCES): Energy systems that provide heating, cooling, hot water, with reduced or limited GHG emissions, typically regulated through a maximum annual emissions per square meter basis.

Scope 1 Emissions: Direct greenhouse (GHG) emissions that occur from sources that are controlled or owned by an entity (e.g., emissions associated with fuel combustion in boilers, furnaces, vehicles).

Scope 2 Emissions: Indirect GHG emissions associated with the purchase of electricity, steam, heat, or cooling. Although scope 2 emissions physically occur at the facility where they are generated, they are accounted for in an entity's GHG inventory because they are a result of the entity's energy use.

Scope 3 Emissions: The result of activities from assets not owned or controlled by the reporting entity, but that the organization indirectly affects in its value chain. Scope 3 emissions include all sources not identified within an organization's scope 1 and 2 boundary.

Offsets: Greenhouse gas reductions that are used to counterbalance greenhouse gas emissions elsewhere. A carbon offset occurs when an individual or organization emits a given amount of GHG emissions but invests in measures that permanently and verifiably remove the equivalent amount of GHG emissions from the atmosphere.

Units

GHG emissions: 1 $ktCO_2e$ = 1,000 tCO_2e

Energy: 1 GJ= 278 kWh, 1 MWh= 1,000 kWh

Executive Summary

This **Community Climate Action Plan** is Stratford's response to addressing the climate crisis, providing a path toward a low-carbon future for the community. Following the commitment established in Stratford's Climate Emergency Declaration, this plan provides a roadmap to achieve the ambitious target of 30% greenhouse gas (GHG) reduction (below 2017 levels) by 2030 and to become a net-zero city by 2050. This target reflects Canada's commitment to the Paris Agreement and the global effort to limit global average temperature from rising above 2°C and pursue efforts to limit the increase to 1.5°C. Meeting this goal is critical to avoid more catastrophic impacts of climate change.

This Plan has been developed as a mitigation strategy and lays out specific actions to reduce the community's greenhouse gas (GHG) emissions, accelerate the clean energy transition and seek economic development opportunities, with a focus on seven program areas: Efficient Homes and Buildings, Low-Carbon Neighbourhoods, Efficient Transportation, Efficient Industry, Energy Supply and Distribution, Towards Zero Waste and Governance. For each program area, a set of goals and actions are identified, with the aim to fulfill Stratford's climate action vision, enable its transition into a sustainable, low-carbon city, and ensure local energy dollars remain in the community.

Achieving this feat will involve significant investments in our buildings, transportation, and infrastructure. This plan will help guide community-driven action toward fostering environmental stewardship, building resilience, and achieving several other objectives concurrently.

Transitioning to a low-carbon city requires a tremendous effort that extends beyond the municipality, involving every resident, business, and organization in the community as crucial contributors to our city's envisioned future. Achieving our collective goals will also necessitate action from all levels of government. To increase the likelihood of achieving success together, the City must allocate dedicated resources toward plan implementation, ongoing support, and oversight.

The Community Climate Action Plan incorporates advocacy and partnerships as key components to support a collaborative approach, ensuring that we continue to live in a healthy and resilient community.

Section 1 Introduction

Following a community call for an urgent response to address climate change, the City of Stratford adopted greenhouse gas (GHG) emission reduction targets of 30% by 2030, 60% by 2040, and net-zero by 2050. The Community Climate Action Plan (CCAP) is the city's updated net-zero strategy that provides a roadmap for achieving these GHG emission reduction targets and is intended to empower the community to collectively take climate action.

Implementing the programs and initiatives outlined in the Community Climate Action Plan (the "Plan" or "CCAP") will also enhance Stratford's resiliency to the impacts of a changing climate and support the City's overarching equity, affordability, and sustainability goals.

The Challenge

Human-induced climate change is exacerbating extreme weather conditions and contributing to long-term shifts in weather patterns across the globe[1], causing irreversible damage to the environment and ecosystems. In response, cities across the world are taking immediate action to aim for rapid and steep GHG emission reductions to limit global warming.

In 2018, the Intergovernmental Panel on Climate Change (IPCC), the world's leading scientific body on climate change, released a report that indicated that the risks of climate change can be substantially reduced by limiting warming to 1.5°C above pre-industrial levels. However, if current annual GHG emissions trends continue, we have a window of opportunity of less than 10 years for the planet to remain below 1.5 degrees of warming[2].

Canada's House of Commons declared a climate emergency in June 2019, joining several countries and cities around the world in recognizing the threat of the climate crisis and the urgent need to address its extreme impacts. Stratford has also recognized the urgency of responding to the climate crisis at a local level and has made a commitment to taking action.

---

[1] IPCC, 2021. Summary for Policymakers. In Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

[2] The remaining global carbon budget for having a 66% chance of limiting warming to 1.5 degrees is 420 $GtCO_2e$. Global annual GHG emissions are approximately 42 $MtCO_2e$. (IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways.)

We are now at a pivotal point in human history. The immediate actions we take during the present decade will be instrumental in determining whether or not our communities can successfully address the direst impacts of climate change.

The Opportunity

Climate change is accelerating fundamental shifts in every major sector of the economy, propelled by energy transition, away from fossil fuels towards low-carbon alternatives and renewable energy. This Plan positions Stratford to embrace emerging opportunities and innovation resulting from this energy transition and drive economic development in the community.

Governments are advancing their efforts to address climate change through national strategies and commitments to target net-zero emissions by 2050, that are rapidly being adopted by cities in their climate action planning. Recognizing that cities are in a unique position to respond to this crisis and drive action at a local level, there is innate opportunity to impact mitigation through holistic systems thinking.

The CCAP considers a rigorous analysis of GHG emissions, energy use, utility and fuel costs identified over the short, medium, and long term. Further, the Plan presents climate-related scenarios reflecting different futures, including a business-as-usual (BAU) scenario and a low-carbon or net-zero scenario based on rapid decarbonization. It also outlines immediate actions towards our climate emergency targets and provides recommendations on the most impactful opportunities to pursue.

Climate Change in Stratford

Figure 1 Significant Winter Event, December 2022

Climate modelling for Stratford predicts that, if current trends continue, the city can expect to experience the following impacts by 2050:

- An annual mean temperature that is approximately 2.2°C higher than current levels, bringing hotter summers and warmer winters.
- An extended growing season, as much as 30 days for both spring and fall.
- A 58mm (6%) increase in annual average rainfall, with more intense precipitation occurring in the winter months.
- More than three times as many days above 30°C (26 days a year, versus the current average of 9 days) and several days that exceed 40°C annually.
- More frequent heavy rainfall, hail, freezing rain, and snowstorms.
- A significant increase in the intensity of extreme weather events like storms.
- Frequent freeze-thaw cycles resulting in damaged infrastructure, and escalated costs of repair.

Climate change also poses considerable risk to the well-being, economic prosperity, and natural evolution of the community. Examples of physical risks from extreme weather events include the deterioration of public infrastructure, property damage, supply chain disruptions, health impacts and biodiversity loss.

No municipal government, or any single organization for that matter, can tackle climate change or lead emission reduction efforts in isolation. Effectively reducing global GHG emissions will stem from a combination of incremental actions and ambitious, large-scale initiatives and collaborations with the community and industry. Stratford recognizes the need to work with senior levels of government, the community, local businesses, and an

array of stakeholders to do our part in accelerating the clean energy transition while making impactful GHG emission reductions and driving economic growth.

Mitigation and Adaptation

Mitigation and adaptation are key approaches to addressing present and future challenges posed by climate change, each focusing on different aspects of this challenge.

Mitigation focuses on actions taken to reduce or eliminate GHG emissions into the atmosphere such as use of renewables instead of fossil fuels, energy efficiency and sustainable transportation. Adaptation focuses on actions taken to manage the risks of climate change impacts that are already occurring or are expected to occur, such as emergency management, infrastructure upgrades and protecting biodiversity and ecosystems. Figure 2 below provides examples of initiatives that contribute to mitigation (left), adaptation (right) and their intersectionality.

Mitigation
(Address the Cause)

Adaptation
(Address the Impacts)

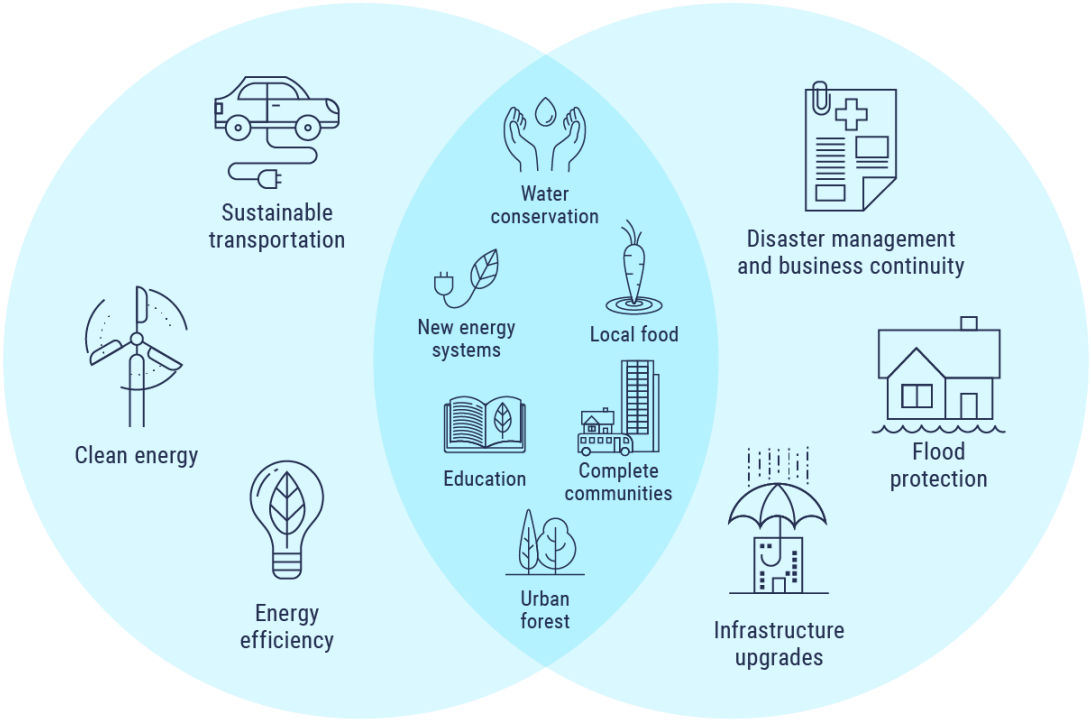


Figure 2 Considerations in building climate resilience in the City of Stratford (Source: City of Calgary)

We are already experiencing the effects of climate change in Stratford, such as a warmer winter leading to reduced snowpack season, severe storms, varying precipitation patterns, and increased frequency and intensity of heatwaves during summer. These

changes are having a profound impact on our population, especially those most vulnerable such as seniors, youth, children, and the unhoused. Recognizing these nuances in our approach toward building a community resilient to climate change, it is prudent that we focus on both aspects- lowering our emissions to limit future impacts of climate change (mitigation) and preparing for the changes to our climate that are already set in motion (adaptation).

Although this Plan has been designed to focus on mitigation elements, it is not intended to be a standalone document. Actions that enable and facilitate adaptation are being embedded into other municipal plans and policies. Coordination is needed amongst all long-term municipal plans so that the CCAP informs or influences numerous other City initiatives moving forward.

Municipal plans and policies are being updated with a **Climate Lens** that includes both mitigation and adaptation considerations. Some emission reduction measures also yield adaptation benefits thereby fostering community resilience. For instance, green infrastructure enhances stormwater management practices, which not only reduces emissions from stormwater handling but also promotes biodiversity and bolsters resilience against more intense rainfall occurrences.

Co-Benefits and Synergies

Synergies in mitigation and adaptation actions occur when efforts to reduce greenhouse gas emissions and efforts to cope with the impacts of climate change reinforce each other, leading to greater overall benefits. These co-benefits can enhance environmental, economic, and social well-being.

The Sankey diagram in Figure 3 illustrates examples of these synergies.

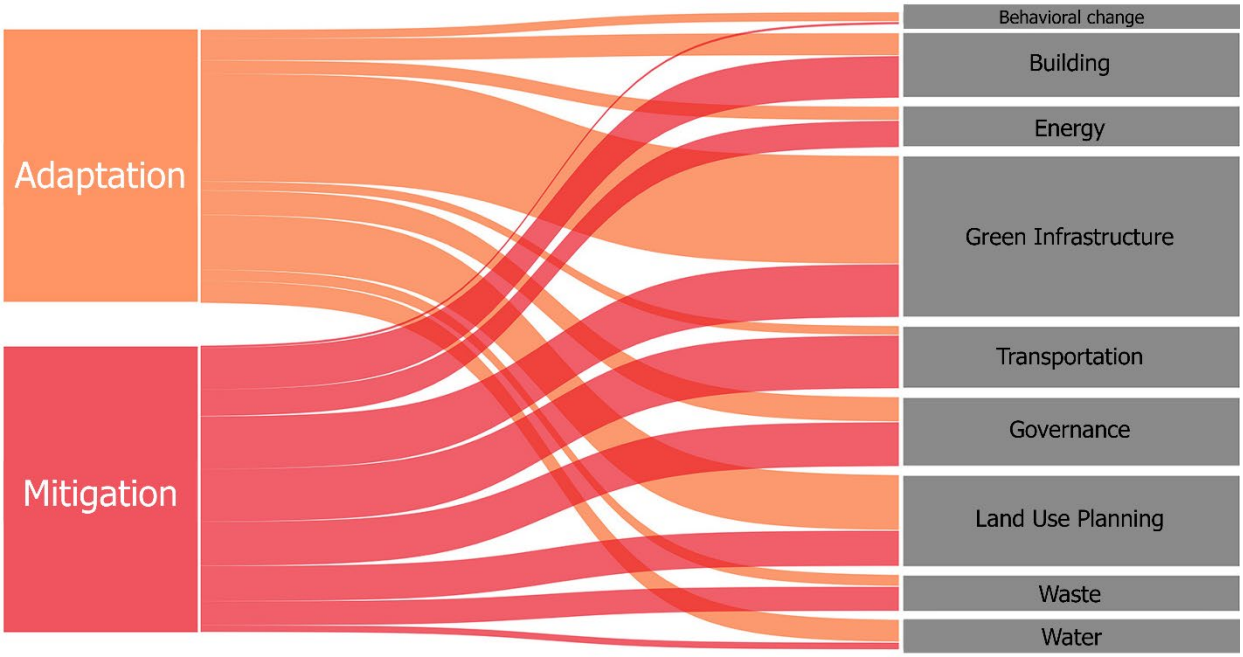


Figure 3 Examples of mitigation and adaptation that can help realize co-benefits

Section 2 Background and Policy Context

As a nation, the Canadian government introduced the 'Pan-Canadian Framework on Clean Growth and Climate Change' in 2016, followed by the 'Federal Actions for a Clean Growth Economy' in the same year, which implements the framework. The latter outlines measures to reduce carbon emissions across various sectors and includes a plan for adapting to the impacts of climate change.

On a provincial level, Ontario's climate action is guided by the 'A Made-in-Ontario Environment Plan' (2018). Relevant legislation includes the Electricity Act, which addresses energy consumption, greenhouse gas reporting, and conservation management planning, as well as the Strategy for a Waste-Free Ontario, which provides a roadmap towards a circular economy.

At the municipal level, local governments are leading climate action for their communities and play a significant role in developing infrastructure, shaping policies, implementing initiatives, and engaging residents to reduce GHG emissions, enhance sustainability, and build resilience.

Connection to Existing Municipal Plans

The City has a suite of overarching plans that are being updated to incorporate climate considerations. These plans help shape future growth, thereby supporting both emission reductions and managing the impacts of climate change.

The CCAP supports several key strategic plans and policies within the City, including:

- Strategic Priorities 2024-2027 – Council's updated priorities emphasize on the importance of enhancing and investing in infrastructure to support the community's overall well-being, and sustainability, while creating new neighbourhoods like the Grand Trunk development with an environmental lens.
- Official Plan 2024 (currently under review) – Stratford's Official Plan (OP) was approved in 2016 and is the City's overarching policy document that contains guiding principles, goals, objectives, and policies for land use. The OP acts as a roadmap for how our community will develop, where we should locate housing, build transportation networks, locate employment lands, and offer community facilities. The current review/update is an opportunity to embed intrinsic elements of climate change impacts including mitigation, adaptation, and resilience.
- Transportation Master Plan 2023 – The Transportation Master Plan (TMP) is a long-term planning document that identifies strategies and infrastructure solutions to guide planning, expansion, renewal, and management of the City's multi-modal

transportation system. The TMP supports Stratford's vision for the future and responds to projected needs with a focus on safety, complete streets, active transportation, and the environment.

- Urban Forestry Plan 2023 (updated) – The Urban Forestry Plan update focuses on environmental stewardship and outlines actions to protect the city's urban forest and ecosystems by enhancing the tree canopy cover, improving tree management practices such as maintenance and removal, and facilitate the tree planting program.
- Corporate Energy and Emissions Plan 2023 – The Corporate Energy and Emissions Plan (CEEP) 2023 identifies priority areas and actions for the City of Stratford to accelerate decarbonization across key sectors including facilities, fleet, solid waste, and infrastructure (outdoor lighting, water, and wastewater) toward a carbon neutral corporation by 2050.

  Perth County GHG Reduction Plan 2021 – Outlines high-level strategies that the region can take to address climate change mitigation.

Community Vision and Climate Action Plan Framework

The CCAP includes a framework (Figure 4) to guide programs and initiatives at the local level. At the highest level (goals), the community vision sets the direction for the ideal future for the City of Stratford regarding climate action. It is supported by a series of guiding principles that set direction for both the development of the CCAP and its implementation. The principles are supported by key program areas (Section 4) as shown below.

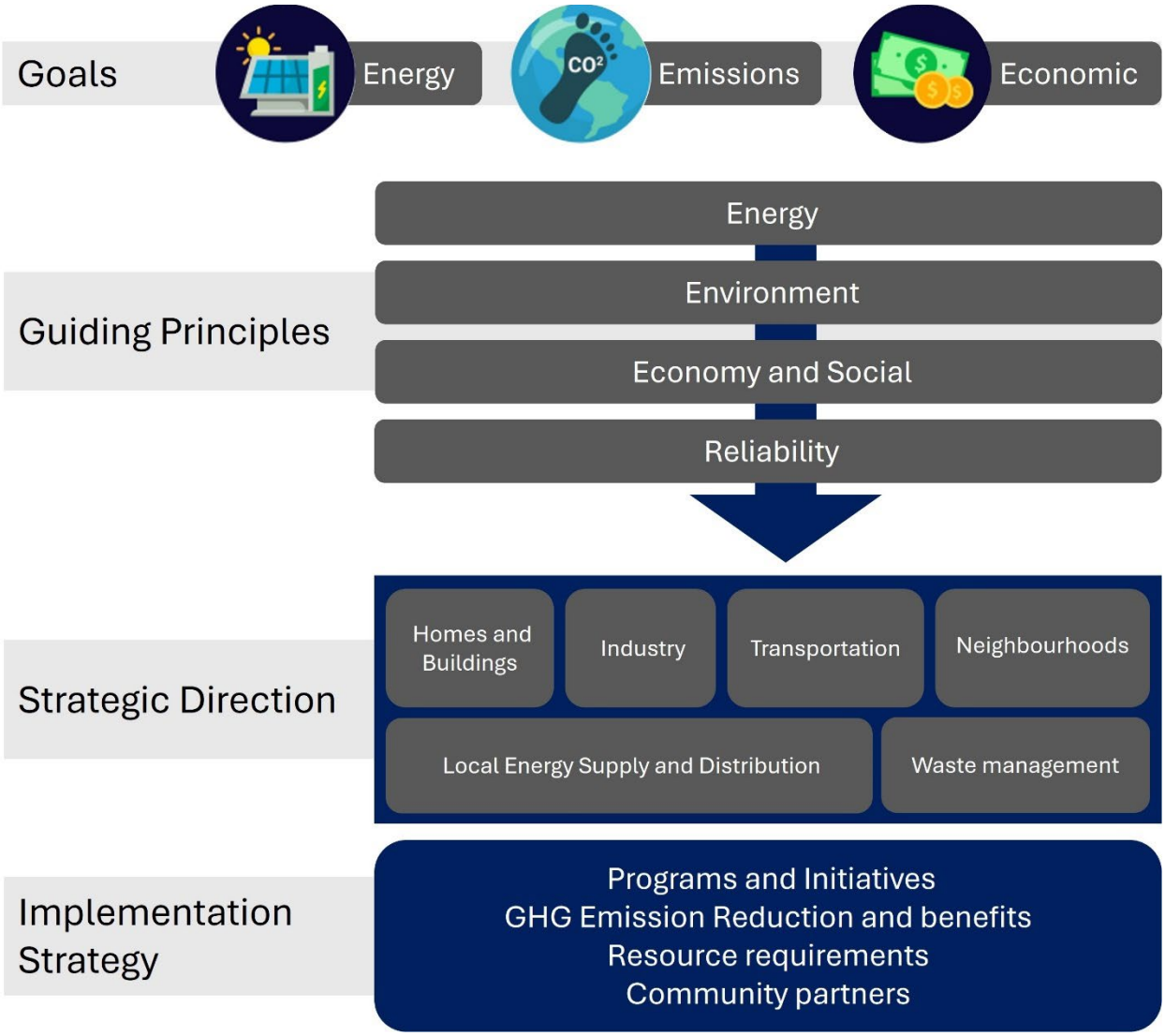


Figure 4 Community Climate Action Plan Framework

Community Vision

The Stratford community commits to reducing greenhouse gas emissions and building economic self-sufficiency and resiliency while enhancing the wellbeing of present and future generations.

Guiding Principles

A future-focused energy system looks to benefit the environment, economy, and society. Through stakeholder workshops, the following principles were identified to guide decision-making. They can be used by the City, community, and community partners to guide and inform actions on the ground that support the CCAP vision.

Environmental

- Develop a sustainable energy system that addresses present and future needs while considering environmental, economic, social, and cultural aspects.
- Steer efforts towards climate neutrality, or net-zero emissions.
- Design places and spaces that support human health.
- Evaluate program areas based on global energy efficiency and emission standards.
- Recognize the role natural assets play in carbon sequestration and storage.

Economic

- Ensure all energy investments offer acceptable risk-adjusted returns.
- Ensure consumers are not burdened by uncompetitive energy costs.
- Foster high-quality employment opportunities.
- Retain as much energy expenditures in the local economy as possible.
- Plan for reliable energy systems that are adaptable to user needs, climate variations, and technological advancements.
- Meet or surpass current system reliability.

Social

- Promote equitable energy solutions for all sectors and demographics.
- Advance climate mitigation solutions that have health and wellbeing benefits.
- Enable positive action amongst residents and local businesses.

What We Heard

This Plan has been developed through extensive research and consultation across City divisions and agencies, stakeholders, and the public. A range of community members including youth and industry representatives were engaged during the first round of public consultation (Figure 5) in Spring and Summer 2023 to provide input on climate action initiatives that would support the City's climate emergency targets.

Further consultation was facilitated in Spring 2024 in another round of engagement with key stakeholders and implementation partners to inform, solicit feedback on preliminary recommendations and discuss priorities, actions, and program areas for final plan development.

Engagement activities included:

- an online survey on Engage Stratford
- kitchen table kits
- in-person engagement
- online ideas board for youth

- consultation with City Staff
- direct outreach with utility companies, Festival Hydro, and Enbridge Inc.
- key stakeholder workshops to inform, discuss and gather feedback on technical analysis, identify actions and establish a community vision for the plan. Stakeholders included members of Council, Energy and Environment Advisory Committee and Active Transportation Advisory Committee, industry representatives, Downtown BIA, Destination Stratford, Stratford Public Library, environmentalists, and other community members.

Figure 5 Public engagement for the Community Climate Action Plan, April 2023

During the various engagement activities, participants outlined their priorities for climate action and identified specific initiatives the community can take to address the climate emergency and support a low-carbon economy.

CCAP development involved gathering input from community members and industry representatives to inform the plan's **priorities and actions**, including discussions around which actions would be most likely to foster community uptake, which actions were most appropriate to Stratford context, and those that are likely to generate additional co-benefits like improved health and well-being. Further **collaboration and partnerships** will be critical for implementation.

Section 3 GHG Emissions and Climate Action Pathways

What GHG Emissions are Included?

The CCAP takes into account Scope 1 and Scope 2 greenhouse gas (GHG) emissions, along with some Scope 3 GHG emissions that are related to solid waste production and energy transmission (Figure 6).

Excluded are additional Scope 3 emissions, like transportation beyond operational boundaries, raw material sourcing, production of purchased inputs, product distribution, and other emissions that are not directly generated. The presumption is that most of these emissions are covered within the reported inventories of relevant jurisdictions or by reporting entities with the authority to regulate them.

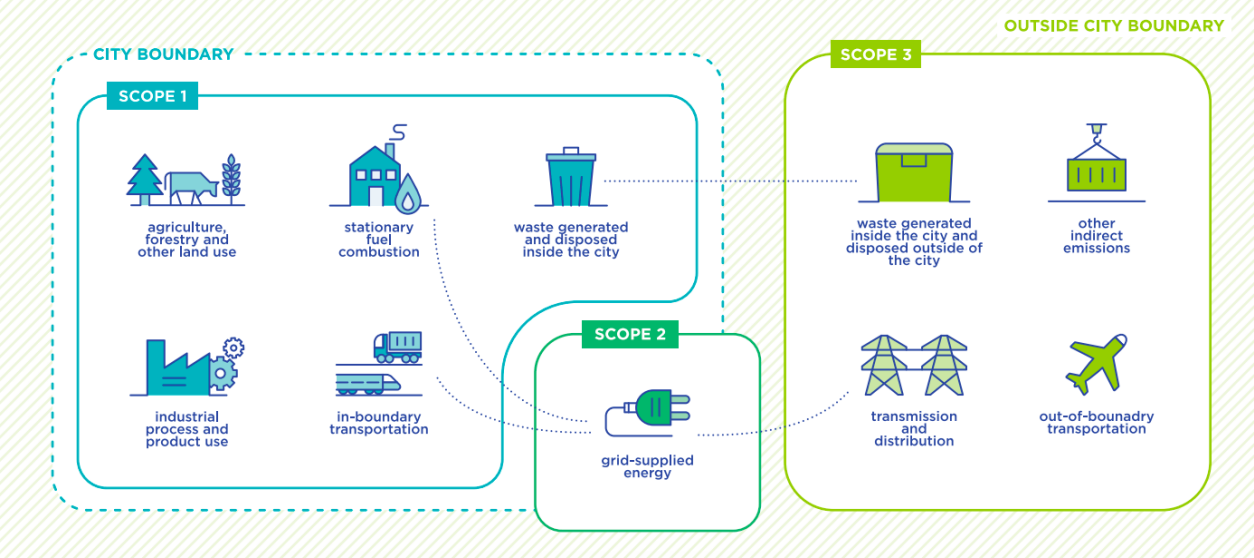


Figure 6 Emission scopes as they relate to geographic and inventory boundaries.

(Source: Consumption-Based Inventories of C40 Cities (https://www.c40.org/researches/consumption-based-emissions))

Emissions Trajectory

Stratford is a growing community, experiencing population increase in line with the provincial average. The most recent national census in 2021 recorded Stratford's population at approximately 33,232 residents. Projections suggest that by 2050, the population is estimated to grow to approximately 46,000 residents. This anticipated growth in population will translate to a continued increase in demand for infrastructure, housing, and economic development within the city, driving up corresponding energy consumption and GHG emissions.

Taking decisive steps to achieve net-zero emissions is critical. The timing and extent of our actions hold equal significance, the longer the delay, the higher the emissions and the more profound the consequences of climate change. Bold measures taken quickly are expected to translate to significant emission reductions and cost savings in the long term. Delay in our response will lead to greater cumulative emissions and significant energy cost burdens on the community.

Technical analysis of the CCAP comprised gathering baseline data on Stratford's energy consumption, utility costs and GHG emissions. Subsequently, assumptions about the city's future growth and mobility patterns were used to develop various future scenarios. Simulation was conducted for three analytical categories: GHG emissions (tCO_2e), energy use (GJ) and total energy costs to the community ($), which helps to illustrate two comparable scenarios, Business-As-Usual and Low-Carbon Scenario (see Figure 7).

Greenhouse gases are measured in tonnes and converted into tonnes of carbon dioxide equivalent (tCO_2e) as a standard protocol for measurement and reporting. The conversion allows comparison of each gas' greenhouse gas effect—or **global warming potential (GWP)**—relative to one unit of carbon dioxide. For example, the global heating effect of one tonne of methane is 86 times that of one tonne of CO_2 over 20 years.

1. Business-As-Usual (BAU) trend line, depicted in red where minimal climate actions are implemented in the community. These will have negligible impact on our climate emergency targets and emissions trajectory.

2. Low-Carbon Scenario trend line, depicted in green demonstrating accelerated action through the implementation of recommended initiatives/programs in CCAP, in conjunction with other plans and policies through a Climate Lens. This line represents actions that would help steer the community toward the IPCC recommended 1.5° Celsius average global warming limit.

Note that some regulatory actions (depicted in yellow) that are currently underway may contribute toward 15-18% reduction in emissions, however, provide no discernable pathway to consistently impact the emissions trajectory.

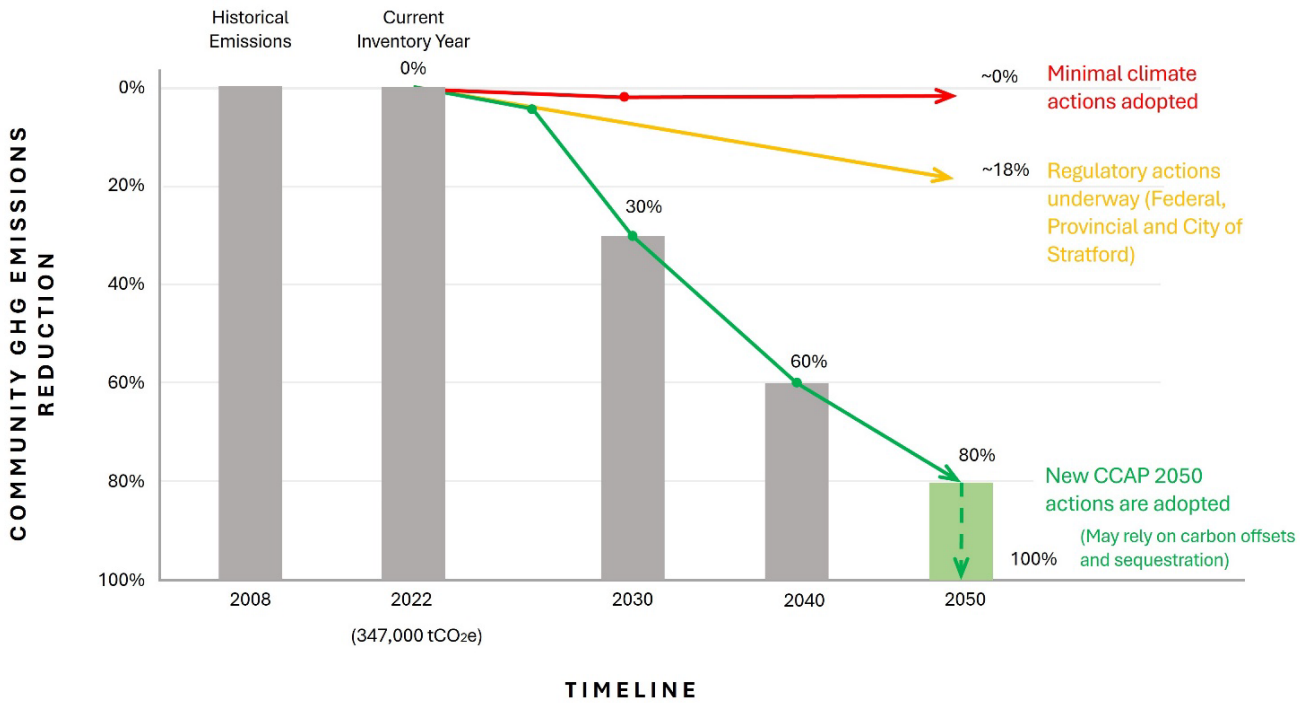


Figure 7 Community GHG Emission Reduction- BAU and Low-Carbon Scenario

Additional details pertaining to the City of Stratford's corporate GHG reduction strategy and emissions profile are available in the Corporate Energy and Emissions Plan (2023) and supporting documents available on the City of Stratford's Climate Change website.

2022 GHG Emissions Inventory

The emission inventory presents the most critical areas of action needed for significant impact over a short, medium, and long-term. Stratford's community GHG emissions in 2022 were measured at 347,000 tCO_2e for the entire community or 10 tCO_2e per capita. Transportation emissions were by far the biggest percentage of the total at approximately 43%, followed by the building sector including residential, commercial, and industrial, and waste. By utility, natural gas was the largest source of GHG emissions, followed by gasoline and diesel.

Figure 8 depicts a sectoral breakdown of Stratford's 2022 community GHG emissions.

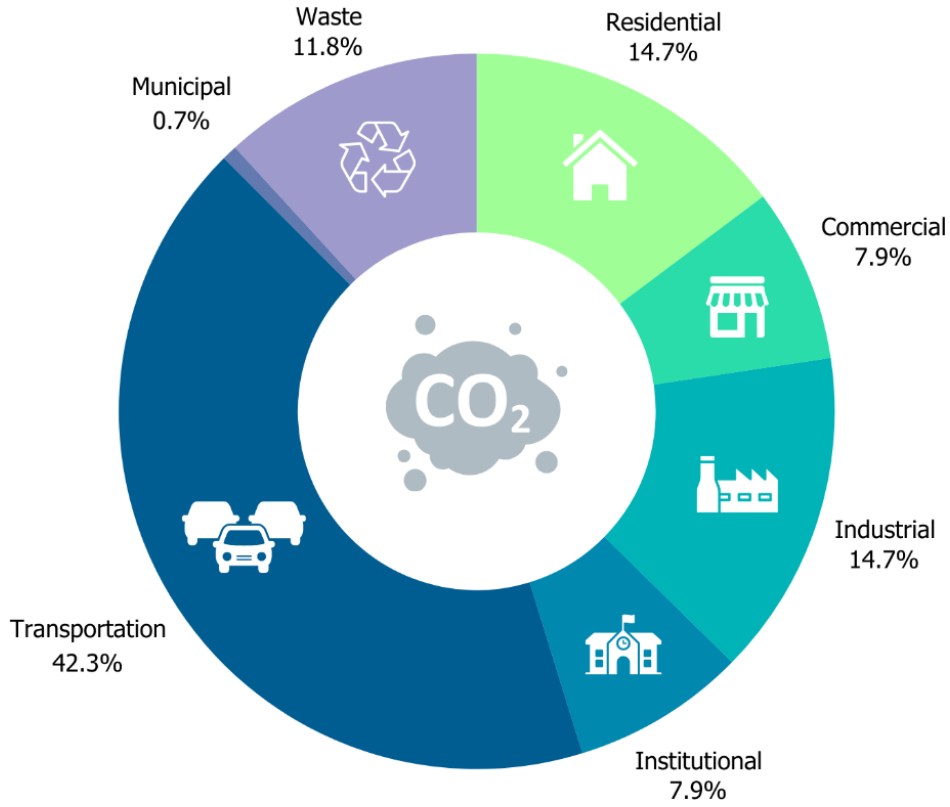


Figure 8 Community GHG Emissions by Sector

Figure 9 illustrates community-wide source energy use categorized by sector (L) and source energy use by utility (R). The total community-wide energy use is 9 terajoules or 257 gigajoules per capita, with electricity accounting for almost half, followed closely by natural gas, diesel, and gasoline.

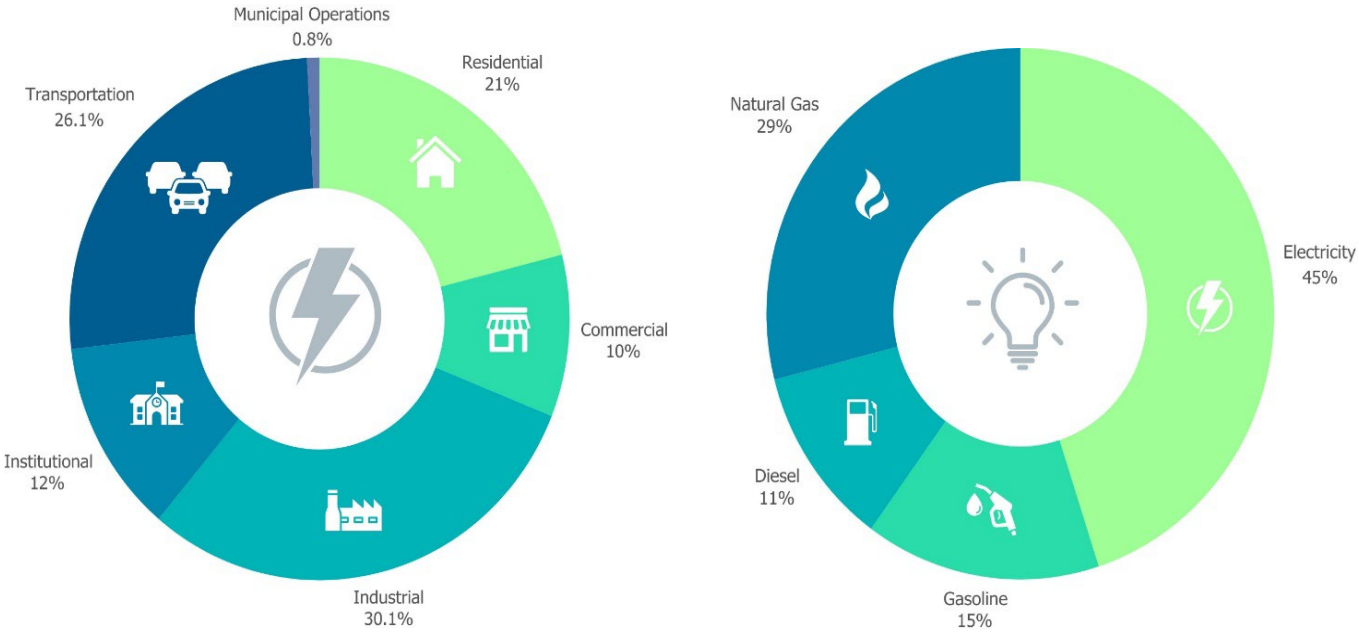


Figure 9 Source Energy Use by Sector (L) and by Utility (R), 2022

Business-as-Usual Scenario

The Business-as-Usual (BAU) Scenario forecasts energy consumption, energy costs and GHG emissions in the city if current practices continue unchanged. Figure 10 below illustrates the projected GHG emissions rise from 2022 to 2050, from 304,000 tCO_2e to 362,000 tCO_2e. Also indicated are the city's climate action targets.

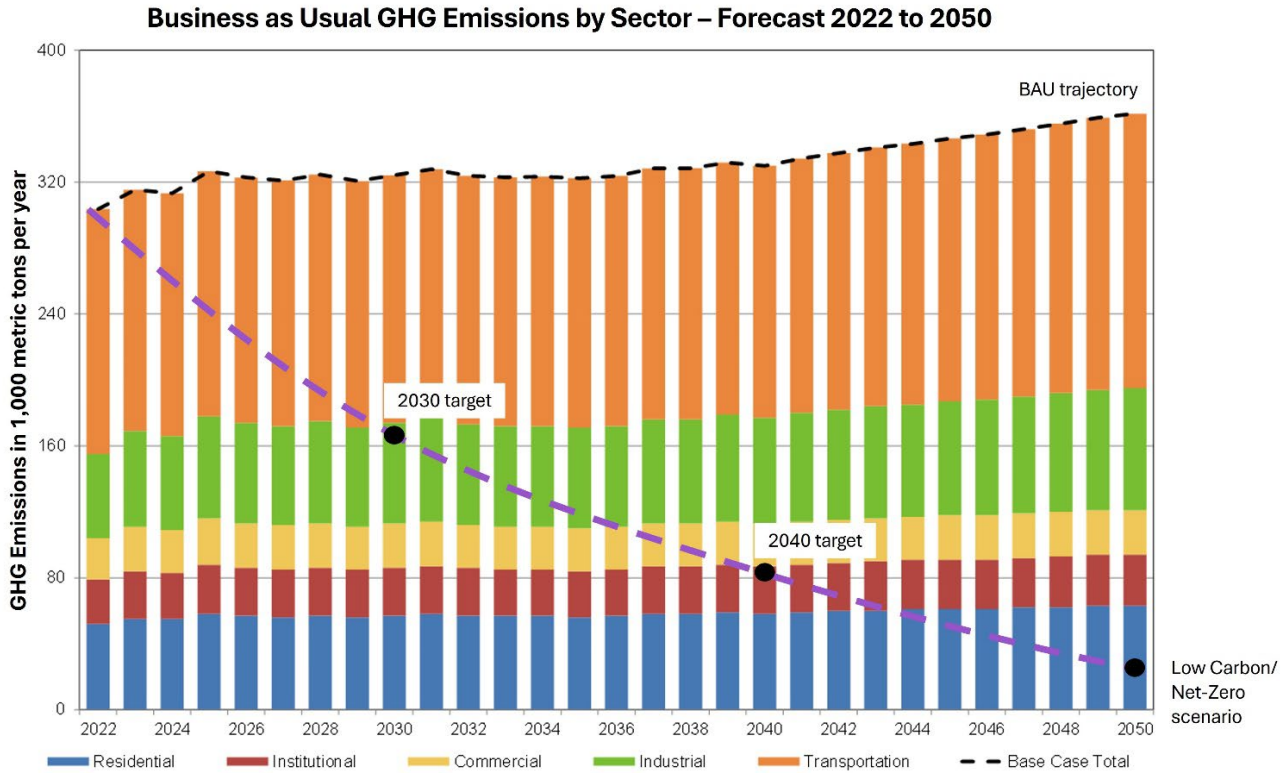


Figure 10 Business as Usual Forecast of GHG Emissions by Sector, 2022 to 2050

Under the BAU scenario, while energy consumption is projected to increase by 22%, GHG emissions are projected to rise by 20% by 2050.

The largest inflationary pressures are on energy expenditures for the entire community, including electricity, natural gas, transportation fuels. Total energy costs (2024-dollar value) are forecasted to increase from $230M in 2022 ($6,630 per capita, or $26,520 for an average family of four) to more than $700M in 2050 ($15,218 per capita, or $60,870 for an average family of four).

Consequently, under a BAU scenario, Stratford will be unable to meet any critical climate targets in the next 30 years.

Low-Carbon Scenario

The Low-Carbon Scenario forecasts energy consumption, energy costs and GHG emissions in the city if actions from the CCAP are implemented aggressively. Figure 11 below illustrates the projected GHG emissions decrease from 2022 to 2050, from 304,000 tCO_2e to 132,000 tCO_2e. Under this scenario, energy expenditures for the community, including electricity, natural gas, transportation fuels are projected to rise from $230M to $300M under a low energy price range, which translates to roughly $6,520 per capita ($26,080 for an average family of four). Under a high energy price range, energy expenditures will be around $500M, which is $10,870 per capita ($43,478 for an average family of four). Cumulative savings for the community from the energy transition are estimated to be between $5B to $7.3B.

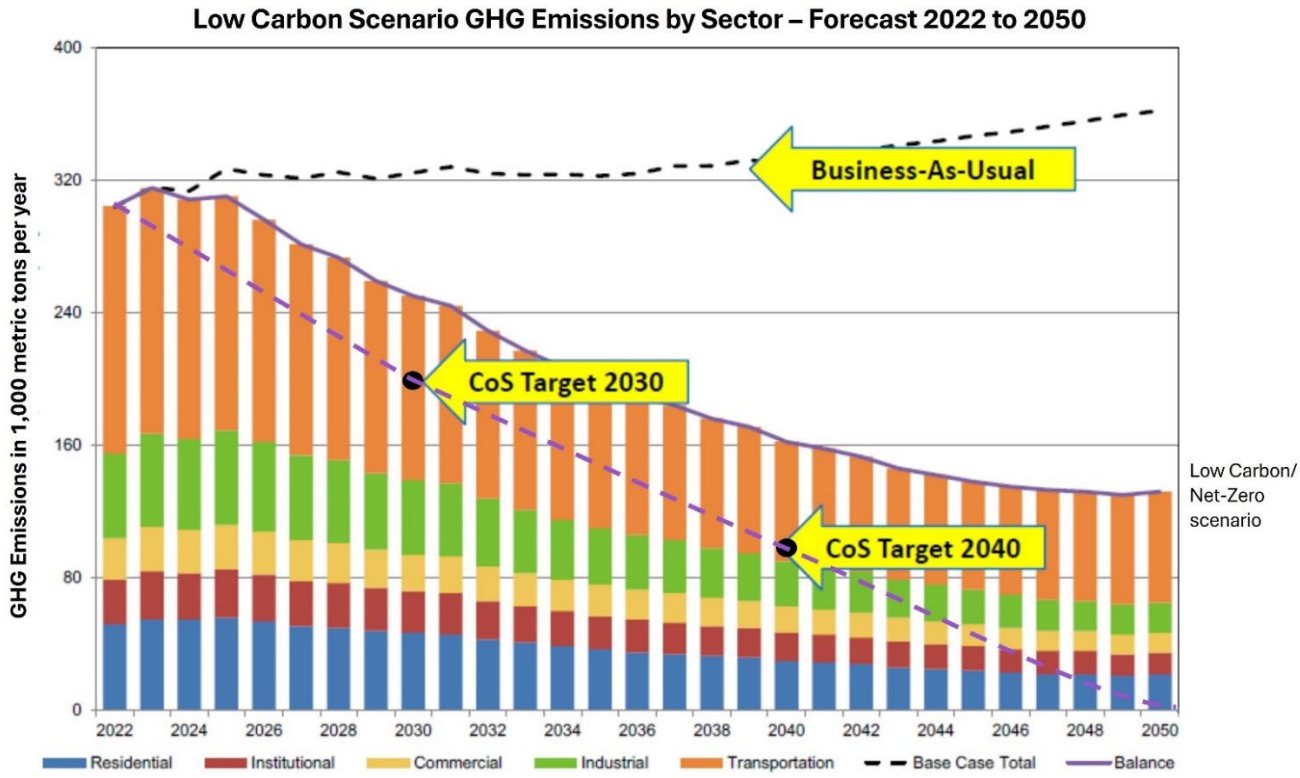


Figure 11 Low-Carbon or Net Zero Scenario of GHG Emissions by Sector, 2022 to 2050

The 2030 target for Stratford corresponds to an emissions cap of 242,900 tCO_2e. Even with the increased urgency to address climate change, we are not on track to achieve our existing climate targets which are set at achieving reductions of 30% by 2030. As we course correct in the near term, we will need to accelerate our efforts and create a pragmatic pathway to motivate action and increase accountability throughout the community.

Action at Municipal Level

Several municipalities in Ontario, including the City of Stratford, have enacted community climate action plans or community energy and emissions strategies, which outline tangible actions they can take, or are taking, to reduce carbon pollution. Local governments have varying degrees of influence over different sources of emissions within their boundaries, as shown below.

If local governments are to succeed, they will need leadership and/or support from senior levels of government, as well as commitments from residents and businesses.

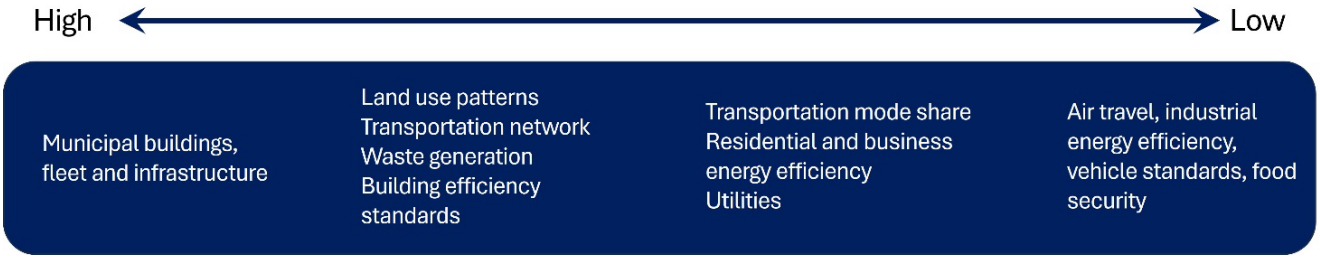


Figure 12 Local Government Relative Influence over GHG Emissions (derived from BC Municipal Climate Leadership Council)

Corporate-owned assets account for approximately 1% of total emissions generated in the community (Fig. 8). To demonstrate its leadership in climate action, the City of Stratford has developed its own net-zero strategy, the Corporate Energy and Emissions Plan (CEEP) 2023 as a roadmap to align operations with our collective goals. The CEEP describes priorities for the City to transform its own asset inventory, existing processes, and identifies projects and energy management measures to improve efficiency and reduce emissions for the next three decades. Aligning with the net-zero approach of CCAP, the City will strive to work toward transforming its asset inventory and processes well before 2050. Climate change and associated implications have been identified as a critical strategic priority and is embedded in corporate decision-making through the use of a stringent “Climate Lens”, one that is intended to be used to evaluate all City-led decisions on investments, replacement or upgrading assets, strategic growth, and policy development.

Plugging the Emissions Gap

The low-carbon scenario modelled for CCAP 2050 does depict a gap from achieving net-zero emissions. This is primarily due to the challenges associated with decarbonizing particular sectors due to lack of viable low-carbon alternatives and substantial upfront costs.

Remaining emissions come from:

- aviation sources and rail operations;
- some remaining natural gas use in homes and large industry; and
- gasoline and diesel in the few gas-powered cars and medium to heavy-duty fleet and equipment.

Currently many of these emissions are difficult to address and lack current policy and technological solutions and are anticipated to be addressed through federal and provincial policy tools, carbon sequestration and other emerging strategies such as carbon offsets, carbon capture, technology developments, among others.

Section 4 Program Areas

With the intent to guide the city in reducing energy and GHG emissions while retaining energy dollars in the local economy, this Plan includes the following key program areas for implementation. The program areas reflect community priorities and address the built environment, neighbourhoods, energy supply, transportation, and waste.

Each program area includes the following:

- The category for which the program area applies.
- The name of the program area.
- A brief overview of the program area and why it is an important part of the holistic approach to addressing climate mitigation in Stratford.
- A targeted participation rate indicates the scale of implementation needed. In all cases, program areas can be accelerated to deepen GHG emission reductions.
- The role of the municipality in implementing the program area.
- Enabling components.
- A relative scale cost for the municipal role in implementation.
- A list of available incentives or mechanisms to recover costs for the municipality.
- Benefits to the community from an environmental, social, and economic perspective.
- An indication of the potential GHG emission reductions identified per annum.

All program areas are underpinned by a foundational need for community engagement and an ongoing governance structure to support implementation, as defined in implementation strategy table in Appendix A.

Framing Goals and Targets

The CCAP provides a data-informed action plan to reduce emissions and accelerate economic growth in the city. The following goals and targets set the direction for programs and initiatives and mark the community's aspirations for emission reduction in the long term.

- Reduce absolute GHG emissions by 30% from 2017 level by 2030
- Reduce absolute GHG emissions by 60% from 2017 level by 2040
- Reduce absolute GHG emissions to net-zero by 2050
- Science-based to limit global temperature increase below 1.5°C
- Aligned with Canada's commitment to the Paris Climate Agreement

- The City of Stratford demonstrates leadership by adopting the community targets for corporate emissions

The following sections outline priority actions for each program area. The full list of programs and initiatives in each program area is provided in Appendix A.

Efficient Homes and Buildings

The operation of homes and buildings accounted for approximately 70% of total energy use and **52% of total GHG emissions** generation in Stratford in 2022. Emissions from natural gas heating and cooling account for nearly 95% of emissions from buildings. Transitioning to high performance standards in new and existing buildings is a critical part of our low-carbon pathway.

Stratford is a compact city, with a dense downtown core consisting of several heritage structures, public facilities, and a mix of building typologies. As such, working with existing buildings is a key strategy. Retrofitting existing buildings to reduce energy demand (e.g., adding insulation, draft sealing), improving efficiency (e.g., using efficient lighting and appliances), and switching fuel sources (e.g., from fossil fuel furnaces to efficient electric heat pumps), will result in more efficient use of energy and resources. Retrofits can also help improve the resilience and livability of homes, especially important in the context of increased frequency and severity of extreme weather events.

Achieving retrofit goals will require a solutions-based approach to retrofitting existing multi-unit residential buildings and homes, switching to low-carbon energy sources, and requiring fuel source switching where feasible. Seeking incentives from senior levels of government while inspiring residents and rental building owners to proactively invest to reduce emissions will be critical. Careful consideration to affordability impacts for owners and renters will be needed, as well as tenant protection.

There is tremendous opportunity to construct high-performance buildings that incorporate eco-friendly practices in design, construction, and operation. With growth expected over the next 25 years, investing in resilient, energy-efficient buildings will be crucial for achieving significant emission reductions and unlocking considerable cost savings.

Table 1 Program Area 1: Efficient Homes and Buildings

Programs/ Initiatives	Recommended Approach	Estimated Cost to the Municipality	Potential GHG Reduction (tCO_2e)
Deep Retrofit Program for Existing Homes	A deep retrofit program aims to reduce energy consumption and GHG emissions in the residential sector. The program would standardize retrofits by property type and location, delivered via local partners.	$80K to $100K- Costs associated with detailed business plan development.	**19,000** tCO_2e per annum
Deep Retrofit Program for Existing Non-Residential Buildings	A deep retrofit program aims to reduce energy consumption and GHG emissions in the commercial and institutional sectors. The program would standardize retrofits by property type and location, delivered via local partners.	Marginal additional costs to residential detailed business plan costs	**25,000** tCO_2e per annum
Building Efficiency Program	The building efficiency program ensures all new construction fully meets or exceeds the anticipated Ontario Building Code (OBC). The program would aim to raise customer awareness and	Incremental	**13,000** tCO_2e per annum

	expectations through Energy Performance Labelling and Green Development Standards (GDS).		
Energy Performance Labelling (EPL) for Homes and Buildings	Energy Performance Labelling (EPL) programs such as EnerGuide for homes (or similar) create market transparency and increase end-use efficiency. The initiative encourages EPLs to be available on all properties when sold or rented.	Incremental	Supports all efficiency areas

Low-Carbon Neighbourhoods

Our built environment and public realm are a key part of how residents and visitors choose to get around the city. Research indicates that energy used for transportation increases as a community becomes more spread out and as housing, jobs, daily needs and recreation or community destinations become more dispersed. Complete communities and increased density allow new growth and development to enable low-carbon living.

As the city continues to grow, it is imperative that new neighbourhoods and sub-divisions are developed with a Climate Lens, and buildings constructed to the highest energy efficiency standards to enable adoption of new technologies as they develop, and regulated energy standards enhance. The City can explore opportunities to be bold and innovative in reducing emissions from the built environment in large scale developments within corporate-owned assets, such as the Grand Trunk Site, or its business parks.

Table 2 Program Area 2: Low-Carbon Neighbourhoods

Programs/ Initiatives	Recommended Approach	Estimated Cost to the Municipality	Potential GHG Reduction (tCO_2e)
Net Zero Neighbourhoods	Low-Carbon, or Net Zero neighbourhoods provide an opportunity to show local application of energy best practices. This initiative aims to establish a net-zero neighbourhood as a model for sustainable urban living and transformative change.	May vary based on City allocated resources.	Low-carbon neighbourhoods have the potential to contribute to large-scale energy and emissions reductions, and achieve costs savings for residents
Green Development Guidelines (GDG) for new development	Recommend integration into the planning approvals process, where development applications are required to meet certain criteria in the GDG.	Resource may be needed to develop support guidelines (+/- $50,000)	Supports efficient new property and low-carbon energy supply

Efficient Industry

Industry is responsible for roughly **one third of the energy** use in the city – roughly equal to the energy needs of the transportation sector. Proliferating energy efficiency in the industrial sector will involve a multi-faceted approach encompassing evolving policy incentives, technological advancements, and collaboration.

Stratford is home to a variety of local industries that are evolving operations with more cost-effective, efficient processes and constantly tap into transformative emerging technologies. There is immense potential to share best practices within the sector in order to advance steep emission reductions and steer the energy transformation industry-wide. Within the next decade, massive change is anticipated through large-scale investments, operational advances, developing recyclable components, and shifting to renewable or low-carbon power sources.

Table 3 Program Area 3: Efficient Industry

Program/ Initiative	Recommended Approach	Estimated Cost to the Municipality	Potential GHG Reduction (tCO_2e)
Industrial Energy and Climate Best Practice Network	An industry-focused best practice network ensures world-class continuous improvement in industrial energy efficiency. This initiative aims to encourage Perth County Industrial Best Practice Networks, host Global Best Practice events, and share industrial management expertise throughout the County.	Minimal	**13,000** tCO_2e per annum

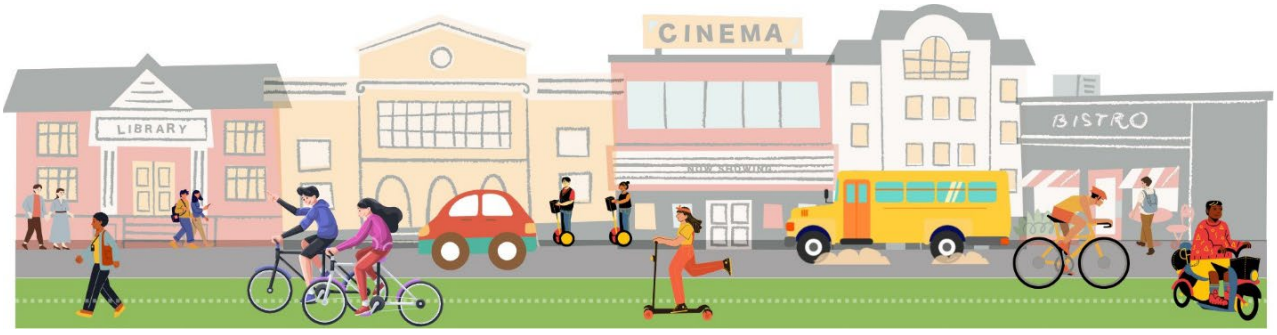
Efficient Transportation

Transportation accounted for nearly **26%** of the community's energy use in 2022 and was responsible for approximately **43% of the city's GHG emissions**. Gasoline-powered and diesel-powered vehicles and light duty trucks generated a majority of all transportation emissions. Many Stratford residents use personal vehicles to get around.

Being a compact city, Stratford is well-positioned to significantly reduce emissions from transportation. This objective is further reinforced by our focus to invest in a robust public transit system and create complete communities.

As outlined in the Transportation Master Plan (2023), the City's priority is to support more active modes of transportation such as walking, biking, transit use, and multi-occupant use of vehicles. These sustainable modes of transportation are low-carbon, equitable, affordable, and widely accessible – and support a broad range of community members, including those not using private vehicles. They also better support local businesses and can build a low-carbon core area.

Active transportation promotes health, reduces congestion, and makes efficient use of energy and resources. To facilitate this shift, walking and biking must be safe and comfortable for more users, transit must be reliable and convenient, and "last mile" challenges related to the last leg of journeys must be solved. eMicromobility options such as e-bikes and e-scooters can help with the last mile, and further the distance that can be comfortably travelled without a car.



Electrification of vehicles—including transit, commercial and personal vehicles— will also reduce emissions and improve air quality. Adoption of electric vehicles (EVs) for trips that cannot be done by active transportation will provide significant gains. Vehicle electrification goals can be supported by providing charging options at home, work, and key destinations.

Table 4 Program Area 4: Efficient Transportation

Programs/ Initiatives	Recommended Approach	Estimated Cost to the Municipality	Potential GHG Reduction (tCO_2e)
Alignment with Transportation Master Plan initiatives to reduce average trip lengths	This program aims to reduce the time spent in Light-Duty Vehicles (LDV), such as cars, SUVs, and pick-ups. The recommended aligning the CCAP strategies with existing transportation plans	Marginal increase to existing internal costs	**15,000** tCO_2e per annum
Alignment with Transportation Master Plan initiatives to increase trips by train, bus, bike and walking	This initiative aims to reduce. the need for LDVs and promotes more low-carbon shares of passenger kilometres travelled (PKT). This initiative relies on aligning the CCAP targets with existing active transportation plans.	Marginal increase to existing internal costs.	**17,000** tCO_2e per annum
Electric and Low-Emission Vehicle Support Program	Using vehicles with lower emissions will reduce the impact of the transportation sector's GHG emissions. This program aims to drive uptake through municipal actions and outreach. It includes a need for investment in electric	Costs for charging stations will vary based on selected unit, plus installation costs. Level 2 charging stations are approximately $12,000 to $15,000 per unit,	**68,000** tCO_2e per annum

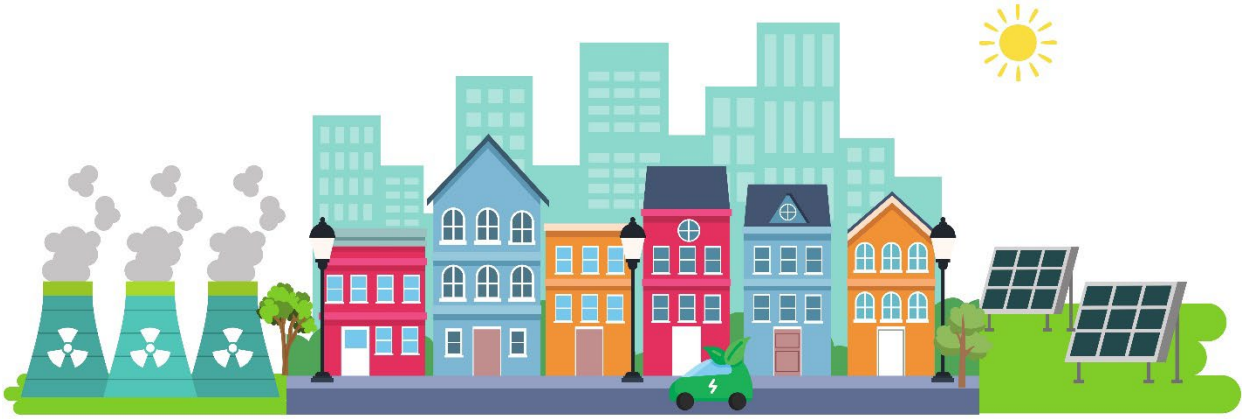
	vehicle infrastructure, charging stations.	Level 3 charging stations may cost upward of $50,000	

Energy Supply and Distribution

Energy sources have substantial implications on GHG emissions and can drive our emissions trajectory well toward our targets. **Decarbonization** through expansive electrification presents a major opportunity to reduce emissions on a community scale.

CCAP prioritizes energy efficiency and further relies on fuel switching from gasoline, diesel, and other carbon intensive sources to low-carbon alternatives including electricity, thermal energy, and solar power to achieve carbon neutrality.

Continued growth and electrification can challenge current grid capacity and lead to supply constraints. Energy conservation and demand management are crucial strategies to avoid exhausting the grid electricity supply. These initiatives rely on minimizing energy use as well as managing energy usage through smart technologies, which can result in energy cost savings and reduced need for new electricity infrastructure. Stratford can also address increased grid demand through local renewable energy generation. As solar photovoltaics, solar thermal, renewable energy, battery storage, and other technologies evolve, there will be opportunities to create on-site and community-scale gardens to foster grid resilience.



The actions in this section help to implement energy conservation and demand management initiatives, encourage local renewable energy systems, embrace emerging smart grid technologies, and expand connections to district energy systems. As a city with close partnership with Festival Hydro Inc., Stratford is ideally positioned to take bold action on energy.

Table 5 Program Area 5 Energy Supply and Distribution

Programs/ Initiatives	Recommended Approach	Estimated Cost to the Municipality	Potential GHG Reduction (tCO_2e)
District Energy Program	This initiative targets densification and new growth areas to provide efficient heating and cooling using high-quality, low-carbon thermal services. The program would create a District Energy entity to supply services and ensure future area-specific plans, including District Energy guidelines.	Development of a business case (+/1 $100,000)	**37,000** tCO_2e per annum
Heat Pump Program	Heat pumps provide high-quality, low-carbon heating and cooling options to areas not served by District Energy. This program aims to promote the use of heat pumps in low-density areas.	Some costs may be absorbed by existing City resources if being led by the municipality	Included in efficient new construction
Solar Hot Water Program	Solar hot water provides supplemental hot water and heating in homes not served by District Energy as a cost-effective zero-carbon hot water	Incremental	**1,000** tCO_2e per annum

	alternative. This program aims to raise customer awareness through comprehensive outreach and engage Enbridge, key builders, and realtors as champions.		
Solar Photovoltaic Program	Solar photovoltaics reduce the dependence on fossil fuels and uses solar power as a cost-effective zero-carbon electricity alternative. This program aims to raise customer awareness through comprehensive outreach and engage utilities, key builders, and realtors as champions.	Incremental	**22,000** tCO_2e per annum

Towards Zero Waste

The waste sector relates to several environmental concerns, including emissions from the extraction of materials, manufacturing and production, and environmental degradation. Emissions from waste represented **12%** of total emissions generated in Stratford. Although this makes up a minor portion of the emissions profile, population growth is expected to increase the waste generated within the community, along with resultant emissions.

At a city-scale it is prudent to enhance waste management practices and awareness programs. The most effective way to reduce GHGs from waste is to reduce the waste generated in the first place, which also avoids the costs of landfilling and composting. Opportunities to reduce organic waste and resultant GHGs will mean scaling up current efforts. Strategies that maximize the diversion of waste from the landfill are critical, along with reusing resources, which not only reduces the raw materials used in their production, but also reduces emissions from the transportation of new and waste products.

Significant waste-related emission reductions can also be achieved through embracing a circular economy model, wherein, waste is “designed out”, as outputs from one process become inputs for another; instead of being extracted, used, and discarded, resources are potentially used indefinitely. Achieving this shift would require significant societal change, but the City can use regulations, policy, and advocacy to help build momentum within our local business and resident community.

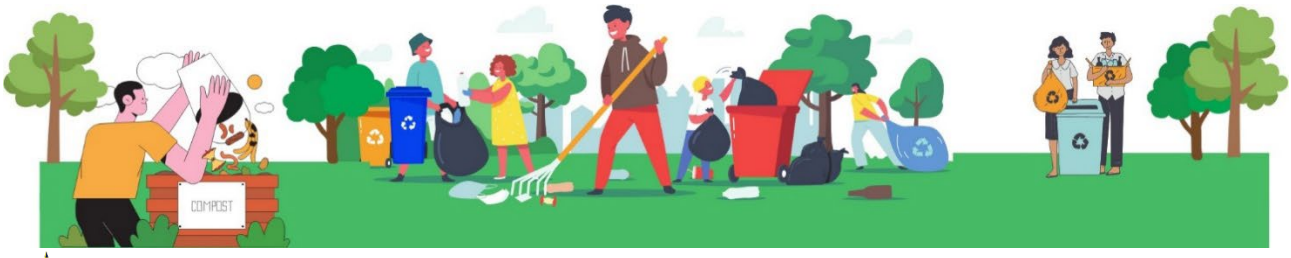


Table 6 Program Area 6: Towards Zero Waste

Programs/ Initiatives	Recommended Approach	Estimated Cost to the Municipality	Potential GHG Reduction (tCO_2e)
Alignment with Existing Waste Management Activities to reduce compostable waste to landfill	Anaerobic methane from landfill contributes significantly to the community emissions profile. Methane is approximately 25 times more powerful than equivalent CO_2. This initiative aims to continue to scale up the existing green bin program.	Incremental	**4,500** tCO_2e for every 1% increase in organic waste separation
Waste Reduction and Recycling	▪ Support senior government action on reducing use of single time use plastics and packaging, and explore implementing changes locally ▪ Support and amplify waste reduction, recycling and diversion programs delivered by the City and other partners	To be determined	Supports Ontario's shift from linear to circular economy. GHG emissions and energy usage will vary per material, recycled input among other factors.

Governance

The City has demonstrated leadership in climate action through transformation of its own operational processes, and the application of a **Climate Lens** in municipal decision-making. There is potential to unlock impactful opportunities through collaborative efforts and partnerships between the City, local businesses, industries, institutions, and residents.

Municipal Leadership

The City has already taken on GHG reduction and energy savings measures for municipal operations through implementation of the CEEP which provides a roadmap for corporate-wide assets to decarbonize; tackling energy, costs and emission reductions strategically. This roadmap will drive the shift from the current corporate energy use and emissions trajectory to near-zero emissions by 2050. Under the CEEP, the City's capital inventory and investments will be transformed to a low-carbon emissions fleet and efficient municipal buildings, among other asset classes.

Climate considerations also shape municipal processes through the application of a "Climate Lens" which is embedded in the decision-making processes including budgets, infrastructure upgrades and replacements, growth and planning in alignment with GHG targets.

The City can take further its commitment toward equitable climate action in the community by adopting new technologies, making strategic investments, creating pilot programs for community uptake, supporting education and awareness programs and facilitating a 'Task Force', as detailed below.

Communication and Engagement

Convene and Support a Community Implementation Task Force

The implementation of this CCAP is a community-wide effort. Implementation will require ongoing oversight to ensure that planned objectives and program areas are advancing.

To support and guide the implementation of the CCAP, it is recommended that the City of Stratford facilitate a Community Implementation Task Force (CITF). This Task Force will directly facilitate the development of implementation partnerships, advance educational initiatives and report on overall progress to the community. Internal and external partners will be brought into the process. The CITF will act as champions for the CCAP implementation, promote and facilitate community actions to accelerate participation and collaborate with all community partners, including businesses, developers, utilities, governments, institutions, non-profits, investors, and homeowners. The initial step will be to create the implementation entity and establish implementation partnerships.

Community-led Action

As a community-wide plan, the CCAP will require the support of many community members. There is a role for anyone interested in advancing climate action in the community. Community members, in addition to the CITF, can help support plan implementation through:

- Sharing best practices, resources, and expertise.
- Building support for implementation within their sectors and amongst the public.
- Providing funding support for the implementation of program areas.
- Aligning the program areas identified with their organization's mandates, priorities, and targets.
- Assisting with the implementation, monitoring, and reporting of program areas.
- Participating in community engagement activities.

Several organizations with similar mandates can support implementation, as noted in the Implementation Strategy (Appendix A). The following are some stakeholders to kick-start the process. Each would need to confirm their participation:

- City of Stratford: To implement policies and programs that support CCAP framing goals.
- Community organizations: To advance and promote programs, inform the public about climate change impacts and opportunities to participate, advocate for change, and collaborate on program delivery and monitoring as appropriate.
- Local energy utilities: To provide expertise, support and funding opportunities for new and existing buildings, renewable energy solutions and ensure alignment with broader energy system planning.
- Business and industry organizations: To educate their customers and employees on the benefits of energy conservation and participate in relevant programs.
- Developers and builders: To provide the expertise and capacity to build and retrofit energy-efficient buildings.
- Schools and institutions: To inform members of the public on the benefits of energy conservation, leading by example.
- Members of the public: To participate in programs, activities, share climate knowledge and participate in engagement events.

Community Outreach

Education, communication, and outreach were identified as critical needs by participants in community workshops. Many, if not all, program areas require some aspect of public communication, outreach, engagement, or collaboration. Workshop participants further identified that most residents will be interested to learn about the need for climate action, see opportunities for action at the individual level, and understand how the CCAP informs decision-making. The City will continue its outreach and educational activities that support climate action efforts and seek opportunities to expand them where possible.

Section 5 Nature-based Solutions for Adaptation and Resilience

Stratford's natural heritage and greenspace are community assets that **improve livability**. Apart from benefits such as improved air quality and shading, it is a lifeline for local wildlife, water quality, and bolsters resident wellbeing and health. Continuing to protect and expand these natural areas is an important part of our net-zero pathway, as trees and healthy soil are an important source of **carbon sequestration**.

While the CCAP strongly focuses on mitigation strategies, it does recognize the importance of embedding a lens of adaptation and resilience that reduce the risks of climate change on Stratford's physical, economic, social and ecological systems.

Nature-based solutions such as those directly related to adaptation and resilience focus on preserving and expanding the city's tree canopy cover, which helps sequester carbon, while providing significant co-benefits such as providing shade, moderating microclimates, providing stormwater storage, improving air quality, and enhancing energy efficiency of buildings. The City has considerable influence over land use planning matters to help preserve the existing tree canopy cover and aim to enhance it through effective partnerships with the community, local Conservation Authorities, the private and not-for-profit sectors.

Table 7 Actions to Support Adaptation and Resilience

Priority Actions	Strategies	Co-Benefits
Urban Tree Canopy Cover	▪ Monitor urban tree canopy cover and strive to maintain and enhance current canopy cover (30%) with an aim to attain best practice (40%) ▪ Routinely monitor health of existing trees and shrubs, and develop a resilience and maintenance plan to influence health longevity of new trees planted	▪ Adaptation ▪ Resilience ▪ Equity ▪ Biodiversity ▪ Carbon Sequestration potential
Naturalization and Native Plants	▪ Encourage naturalized vegetation in public green areas and private lawns through planting of native trees and shrubs ▪ Bolster community efforts toward invasive species management	▪ Healthy ecosystems ▪ Biodiversity
Outreach	▪ Explore opportunities and continue partnerships with community-led organizations to enhance naturalization and native and adaptive tree planting efforts city-wide	▪ Adaptation ▪ Equity ▪ Community Awareness
Bolster Local Economy	▪ Explore opportunities to support sustainable local food systems, such as by encouraging communal gardens or roof gardens in homes and buildings ▪ Review regulations to remove barriers to urban farming ▪ Support local food procurement and farmers markets	▪ Resilience ▪ Food security ▪ Cost savings

Section 6 Implementation Strategy

The community will adopt several additional strategies to significantly reduce energy consumption and phase out fossil fuels. This section outlines these supporting strategies and emphasizes the importance of regular review and updates. The strategies are specifically designed for Stratford's building stock, transportation network, energy infrastructure, industry, and waste system. While the City is uniquely positioned to lead many of these initiatives, their implementation will require resources and partnerships with various stakeholders, including Enbridge Inc., Festival Hydro Inc., the provincial government, and the federal government.

Detailed Implementation Strategy for Program Areas is available in Appendix A.

Monitoring and Evaluation

Monitoring and evaluating progress toward the Vision to Action goals is crucial during the implementation phase to guide decision-making, facilitate continuous improvement, and ensure transparency. Consistent and reliable ongoing monitoring offers the community several key functions and benefits, including:

- Guiding decision-making across the community.
- Supporting annual planning and budgeting processes.
- Ensuring transparency and accountability to community stakeholders.
- Engaging businesses, residents, and visitors in the journey toward the vision by providing meaningful and timely information in an interactive manner.

It is recommended that monitoring progress, evaluating programs, and reporting should be performed on an annual basis, to enable course correction as necessary. The initial set of sustainability metrics (Table 8) provided is based on the type of data identified under each program area.

Some data can be obtained from Statistics Canada, Hydro One, Festival Hydro Inc., Enbridge Inc., Destination Stratford, the Community Energy and Emissions Inventory, and community surveys, which are a great way of collecting unique community-specific information. New data collection tools and sources may be utilized in the future and should be included in the monitoring system to make indicator results more robust and reliable.

Charting our Progress

Success can be measured in a variety of ways; the most relevant for the purposes of this Plan are the consistent reduction of overall annual GHG emissions, and the economic impact of clean energy in the community.

Periodic reporting such as annual/bi-annual reporting will focus on efforts and achievements towards the implementation of the program areas. In addition, the City can monitor the impacts of overall implementation by tracking specific metrics (or key performance indicators, KPIs), on an annual or bi-annual basis.

The following sustainability metrics have been identified for each program area to measure the progress of the CCAP toward our GHG reduction targets, energy use, waste diversion, and energy cost impacts on the community. These can be compared against the baseline and BAU to measure progress.

Table 8 Sustainability Metrics (KPIs) for CCAP Program Areas

GHG Emissions:

Sustainability Metrics (Key Performance Indicators)	Measure/Unit	Proposed tracking timeline
Total GHG emissions	tCO_2e	Annual
GHG emissions by sector	tCO_2e	Annual
GHG emissions by sector as percentage of total	%	Annual
GHG emissions by source	tCO_2e	Annual
GHG emissions by source as percentage of total	%	Annual
GHG emissions per capita	tCO_2e /capita	Annual
Percentage change in GHG emission per capita from baseline (2022)	%	Bi-annual

Energy:

Sustainability Metrics (Key Performance Indicators)	Measure/Unit	Tracking timeline
Total energy use	GJ	Annual
Total energy use per capita	GJ/capita	Annual
Percentage change in total energy use per capita from baseline	%	Annual
Total energy use by sector	GJ	Annual
Energy use by sector as percentage of total	%	Annual

Total energy use by source	GJ	Annual
Energy use by source as percentage of total	%	Annual
Residential energy intensity	GJ/m^2	Annual
Non-residential energy intensity	GJ/m^2	Annual
Percentage change in energy use per capita from baseline (2022)	%	Bi-annual

Waste:

Sustainability Metrics (Key Performance Indicators)	Measure/Unit	Tracking timeline
Percentage compostable waste diverted from landfill	%	Annual

Economic:

Sustainability Metrics (Key Performance Indicators)	Measure/Unit	Tracking timeline
Total community energy costs	$$	Bi-Annual
Total energy costs per capita	$$/capita	Bi-Annual
Energy cost by sector	$$	Bi-Annual
Energy cost by source	$$	Bi-Annual

Community-Wide:

Sustainability Metrics (Key Performance Indicators)	Measure/Unit	Tracking timeline
Percentage change in energy cost per capita from baseline (2022)	%	5-year

Sustainability metrics outlined in this section will serve as essential tools to benchmark performance, track progress against our targets and monitor the effectiveness of initiatives underway. Timelines may be updated based on resource allocation and the availability of data.

Appendix A - Detailed Implementation Strategy for Program Areas

Program Area 1: Efficient Homes and Buildings

Program /Initiative	Recommended Approach	Participation Rate	Municipal Role	Enabling Components	Estimated Municipal Cost	Incentives, Municipal Cost Recovery	Potential Partners	Benefits	Potential GHG Reduction
Deep Retrofit Program for Existing Homes	A deep retrofit program aims to reduce energy consumption and GHG emissions in the residential sector. The program would standardize retrofits by property type and location, delivered via local partners.	80% of existing residential buildings (at 35% - 40% increased efficiency)	Initiate the development of a business case for a Deep Retrofit Program for Existing Homes	Develop Local Improvement Charge (LIC) policies and by-laws	$80K to $100K- Detailed business plan development costs	▪ Potential Federation of Canadian Municipalities (FCM) funding for planning, feasibility assessment ▪ Potentially recoverable as administrative overhead in the functioning retrofit program	▪ Contractors ▪ Realtors ▪ Retrofit component suppliers ▪ Utilities	▪ Increased property value ▪ Reduced energy costs ▪ Higher contractor margins ▪ Local employment ~ 120 jobs total ▪ Efficient channel for adaptation measures and other program delivery	▪ **19,000** tCO_2e per annum ▪ Contribution to total: **8%**
Deep Retrofit Program for Existing Non-Residential Buildings	A deep retrofit program aims to reduce energy consumption and GHG emissions in the commercial and institutional sectors. The program would standardize retrofits by property type and location, delivered via local partners.	60% of existing non-residential buildings (at 35% - 40% increased efficiency)	Initiate the development of a business case for Create a Deep Retrofit Program for Existing Non-Residential Buildings	Develop Local Improvement charge (LIC) policies and by-laws	Marginal additional costs to residential detailed business plan costs	▪ Potential FCM funding for planning ▪ Recoverable as admin overhead in functioning retrofit program	▪ Contractors ▪ Realtors ▪ Retrofit component suppliers ▪ Utilities	▪ Increased property value ▪ Reduced energy costs ▪ Higher contractor margins ▪ Local employment ~ 60 jobs total ▪ Efficient channel for adaptation measures and other program delivery	▪ **25,000** tCO_2e per annum ▪ Contribution to total: **11%**

Building Efficiency Program	The building efficiency program ensures all new construction fully meets or exceeds the anticipated Ontario Building Code (OBC). The program would aim to raise customer awareness and expectations through Energy Performance Labelling and Green Development Standards (GDS).	30% above code for new residential and non-residential buildings	▪ Ensure compliance with the OBC for New Residential Development ▪ Encourage above-code design and construction via GDS (see Low Carbon Neighbourhoods below)	Maximizes energy performance of the community's new building stock	Incremental	N/A	▪ Developers/builders ▪ Contractors ▪ Efficient homes products and services supply chain ▪ Utilities	▪ Confirmed value for buyers ▪ Competitive edge for quality builders	▪ **13,000** tCO_2e per annum ▪ Contribution to total: **6%**
Energy Performance Labelling (EPL) for Homes and Buildings	Energy Performance Labelling (EPL) programs such as EnerGuide for homes (or similar) create market transparency and increase end-use efficiency. The initiative encourages EPLs to be available on all properties when sold or rented.	N/A. Designed to motivate increased energy efficiency in the residential and non-residential sector	Minimal costs associated with designing and rolling out the EPL plan	An EPL program drives market activity by adding value to homes through their energy efficiency rating	Incremental	N/A	▪ Developers ▪ Builders ▪ Realtors	▪ Confirmed value for buyers ▪ Competitive edge for quality builders and contractors	▪ Supports all efficiency areas

Program Area 2: Low-Carbon Neighbourhoods

Program /Initiative	Recommended Approach	Participation Rate	Municipal Role	Enabling Components	Estimated Municipal Cost	Incentives, Municipal Cost Recovery	Potential Partners	Benefits	Potential GHG Reduction
Net-Zero Neighbourhoods	Low-Carbon, or Net Zero neighbourhoods provide an opportunity to show local application of energy best practices. This initiative aims to establish a net-zero neighbourhood as a model for sustainable urban living and transformative change.	Inclusive of all participation rates indicated in other programs and initiatives	City staff to develop the general policy and planning guidelines for a "net-zero" neighbourhood	Enables integration of overall CCAP objectives into neighbourhood development and/or renewal	May vary based on City resources.	FCM Grants for urban renewal projects, brownfield development (e.g. for Grand Trunk development)	▪ Developers ▪ Builders ▪ Festival Hydro ▪ Investors ▪ Other stakeholders	▪ Uses municipal infrastructure more efficiently ▪ Reducing Greenhouse Gas (GHG) emissions ▪ from new buildings and transportation ▪ Improving health and wellness for residents ▪ Cost savings	Low carbon neighborhoods have the potential to contribute to large-scale energy and emissions reductions, and achieve costs savings for residents
Green Development Guidelines (GDG) for new development	Recommend integration into the planning approvals process, where development applications are required to meet certain criteria in the GDG.	Inclusive of all participation rates indicated in other program areas.	City staff to facilitate this program. May require external support.	Enables integration of overall CCAP objectives into neighborhood development and/or renewal	Resource may be needed to develop support guidelines (+/- $50,000)	FCM Grants and other funding opportunities available to develop such guidelines	▪ Developers ▪ Community at large	▪ Streamlined approach for new development	Supports efficient new property and low carbon energy supply

Program Area 3: Efficient Industry

Program /Initiative	Recommended Approach	Participation Rate	Municipal Role	Enabling Components	Estimated Municipal Cost	Incentives, Municipal Cost Recovery	Potential Partners	Benefits	Potential GHG Reduction
Industrial Energy and Climate Best Practice Network	An industry-focused best practice network ensures world-class continuous improvement in industrial energy efficiency. This initiative aims to encourage Perth County Industrial Best Practice Networks, host Global Best Practice events, and share industrial management expertise throughout the County.	1.0% of local industry participation per year	Convene industrial best-practice networks	Proliferate low-carbon, high-efficiency practices in the industrial sector	Minimal	N/A	▪ Local industry ▪ Invest Stratford	▪ Industrial competitiveness ▪ Sustained and new employment ▪ City reputation ▪ Inbound industrial investment	▪ **13,000** tCO_2e per annum ▪ Contribution to total: **6%**

Program Area 4: Efficient Transportation

Program /Initiative	Recommended Approach	Participation Rate	Municipal Role	Enabling Components	Estimated Municipal Cost	Incentives, Municipal Cost Recovery	Potential Partners	Benefits	Potential GHG Reduction
Alignment with Transportation Master Plan initiatives to reduce average trip lengths	This program aims to reduce the time spent in Light-Duty Vehicles (LDV), such as cars, SUVs, and pick-ups. The recommended aligning the CCAP strategies with existing transportation plans	15% of trip lengths are reduced	▪ Ensure Transportation/ Transit Plans & Secondary Plans include supportive measures, adopting mixed-use compact design, increasing local social destinations, encouraging shared vehicle services, and including impacts of home working.	▪ Transportation planning ▪ Secondary planning	Marginal increase to existing internal costs	N/A	▪ Destination Stratford ▪ Chamber of Commerce ▪ BIA Stratford ▪ Local Active Transportation Interests	▪ Increased local employment ▪ Attractive, livable neighbourhoods ▪ Decarbonizing transportation ▪	▪ **15,000** tCO_2e per annum ▪ Contribution to total: **7%**
Alignment with Transportation Master Plan initiatives to increase trips by train, bus, bike and walking	This initiative aims to reduce the need for LDVs and promotes more low-carbon shares of passenger kilometres travelled (PKT). This initiative relies on aligning the CCAP targets with existing active transportation plans.	▪ 10% increase in active transportation activities ▪ 10% increase in local transit use	▪ Ensure the Transportation and Transit Plans include energy targets; supportive measures; multi-modal transport nodes, competitive transit services, and transit-oriented development in the City that are supplemented by bike, e-bike	▪ Transportation and Transit Plans include energy targets and supportive measures ▪ Ensure Secondary Plans include supportive measures	Marginal increase to existing internal costs	N/A	▪ Destination Stratford ▪ Chamber of Commerce ▪ BIA Stratford ▪ Local Active Transportation Interests	▪ Attractive, livable neighbourhoods ▪ Reduced driving stress ▪ Improved health ▪ Decarbonizing transportation	▪ **17,000** tCO_2e per annum ▪ Contribution to total: **7%**

			and walking routes						
Electric and Low-Emission Vehicle Support Program	Using vehicles with lower emissions will reduce the impact of the transportation sector's GHG emissions. This program aims to drive uptake through municipal actions and outreach. It includes a need for investment in electric vehicle infrastructure, charging stations.	▪ 80% of light-duty vehicles are low emission - including EV ▪ 80% of transit ▪ 10% of heavy-duty vehicles	▪ Encourage uptake through municipal outreach ▪ Planning policy - parking and charging guidelines ▪ Infrastructure – incorporate charging stations in public parking facilities	▪ Transportation and Transit Plans include energy targets and supportive measures ▪ Ensure Secondary Plans include supportive measures	+/- $12,000/charging station	▪ Government incentives for consumers ▪ Government incentives for municipalities to install public charging infrastructure	▪ Business community with parking lots ▪ Local transportation interests ▪ Auto Dealers	▪ Individual access and parking privileges ▪ Reduce fuel operating costs ▪ Decarbonize transportation	▪ **68,000** tCO_2e per annum ▪ Contribution to total (EV): **17%** ▪ Contribution to total Vehicle Efficiency): **13%**

Program Area 5: Energy Supply and Distribution

Program /Initiative	Recommended Approach	Participation Rate	Municipal Role	Enabling Components	Estimated Municipal Cost	Incentives, Municipal Cost Recovery	Potential Partners	Benefits	Potential GHG Reduction
District Energy Program	This initiative targets densification and new growth areas to provide efficient heating and cooling using high-quality, low-carbon thermal services. The program would create a District Energy entity to supply services and ensure future area-specific plans, including District Energy guidelines.	▪ 90% of new construction in areas targeted for intensification of new growth ▪ 70% of existing renovation in areas targeted for densification	Initiate the development of the District Energy business plan	Serves to attract investors, funders and service providers to the opportunity	Development of a business case (+/1 $100,000)	▪ Potential FCM funding for planning. ▪ Recoverable as administrative overhead in functioning district energy company or utility	▪ Utilities ▪ Developers ▪ Builders	▪ Competitive, reliable, comfortable thermal services ▪ Local employment ▪ Municipal dividends and investor returns ▪ Pathway to further GHG reductions using bio-energy and other renewable heating & cooling sources ▪ Business opportunity in other communities	▪ **37,000** tCO_2e per annum ▪ Contribution to total: **16%**
Heat Pump Program	Heat pumps provide high-quality, low-carbon heating and cooling options to areas not served by District Energy. This program aims to promote the use of heat pumps in low-density areas.	50% of new construction	Promote the use of heat pumps in low-density areas	Incorporate heat pumps into permitting processes	Some costs may be absorbed by existing City resources, while other costs may need to be accounted for	Government and utility incentives for consumers	▪ Builders ▪ Contractors ▪ HVAC Suppliers ▪ Electrical Utility	▪ Low-carbon heating and cooling	▪ Included in efficient new construction
Solar Hot Water Program	Solar hot water provides supplemental hot water and heating	10% of heating and hot water use in all buildings	Include in policy and planning construction guidelines	▪ Green Development Standards	Incremental	N/A	▪ Builders ▪ Contractors ▪ HVAC Suppliers	▪ Attractive investment for consumers	▪ **1,000** tCO_2e per annum ▪ Contribution to total: **>1%**

	in homes not served by District Energy as a cost-effective zero-carbon hot water alternative. This program aims to raise customer awareness through comprehensive outreach and engage Enbridge, key builders, and realtors as champions.			▪ Streamline permitting for existing buildings				▪ New opportunity for contractors ▪ Predictable, proven technology ▪ Local employment ▪ Contribute to decarbonizing heating	
Solar Photovoltaic Program	Solar photovoltaics reduce the dependence on fossil fuels and uses solar power as a cost-effective zero-carbon electricity alternative. This program aims to raise customer awareness through comprehensive outreach and engage utilities, key builders, and realtors as champions.	10% of all electricity needs in all buildings	Include in policy and planning construction guidelines	▪ Green Development Standards ▪ Streamline permitting for existing buildings	Incremental	Government and utility incentives for consumers	▪ Utilities ▪ Builders ▪ Contractors ▪ Local Suppliers	▪ Attractive investment for consumers ▪ Avoided investment in power utility ▪ Extended opportunity for contractors ▪ Predictable, proven technology ▪ Local employment ▪ Contribute to decarbonizing electricity	▪ **22,000** tCO_2e per annum ▪ Contribution to total: **10%**

Program Area 6: Towards Zero Waste

Program /Initiative	Recommended Approach	Participation Rate	Municipal Role	Enabling Components	Estimated Municipal Cost	Incentives, Municipal Cost Recovery	Potential Partners	Benefits	Potential GHG Reduction
Alignment with Existing Waste Management Activities to reduce compostable waste to landfill	Anaerobic methane from landfill contributes significantly to the community emissions profile. Methane is approximately 25 times more powerful than equivalent CO_2. This initiative aims to continue to scale up the existing green bin program.	N/A	▪ Communicate to representatives of all compostable waste sources ▪ Service expansion to all organic waste sources	Incorporate into existing waste management strategies	TBD	Incremental to current waste management costs	N/A	Reduce emissions from methane (25 times that of carbon dioxide emissions)	4,500 tCO_2e for every 1% increase in organic waste separation
Waste Reduction and Recycling	▪ Support senior government action on reducing use of single time use plastics and packaging, and explore implementing changes locally ▪ Support and amplify waste reduction, recycling and diversion programs delivered by the City and other partners	For provincial regulatory framework participation rate is expected to be significant by 2025.	▪ The City's Blue Box program transition is underway. Blue Box producers will became fully accountable and financially responsible for collecting and recycling their materials when consumers discard them ▪ Enhance communication around the transition	Blue Box Regulation under the RRCEA requires producers to establish and operate systems for the collection, recycling and reuse of blue box materials.	TBD	N/A		▪ Compliance ▪ Equity ▪ Community Awareness	Supports Ontario's shift from linear to circular economy. GHG emissions and energy usage will vary per material, recycled input among other factors.

MANAGEMENT REPORT

Date: July 4, 2024
To: Infrastructure, Transportation, and Safety Sub-committee
From: Neil Anderson, Fire Chief
Report Number: ITS24-014
Attachments: None

Title: Repair or Replace Fire Utility Vehicle

Objective: To seek Council's approval regarding repair of a damaged utility vehicle.

Background: Unit 2 is the call sign of the Stratford Fire Dept's 2019 Dodge Ram pick-up utility vehicle, typically assigned to one of our Fire Prevention Officers. This vehicle is normally used to perform building inspections, fire extinguisher training, education, fire investigations, and used by staff to respond to second and third alarms, or to attend courses or events outside of our area.

On the afternoon of 17 June 2024, Unit 2 was involved in a motor vehicle collision at Queensland and Lorne, where it was rear-ended, subsequently pushed into the vehicle in front of it, that was stopped while awaiting to make a left turn. The City employee driving at the time was not injured nor found to be at fault.

Analysis: As a result of the incident, the vehicle requires unplanned repairs. The vehicle was purchased in 2019. It was determined by the insurance adjuster to be valued at just under the $50,000 deductible, and it was recommended as a write-off due to a bent vehicle frame.

The City's Fleet Supervisor has sourced a body shop who is able to repair the vehicle, with full frame replacement, at an estimated cost of $28,025 and repair time of 4 – 6 weeks. This vehicle was purchased with an expected service life of 10 years, bringing it to 2029. The residual value at this time, given the current condition, is likely lower than the net book value of the vehicle. It is noted that all emergency equipment installed on the truck remains functional.

The Fire Inspector who normally uses this vehicle is now utilizing the reserve vehicle typically held for after hours emergency responses and administrative staff for performing tasks around the city. The workload of the Fire Prevention staff requires

that both officers utilize separate vehicles to keep up with inspections, issue of permits, education and training, and various other tasks required of them at different locations throughout the city.

Once Stratford Fire Department transfers over the dispatching to Kitchener Fire Department, at the end of August, one of the resulting new positions, Fire Prevention/Safety Educator, will require a vehicle. The reserve vehicle was the intended vehicle. As such, the repair or replacement of the damaged vehicle is essential to maintaining current service levels.

Staff did consider and perform analysis of purchasing new, and not repairing, however, the estimated turn-around time for delivery is one year. The cost is estimated at $90,000, but this would provide a vehicle that would have a useful life until 2035. The cost considerations are not materially different when comparing the net book value of the damaged vehicle along with the repair required, with the cost of a new vehicle. It is the delay, however, that would result in services provided by the Fire Department being operationally impacted, and unable to fulfill all the required duties.

Staff are recommending the repair of the damaged vehicle which will have a $28,000 impact to the repairs and maintenance line item in the Fire department. If pursuing a new vehicle was decided upon, there would likely be no financial impact in the current year, aside from some reduced operating costs for the damaged vehicle as the new vehicle wouldn't be ready until later in 2025. Funding of a new vehicle could impact the reserves as this was not planned until 2029.

Financial Implications:

Financial impact to current year operating budget:
The unbudgeted effect of $28,000 will be a departmental variance within the repairs and maintenance line item. The 2024 budget was determined without consideration of this unplanned repair, but may not have a full impact, depending on other repairs and maintenance that occur in the remainder of the year.

Financial impact on future year operating budget:
If repairing the vehicle, there is no expected effect to the operating budget, but the amortization expense would increase for the remaining 5 years of the vehicle's useful life. This is not a cash expense but is a financial/accounting effect. Planned transfers to reserves are not likely to require significant adjustments for the eventual replacement.

Link to asset management plan and strategy:
The asset management plan has the utility trucks on a 10-year replacement cycle. If repaired, Unit 2 would likely last until its scheduled replacement of 2029, and very possibly longer. It is not uncommon to keep a utility vehicle beyond the scheduled 10 years.

Alignment with Strategic Priorities:

Enhance Our Infrastructure:
This report aligns with this priority as it promotes economic stability through repairing at a much lower cost than replacing, with likelihood of lasting beyond the anticipated retirement date.

Alignment with One Planet Principles:

Not applicable: This does not meet the definition of Zero Waste or Materials and Products but does support waste reduction and support reusing existing materials.

Staff Recommendation: THAT the repair of the fire utility vehicle in the amount of $28,025 be authorized.

Prepared by: Neil Anderson, Director of Emergency Services/Fire Chief
Recommended by: Joan Thomson, Chief Administrative Officer

MANAGEMENT REPORT

Date: July 24, 2024
To: Infrastructure, Transportation and Safety Sub-committee
From: Fire Chief Anderson
Report Number: ITS24-017
Attachments: Proposal Evaluation

Title: Procure New Fire Apparatus using Canoe Procurement Group

Objective: To obtain Council approval to proceed with procurement/replacement of the 2007 Rosenbauer Fire Engine, with a Pierce Quintuple Combination Pumper apparatus, through use of the Canoe Procurement Group.

Background: The 2007 Rosenbauer Engine, known as 'Engine 2', is scheduled for replacement in 2027, using capital reserve funds, as at that time it will be 20 years old. Based on the National Fire Protection Association, front line apparatus should be 15 years or younger, while reserve apparatus should not exceed 20 years. Engine 2 is now 17 years old as a front-line apparatus. Since COVID shutdowns created considerable supply chain issues and cost increases far past the pale of ordinary inflation, the turn-around time for a custom fire apparatus with a pump now averages between 30 – 42 months, from the date of ordering.

During a recent maintenance procedure, it was revealed that the frame and chassis mounting are starting to show signs of risks to emergency vehicle safety. Due to heavy rust jacking and build up on the frame, hardware is breaking and stretching. The rear spring bracket mounting hardware has snapped the heads off the bolts due to this stretching.

Rust jacking occurs when oxidation or rust creates layers that bow and push out, permitting divots in the frame and which can allow foreign debris to enter between the rust, causing further damage. The result is the frame eventually rusts out or breaks as the metal bows out. With the amount of rust and scale that was removed to resecure the spring hangers and fuel tank, the technician indicated that the frame and flange on the unit are becoming very weak and may be unreliable going forward. If there were any cracks or compromised parts of the frame or flange, the vehicle would be unsafe, and it would be necessary to put the unit out of service permanently.

After the rust scale was removed and the frame inspected, the 310T certified technicians agreed that the life span of Engine 2 is at risk and may be deemed unsafe if further frame rust jacking continues. They recommended the replacement of this unit before such a problem occurs. The Fleet Supervisor concurs with their recommendation and analysis.

In 2015, the fire vehicle identified as 'Pumper 1' was a Quintuple Combination Pumper apparatus and was also removed from service due to rust jacking, subsequently replaced with a regular Engine/Pumper. That was the last time that Stratford effectively had the capability to respond with two aerial vehicles, one being a Quintuple Combination Pumper and the other a platform aerial vehicle. "Quintuple" refers to the five functions that this apparatus provides: pump, water tank, fire hose, aerial device, and ground ladders. A Quintuple Combination Pumper serves the dual purpose of an engine and a ladder truck.

Stratford Fire Department began performing undercoating for all vehicles in 2017, as regular maintenance. This increases operating costs but is intended to prevent future rust jacking issues and extend the useful life of the vehicles.

Analysis: If the City were to permanently remove Engine 2 from service, without a replacement, it would not immediately impact our actual response capabilities. However, when any other vehicle had to be removed from service for regular maintenance, which occurs often[1], this would impact our response capabilities as the City would be absent two vehicles (out of four) and in some situations resulting in a single pump to protect the entire City.

If Engine 2 were to be removed from service before a new replacement apparatus is available, the remaining options would be to rent a vehicle or purchase a second-hand vehicle. Availability of rental vehicles is low, and a good second-hand fire apparatus is limited, and would also involve another procurement process. Due to the scarcity of second-hand apparatus, the Ontario Fire Marshal has written a letter to all Fire Chiefs requesting them to advise his office when a second-hand vehicle becomes available, so it can be advertised throughout the Ontario Fire Service. Of note, once a vehicle is procured as second-hand, it is no longer grandfathered and there will be an additional expense to the recipient, on top of the purchase cost, to bring it up to code regarding visual/audio warnings, reflective tape, cab safety measures, tires, etc. Aside from these options, the City could lose its current capabilities for fire response for a prolonged period of time.

The intent has been to replace Engine 2 with a Pierce Quintuple Combination Pumper, keeping in line with the City's vision of building better infrastructure, and returning to the 2015 service level of having an aerial vehicle available for initial response at each end of the city and providing a back-up vehicle for times when the aerial vehicle is out

[1] Fire vehicles are complex and contain significant equipment on each vehicle that must be regularly maintained to ensure optimum performance.

of service. A large benefit of a Quintuple apparatus is that it has a nozzle at the end of the ladder to provide an elevated master stream for higher infrastructure. It is not classified as a platform truck, such as the aerial truck procured 3 years ago, as the ladder on the Quintuple is not made to withstand the weights that the platform aerial can.

Staff are recommending a Pierce manufactured Quintuple Combination Pumper. The current platform aerial apparatus is manufactured by Pierce so there would be similarities and continuity between the vehicles resulting in a reduced training time for staff, making it quickly operational. The Pierce Emergency Vehicle Technicians and garage is located in Woodstock, resulting in the convenience of a rapid pick-up and delivery time for maintenance and warranty work, meaning less loss of operational time due to the close proximity. Currently, the City's other fire vehicles are serviced in Brampton, the next closest Emergency Vehicle Technician garage, which is almost a 2 hour drive each direction. Pierce is considered throughout the service as a very reliable manufacturer and was also ranked #1 when Canoe undertook their competitive process. Pierce will also provide a 5.5% rebate off of the Manufacturer's Suggested Retail Price, if procured through Canoe, which is one of the highest rebates provided. If a Quintuple were ordered custom today, it is anticipated that it would be ready for delivery late 2027 or early 2028. The service technicians do not believe Engine 2 will be road-safe that long. The order of a custom truck is very expensive and customarily subject to delivery delays, resulting in many fire departments purchasing stock or demo models that will suit their community.

A custom-build purchase is typically done through the Request for Proposal process where all the scope and specifications are articulated and evaluated. However, based upon the current condition of Engine 2, timing is also being considered as a significant variable. Municipal buying groups are a reasonable option for this type of purchase, and through the Canoe Procurement Group (Canoe), a stock model could be ready much earlier and be less expensive than if a custom-build is pursued. The Canoe vetting process ensures competitive pricing that can be secured in today's dollars and allows for a quicker turnaround. Most fire vehicle suppliers also offer a minimum 3 - 5% discount from the manufacturer's suggested retail price through Canoe.

Over the past few years there have been unprecedented and significant price increases in fire service vehicles. A recent quote received on a Quintuple, by the same manufacturer as our platform truck, and the current cost of a stock truck they are working on, set for delivery in April 2026, is nearly $2.2 million, with another price increase scheduled for August. Stock models are often sold quickly, and demo models are scarce. This is significantly higher than what was identified in the 10-year forecast in previous years.

Replacing Engine 2 with a similar Engine/Pumper apparatus to what is there now was considered, but, it would require foregoing the enhanced capability having a second aerial apparatus with master stream would present, and would definitely not reflect the

increased growth of the City. The average cost of an Engine/Pumper apparatus is from $1.9 – 2.0 million (slightly lower than the proposed solution). Leasing to own, versus purchasing has also been considered. Manufacturers will not take back a fire service vehicle at the end of a leasing period, so ownership is the only option. The most common leasing payment options are over 36, 48 or 60 months, but they can be as long as 10 years, depending on whether a residual/balloon payment is due at the end of the term. The average interest rates for this option are around 7.85%. As an example, a $2.2 million dollar truck, with $400K down payment, plus sales tax on down payment (recoverable) of approximately $52,000, over a 60-month term at 7.81% would result in monthly payments of approximately $33,000, with a $1 residual. The difference in the overall cost over 5 years is primarily the interest carrying costs. The Quintuple and aerial vehicles are not yet available in a hybrid or electric option and there has not been any indication of if or when they will be.

To summarize, staff are seeking Council authorization to proceed with the procurement of the new fire vehicle in advance of the 2027 scheduled replacement date to ensure service delivery can remain uninterrupted and the City can get the best value for money. It is noted that the current pricing is significantly higher than what has been included in the 10-year capital forecast. The result is that in 2025 and years beyond, there will be a required increase to the transfers to capital reserve funds. This will be the case whether proceeding now, or waiting, to ensure sufficient reserve funds are available for this and other projects included in the 10-year forecast.

This vehicle was identified in the Development Charges background study for 2028, so 32.5%, or $715,000 of this purchase can be funded from Development Charges (DC Reserve Fund has $1.5 million available). The balance of $1,485,000 will come from the Fire Capital Reserve Fund.

Once a vehicle solution is secured, if there are any significant variances from the figures noted in this report, staff will return with an informational report outlining those, and any financial implications.

Financial Implications:

Financial impact to current year operating budget:
Once a truck becomes available with the supplier, the City would be required to put 10% down to secure it. This would come from the reserve fund with the balance due upon delivery, likely 2026. Future repairs and maintenance would be nominal due to the warranty on the new vehicle.

Financial impact on future year operating budget:
Capital Reserve payment will be increased due to the considerable elevation in manufacturing costs to ensure sufficient funds are available for this and other planned purchases in the forecast period.

Link to asset management plan and strategy:
Engine 2 is past its recommended front-line response age of 15 years and because the intent is to use it as a secondary response unit for the last 5 years of its useful life, it was scheduled for replacement in 2027, at 20 years.

Alignment with Strategic Priorities:

Intentionally Change to Support the Future
This report aligns with this priority as it will permit the fire department to service growth of the City with two vehicles with master streams and elevated ladders, enhancing the City's capability of firefighting with future higher infrastructure.

Alignment with One Planet Principles:

Not applicable: There are no alignment definitions that support the subject of this Management Report.

Staff Recommendation: THAT staff be authorized to use the Canoe procurement group to proceed with the procurement process to purchase a Pierce Quintuple Combination Pumper fire apparatus.

Prepared by: Neil Anderson, Director of Emergency Services/Fire Chief
Recommended by: Joan Thomson, Chief Administrative Officer

Proposal Evaluation
Firefighting Apparatus and Fire Service Vehicles RFP #113021

	Possible Points	Acres Industries, Inc.	Alexis Fire Equipment Company	BME Fire Trucks, LLC	Brindlee Mountain Fire Apparatus, LLC	CAMIONS CARL THIBAULT, INC.	CET Fire Pumps MFG	Chemical Containers, Inc.	Custom Fire Apparatus, Inc.	Dependable Truck & Tank, Limited	EJ Metals, LLC	~~E-ONE, Inc.~~	FireStopper USA MD	Fort Garry Fire Trucks, Ltd.	Fouts Brothers, Inc.	Hi-Tech Emergency Vehicle Service, Inc.	HME, Incorporated	HUB Fire Engines & Equipment, Ltd.
Conformance to Terms/ Conditions to Include Documentation	50	38	41	36	41	38	40	33	43	35	40	43	28	42	37	39	43	36
Pricing	400	333	299	298	278	311	315	305	320	265	325	319	263	271	310	306	319	260
Financial, Industry and Marketplace Successes	75	52	57	52	59	55	56	55	60	51	55	65	27	61	59	61	60	52
Bidder's Ability to Sell/ Service Contract Nationally	100	64	77	71	80	71	75	67	75	67	72	88	34	79	71	72	77	65
Bidder's Marketing Plan	50	35	42	34	39	37	42	34	44	38	35	39	34	43	38	38	40	35
Value Added Attributes	75	56	50	42	51	56	56	44	60	44	57	60	51	65	57	58	58	57
Warranty Coverages and Information	50	43	43	40	41	43	40	36	38	40	39	44	37	45	42	42	42	39
Selection and Variety of Products and Services Offered	200	158	156	140	163	164	151	145	169	146	157	180	116	169	156	151	165	151
Total Points	1,000	779	765	713	752	775	775	719	809	686	780	838	590	775	770	767	804	695
Rank Order		14	20	26	22	16	16	25	7	30	13	4	33	16	18	19	8	29

Due to clerical error, amended to read REV Group, Inc. on June 1, 2023

	Possible Points	Laszlo Corporation	Marion Body Works, Inc.	MAXIMETAL, INC.	Metalfab, LTD	P.L. Custom Body and Equipment Co., Inc.	Pierce Manufacturing	Rock River Industries, LLC	Rosenbauer South Dakota, LLC	Skeeter Brush Trucks, LLC	Spencer Manufacturing, Inc.	Super Vacuum Manufacturing CO, Inc.	The Sutphen Corporation	Toyne, Inc.	Ty Parker & Son, Inc.	US Fire Equipment, LLC	Ward Apparatus, LLC
Conformance to Terms/ Conditions to Include Documentation	50	28	40	44	34	44	45	43	44	39	39	44	44	41	33	31	41
Pricing	400	253	303	318	301	334	321	324	300	275	271	271	323	311	245	334	270
Financial, Industry and Marketplace Successes	75	41	61	63	49	64	65	59	64	57	54	62	62	61	47	53	55
Bidder's Ability to Sell/ Service Contract Nationally	100	60	72	85	67	80	90	73	87	72	70	86	87	79	66	68	74
Bidder's Marketing Plan	50	33	41	45	35	43	44	41	44	36	33	45	44	40	34	34	38
Value Added Attributes	75	52	59	64	45	63	65	58	58	43	49	60	63	52	43	49	53
Warranty Coverages and Information	50	39	43	43	37	44	43	42	44	42	41	44	44	42	33	39	42
Selection and Variety of Products and Services Offered	200	110	165	169	141	168	179	162	179	148	170	173	176	166	120	154	158
Total Points	1,000	616	784	831	709	840	852	802	820	712	727	785	843	792	621	762	731
Rank Order		32	12	5	28	3	1	9	6	27	24	11	2	10	31	21	23

DocuSigned by: Kim Austin
6830543C58384D1...
Kim Austin, MBA, CPPB, Procurement Lead Analyst

DocuSigned by: Stephanie Haataja
755BA3F379B5409...
Stephanie Haataja, CPIM, Procurement Analyst

DocuSigned by: Craig West
7F41572C858B4BA...
Craig West, Procurement Analyst

DocuSigned by: Tom Sharbonno
D12CB58EFE9146E...
Tom Sharbonno, Procurement Analyst

MANAGEMENT REPORT

Date: July 24, 2024
To: Infrastructure, Transportation, Safety Sub-committee
From: Heather Denny, Events Coordinator
Report Number: ITS24-013
Attachments: None

Title: Request for an exemption to Noise Control By-law 113-79 for the Stratford Lantern Parade event

Objective: To consider a request from Playmakers! Theatre School from Noise Control By-law 113-79 for the event taking place on Saturday, October 19, 2024 between the hours of 2:00p.m. and 10:30p.m.

Background: Noise By-laws are designed to reduce and control both unnecessary and excessive sounds which can be a nuisance and generally degrade the quality and peacefulness of neighbourhoods. The Noise By-law identifies different rules and restrictions for noise based on four geographical areas throughout the city known as zones (Quiet zone, Residential zone, Commercial zone, Park zone).

The production, reproduction, or amplification of sound is one of the sounds regulated by Noise Control By-law 113-79. The nature of this event would include the aforementioned sounds.

Below are the schedules and clauses within in the Noise By-law applicable to this event that organizers are requesting an exemption to.

> Schedule 2, Clause 2 – "The operation of any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction, or amplification of sound."
>
> **Prohibited all day Sundays and Statutory Holidays, and from 5pm of one day to 7am next day.**
>
> Schedule 2, Clause 4 – "The loading, unloading, delivering, packing, unpacking, or otherwise handling of any containers, products, materials or refuse

whatsoever, unless necessary for the maintenance of essential services or the moving of private household effects."

Prohibited all day Sundays and Statutory Holidays, and from 7pm of one day to 7am next day.

Schedule 1, Clause 8 – "Unreasonable noise provision."

Analysis: The event location is at the outdoor bandshell on Veterans Drive, on Tom Patterson Island, and some areas of parkland along Lakeside Drive. While the event location is within the Park Zone, the event borders a residential area and therefore event organizers are requesting an exemption to permit the amplification of sound in a Residential Zone.

The intent of this noise exemption request on Saturday, October 19, 2024 from 8:00a.m. to 11:00p.m. in a Residential Zone, is to:

- Permit the operation of loudspeakers and amplification of sound for the duration of the event.
- Allow for certain noise during set up and take down.
- Support an exemption from the unreasonable noise provision for the duration of the event.

Notice of Intent to Neighbouring Residents

A notice of the noise exemption request was issued in the Town Crier and the event organizers hand delivered 195 notices to residents with 120m of the event location. The deadline for comments due back to staff and organizers was Friday, June 28, 2024. To date, no responses have been received.

Playmakers! Theatre School have hosted annual lantern events safely and successfully in the City of Stratford since 2017 however as amplified sound is now being incorporated an exemption to Noise Control By-law 113-79 is subject to Council review and final approval.

Financial Implications:

There are no financial implications because of this report.

Alignment with Strategic Priorities:

Work Together For Greater Impact

This report aligns with this priority as it is a community-based event featuring local talent which strengthens the culture of the community.

Alignment with One Planet Principles:

Health and Happiness
Encouraging active, social, meaningful lives to promote good health and wellbeing.

Culture and Community
Nurturing local identity and heritage, empowering communities, and promoting a culture of sustainable living.

Travel and Transport
Reducing the need to travel, encouraging walking, cycling and low carbon transport.

Staff Recommendation: THAT direction be given on the noise exemption requested by the Playmakers! Theatre School for the Stratford Lantern Parade event on Saturday, October 19, 2024, from 8:00 a.m. to 11:00 p.m. from the following provisions:

- **Unreasonable Noise [Schedule 1 clause 8];**
- **The operation of loudspeakers and amplification of sound [Schedule 2 clause 2];**
- **Loading and unloading [Schedule 2 clause 4].**

Prepared by:	Heather Denny, Events Coordinator
Recommended by:	Tim Wolfe, Director of Community Services
	Joan Thomson, Chief Administrative Officer

MANAGEMENT REPORT

Date: July 24, 2024
To: Infrastructure, Transportation and Safety Sub-committee
From: Nick Sheldon, Project Manager
Report Number: ITS24-016
Attachments: 1) Management Report, May 2, 2014 Reconstruction,
2) Newton Group email and Report Parking Structure Options (including 2 attachments, maps)
3) Management Report, April 24, 2019 (including 2 attachments),
4) Read Voorhees Assessment 1988,
5) Downtown Parking Strategy 2016

Title: Erie Street Parking Lot Surface Treatment

Objective: To provide Council with background and options for proceeding with necessary repairs and surface treatment of the Erie Street parking lot.

Background: The Erie Street Parking Lot infrastructure is at the end of its service life and significant aspects of the lot are in a state of significant disrepair including pavement, stairs, retaining wall, lighting, and storm infrastructure. This has been identified for several years, as evidenced by previous reports attached.

- Management Report May 2, 2014 Erie Street Parking Lot Reconstruction
- Newton Group October 20, 2014 Parking Structure Options email and attachments
- Management Report, April 19, 2019 Erie Street Parking Lot Improvements Open House and attachments (comments, maps)
- Read Voorhees Assessment of Structured Parking on Erie Street Lot – September 1988
- Downtown Stratford Parking Strategy 2016 –Summary

Emergency repairs have been performed in the past but will not address ongoing issues and associated liability until it can be completely rehabilitated or replaced. A project outlining surface treatment requirements was initially approved in the 2022 budget, to be funded from the Parking Reserve Fund. It was unable to commence due to legal barriers related to easements on site. During budget deliberations 2024, this recurring item was discussed again, with options being to resurface or reconstruct. These

discussions did not further the project as the option to not proceed, but instead consider other longer-term solutions for this core downtown space such as a parking garage and/or other development.

Should those latter options wish to be explored the barriers around easements still exist and will likely take significant legal work and time to negotiate around those.

The City also received funding for the installation of EV Charging Stations. The Erie Lot was selected for the installation of level 2 and level 3 chargers. In order to retain the funding, the stations must be operable by January 2025. This means the EV Charging Stations must be installed in 2024.

Analysis: Staff are suggesting there are two options for the shorter-term for Council's consideration; resurfacing or reconstruction.

1. Resurfacing

The intent of a resurfacing project is to address the most pressing concerns to a point that risk is mitigated. The largest component of the work in this case would be resurfacing asphalt as well as storm basin repairs. Resurfacing the parking lot would renew the parking lot for up to another 25 years. Spot replacement and repairs could be considered for the stairs, concrete median and curb, retaining wall, and lighting to contain costs. If the intention is to repurpose the site for a different function, it is recommended to proceed with the bare minimum work as to keep costs as low as reasonably possible. Avoiding costly reconstruction work would mean that there would be no essential changes to the existing design. Based on Staff capacity, the goal would be to have design work required for tendering be completed this Fall, with resurfacing proceeding late spring 2025.

It is estimated that proceeding with minimal storm catch basin rehabilitation scope and resurfacing would cost $750,000. This scope would not include charging stations (as they would be installed in 2024), lighting, bike parking, retaining wall or stairs improvements. Pricing has not been estimated for this work but is expected to be an additional $200,000 to $400,000 depending on selected improvements. This work is not included as the intent for resurfacing is to provide an interim solution to figure out the overall goal of this public space.

2. Reconstruction

Proceeding with a reconstruction project would mean that the site would be redesigned to meet current standards with an expected design life of 40-years and be reorientated to meet the needs of all its users. This would have greater impacts to the number of parking stalls, accessibility, stormwater management, and how the easements function. Past attempts to move this project forward have encountered one main obstacle, being how to make the necessary changes to several existing easements that are in favour of adjacent businesses who are hesitant to change a system that works for them. An

overall redesign will require significant staff time to design and facilitate the necessary easement negotiations and corresponding agreements. The earliest date for design finalization and to have agreements in place to facilitate construction would be 2026.

Full reconstruction is estimated to cost $2,000,000. This exceeds the 2025 approved expenditure, however, there are sufficient funds in the Parking Reserves R-R11-PRKG to cover these extra costs.

Not proceeding with either of these options in the immediate future will result in increasing risks of claims against the City. The discontinuity in surface regularity, lighting and other failing infrastructure, will continue to result in avoidable claims that can be expensive to resolve, for which the City can be held liable.

Resurfacing the Erie Street Parking Lot essentially avoids changing any of the characteristics of the Parking Lot, including the several legal easements that exist within it.

Reconstructing the Erie Street Parking Lot will include a redesign and alter the way the parking lot functions. As a result, several of the legal easements would likely require to be developed, amended, or removal.

Action has not been taken around the previous reports, and some of this has been due to the desire to explore the Cooper Site in conjunction with this parking area. While the Cooper Site is now progressing from five-to-ten years ago, finalization of the site in its entirety is still into the future and likely more than a few years away.

Therefore, Staff are recommending the resurfacing option to allow Council to explore any alternatives over this or coming terms of Council that could have a further reaching impact to the downtown core.

Financial Implications:

Financial impact to current year operating budget:
There would be no impact on the current year operating budget with either option, as both are funded from existing reserve funds.

Financial impact on future year operating budget:
Resurfacing or reconstruction will reduce the frequent small to medium repair work done year-round by the Public Works Division.

Link to asset management plan and strategy:
The parking lot is part of the asset management plan, and the asphalt condition and storm infrastructure would be updated to reflect the new investment. Future asphalt and storm replacements will be planned for based on estimated useful life. The adjustment to the asset management plan will impact future capital planning forecasts and funding strategies will be updated accordingly.

Legal considerations:
None noted.

Alignment with Strategic Priorities:

Enhance our Infrastructure
This report aligns with this priority as the surface treatment options address aging infrastructure that is in poor condition.

Intentionally Change to Support the Future
This report aligns with this priority as consideration is given to the sustainable needs of parking lot users, including supporting active transportation.

Alignment with One Planet Principles:

Equity and Local Economy
Creating safe, equitable places to live and work which support local prosperity and international fair trade.

Travel and Transport
Reducing the need to travel, encouraging walking, cycling and low carbon transport.

Staff Recommendation: THAT Council authorize staff to proceed with the design and issuing a tender for the resurfacing of the Erie Street Parking Lot at this time.

Prepared by:	Nick Sheldon, Project Manager
Recommended by:	Taylor Crinklaw, Director of Infrastructure Services
	Joan Thomson, Chief Administrative Officer

Stratford
ONTARIO CANADA
Dramatically Different!

Director
Infrastructure & Development Services Department

MANAGEMENT REPORT

Date: May 2, 2014
To: Corporate Leadership Team
cc:
From: Ed Dujlovic
Re: Erie Street Parking Lot Reconstruction

OBJECTIVE: Finalize the design for the reconstruction of the Erie Street Parking Lot.

BACKGROUND: Presentations were made to City Centre Committee and Protection to Persons and Property on April 15th and 16th respectively, on the proposed reconstruction of the Erie Street Parking Lot. A total of 5 scenarios were developed and narrowed down to 2, Scenario 4 and 5, following input from the public. The design impacts are as follows:

Erie Street Parking Lot Rehabilitation

Parking Conditions

	Number of Parking Stalls					Hard Surface m^2	Green Space m^2	% Hard Surface	% Green Space
	Upper	Lower	Street	Accessible	Total				
Existing Conditions	55	81	12	5	153	6560	210	97%	3%
Scenario #4 - Relocate Entrance & Remove Retaining Wall	39	73	10	5	127	5840	930	86%	14%
Scenario #5 - Remove Entrance & Remove Retaining Wall	42	79	14	5	140	5780	990	85%	15%

*Hard Surface and Green Space based on proposed conditions and final numbers may change based on Community Services feedback

*Number of parking stalls are not counting designated spots for businesses

Dimensions & Typicals

	Stall Dimensions		
	Depth	Width	Drive Aisle
Existing Conditions	5.2	2.7	Varies (7.3 to 4.5)
Proposed Conditions	5.8	2.8	7.0
Typical Conditions	6.0	2.8	7.0

Concerns were raised by a number of businesses with regard to the proposed designs. Generally, they did not support the reduction in available spots to allow for green space and that short term individual metered parking was required. A number of City Councillors agreed and suggested that the proposed green space areas be reduced in order to maximize the number of parking spots.

At the April 28th, 2014 Council Meeting, staff was also requested to provide a report on the development of a parking garage. In spring of 2005, the City issued an RFP for the development of the Erie Street Parking lot. The development of the site included a parking garage, minimum of 200 spots for public parking, that was to be owned and operated by the City, and a Hotel and ancillary uses that would be owned by the proponent. Three submissions were received with costs of approximately $16,000 to $20,000 per parking spot.

Concerns were expressed by a number of downtown businesses. Their preference was that a parking garage be located elsewhere and that short term surface parking was required. They also conducted a survey of customers which indicated that the majority would not use a parking garage.

ANALYSIS: In proceeding with the parking lot design a number of factors need to be considered such as:

Planning Act
"development" means ... the laying out and establishment of a commercial parking lot.

Site Plan Control By-law
- The City of Stratford uses the same definition of "development" as exists in the Planning Act.
- If a private property owner wanted to alter an existing commercial parking lot to the extent that they were establishing a new layout, relocating driveways, altering grades and connecting to City services, we would require them to go through site plan approval.
- Similar to what occurred for the splash pad, the City should submit an application for site plan approval for the parking lot to ensure proper circulation of the proposal and to demonstrate a consistent application of municipal standards for all development. Also consistent with the splash pad, we would not enter into a Development Agreement with ourselves or require securities.

Existing City of Stratford Landscape Guidelines
- Landscaping should be used to mitigate the visual impacts of parking areas.
- Enhance the public perception of a proposed development in terms of aesthetic quality, comfort and convenience of pedestrian and screening of less attractive elements of development (screening of parking, service and storage areas). This can be accomplished through the use of landscaped islands and buffering planting strips.

Proposed Urban Design and Landscape Guidelines
- Planting strips, landscaped traffic islands and/or paving articulation should be used to define smaller "courts", improve edge conditions, provide pedestrian walkways and

screen storage and utility areas. The amount of landscaping should be proportionate to the overall parking lot size.
- Major internal vehicular routes should be defined by raised and curbed traffic islands planted with trees and low level vegetation to maintain visibility.

Proposed OPA Sections
- **4.4.8 Parking** The supply, cost and convenience of parking in the 'Downtown Core', both on-street and off street, is considered a vital element to its continued economic health. The City will, therefore, maintain and increase (where feasible) the supply of parking in the 'Downtown Core'. Where redevelopment or traffic management measures would lead to a loss of municipally owned or operated, off-street parking or on-street parking, every effort will be made to ensure an equivalent amount is provided at a comparable cost and location.
- **4.4.1.v)** To make more efficient and productive use of municipally owned land used for public parking in the Downtown while at the same time not abandoning the City's long practice of providing convenient, inexpensive parking.
- **6.2.3 Streetscape Design** vii) parking areas for non-residential uses or apartments or other large scale residential uses shall be designed to minimize areas where they directly front on the street, and where they do front on the street to reduce their visual impact both on the adjoining streetscape and on users by:
    - a) screening of the parking lot at the street through the use of such features as low fences, walls and a substantial landscaping buffer, excluding the area of any buildings and driveway crossings;
    - b) locating the building and parking on the site in a manner which reduces their impact on the street, and where buildings are located close to the streetline, no parking shall be permitted between the buildings and the street;
    - c) a reduction in the scale of large parking areas through their compartmentalization into smaller areas by means of landscaping; and,
    - d) joint access where feasible

Although the above guidelines do not provide the percentage of area to be landscaped, the 3% that that is currently provided is not sufficient.

At the request of Corporate Services, Engineering is also looking at design options for the Downie/Cooper site to increase the number of parking spots and provide parking for motor coaches. Preliminary designs indicate the potential of an additional 200 spots. Surface parking can be provided at a cost of $4,000 to $5,000 per spot and parking garages at $20,000 to $25,000 per spot.

FINANCIAL IMPACT: A budget of $500,000 has been established for the Erie Street parking lot redevelopment. The funding will be provided by the Parking Reserves.

STAFF RECOMMENDATION: Staff proceed with design of the Erie Street Parking Lot with increased landscaping and in addition to Pay & Display Machines installing parking meters to provide short term parking and;

Staff continue with design options to increase parking at the Downie site.

Joan Thomson

From: Andre Morin
Sent: October-27-14 2:00 PM
To: Charlene Lavigne; Joan Thomson
Subject: FW: Parking Structure - 91 Erie Street, Stratford
Attachments: Stratford PBP ltr Oct 16 14.pdf; SK 001 Siteplan Option 1.pdf; SK 002 Siteplan Option 2.pdf

FYI

André Morin, CPA, CGA
Director of Corporate Services
City of Stratford
P.O. Box 818, 1 Wellington Street
Stratford, ON N5A 6W1
Phone: (S19) 271-0250 Ext. 201
Fax: (S19) 273-5041
Email: amorin@stratfordcanada.ca
Web: www.stratfordcanada.ca

From: Ed Dujlovic
Sent: Monday, October 27, 2014 10:13 AM
To: Andre Morin
Cc: George DeGroot
Subject: FW: Parking Structure - 91 Erie Street, Stratford

Andre,

Please see attached. For Option 1 the cost is $35,000 for each net spot and for Option 2 $24,000.

Ed

From: Joanne Bertrand [mailto:jbertrand@Kiwi-Newton.com]
Sent: October-20-14 8:36 AM
To: Ed Dujlovic
Cc: Ed Newton; Thomas Koester
Subject: Parking Structure - 91 Erie Street, Stratford

Good morning Ed,
Please find attached a preliminary budget letter for the proposed parking structure in Stratford at 91 Erie Street. As you will see from the draft drawings, we have relocated the structure to provide you with the most cost efficient solution for

that property and we have also provided you with two different options for your review and discussion. Please review the attached and don't hesitate to contact me should you wish any further information.

Best regards,

Joanne Bertrand | T 519 822 5281 x 225
Sales & Marketing Manager | F 519 822 6159
41 Massey Road | jbertrand@kiwi-newton.com
Guelph ON Canada N1H 7M6 | www.kiwi-newton.com

Newton Parking Structures Ltd.
41 Massey Road
Guelph Ontario Canada
N1H 7M6
T 519 822 5281
F 519 822 6159
www.kiwinewton.com

October 16, 2014

City of Stratford
82 Erie Street, 3rd Floor
Stratford ON N5A 2M4

via email: edujlovic@stratfordcanada.ca

Attn: Ed Dujlovic, P.Eng.
Director of Infrastructure and Development Services

Dear Ed,

Re: Parking Structure
91 Erie Street, Stratford

Newton Parking Structures Ltd. is pleased to provide the following preliminary budget numbers for the parking structure at 91 Erie Street, Stratford.

We are providing you with two different options for your review and discussion. Please review the attached drawings. We have relocated the parking structure to run parallel to Erie Street. This will maintain a reasonable setback to the existing buildings on neighbouring properties. There are no obstructions for delivery traffic to access the rear of the stores. The ramp location at the rear of the structure allows for a comfortable turning space for inbound and outbound traffic towards the parking structure and sufficient queuing area for vehicles entering and exiting the structure. One suspended level maximizes the relation between traffic area and amount of parking stalls. It also optimizes the cost per stall.

Option 1:
51 stalls on the upper level
Loss of 10 stalls at ground level to allow for ramp
Loss of 2 stalls at ground level to allow for staircase area
Total number of stalls in structure: 114
Net additional stalls: 39

Option 2:
71 stalls on the upper level
Loss of 10 stalls at ground level to allow for ramp
Loss of 2 stalls at ground level to allow for staircase area
Total number of stalls in structure: 154
Net additional stalls: 69

These counts are draft only and may fluctuate based on precise site measurements and the final design.

Newton Parking Structures Ltd.

Newton Parking Structures Ltd. includes the following scope of work for both options to complete the parking structure building including labour, material, equipment and all other supplied and installed:

1. Engineering (Structural and M&E) and Project Management including stamped drawings to go with the project permit set.
2. Detailed design work, project management, procurement and mobilization
3. Foundation including footings, retaining walls, earthwork as per our attached drawings.
4. The CANADACAR Parking Deck structure system including: hot dip galvanized steel columns, beams, bracing, anchor bolts, precast footings and retaining walls with connections for the complete structural steel system. The beams will span the 18.0m to match the parking bays and aisles with no columns in between parking spots.
5. Precast floor plates and precast ramps with protective topping at grouted joint areas. Parking stall size is 5800mm x 2750mm on ground level; parking stall on upper level and underneath the ramp area is 5500m x 2750mm. Aisle width is 7000mm. Floor to floor height provides for 2100mm clear height under this structure.
6. Galvanized non climbable mesh façade at open perimeters where fall protection is needed with hot dipped galvanized traffic bumpers and a galvanized pipe guardrail system.
7. Stainless steel floor drains set into the deck plates and drained into an underground storm pipe system with downpipes. The drain system for the ground level will remain. No heat tracing, insulation or elbow traps included as it is assumed silt and gas traps will be underground, sanitary and storm.
8. Electrical lighting, internal, strip fluorescent fixtures in T5 series or equivalent throughout parking structure plus outdoor lighting posts at the upper level. These lights will also provide sufficient illumination for the parking areas east of the structure. If the roof option is taken, there will be fluorescent light fixtures instead of the light posts.
9. Two (2) enclosed stairhouses with roof, stairs, fire door, lights, exit sign and glass and/or precast panels at outer walls.
10. Basic signage, non-LED or non-lighted.
11. Façade of the front side can be integrated into the proposed landscaping by adding "green wall" segments.
12. Engineering for all of the above including stamped drawings.
13. The services are assumed to be brought to within 1.5m of parking structure building.

Not included:

1. Architectural overview drawings and site plan
2. Application for and payment of site plan approval fee, development fees, building permit by owner.
3. No mechanical ventilation or sprinkler systems are required as the façade has more than 25% opening per level in the façade.
4. Roof, except there are roofs on the two stair shafts. The roof above the entire parking structure is priced separately below.
5. Pumping down of ground water in case it is above the footing line
6. Cost for asphalt underneath the parking structure is not included. It is assumed that the proposed parking lot will be built by others after the parking structure is completed.

Newton Parking Structures Ltd.

7. Removal of environmental contaminants or objects in the ground other than soil reported.

Option 1:
As a turnkey DESIGN+PREFAB+BUILD project, 39 net additional spaces designated as a parking structure utilizing the CANADACAR parkade, total including General Conditions are as follows:

Total Cost Budget: $1,367,297. + HST

Price for optional roof: $332,992. + HST

Option 2:
As a turnkey DESIGN+PREFAB+BUILD project, 69 net additional spaces designated as a parking structure utilizing the CANADACAR parkade, total including General Conditions are as follows:

Total Cost Budget: $1,649,855. + HST

Price for optional roof: $445,597. + HST

Schedule

The time frame of onsite construction, start to finish, is estimated to be six (6) months. During the detailed engineering and drawing phases and while the permit application is being approved, Newton Parking Structures will begin on the pre-fabrication of the steel and precast concrete works well in advance of the construction schedule. The minimum lead time from rewarding the contract to start on site is four (4) months. A detailed schedule will be coordinated and charted as the project progresses.

NOTE: This quotation and prices are valid for 60 days from the date of this letter.

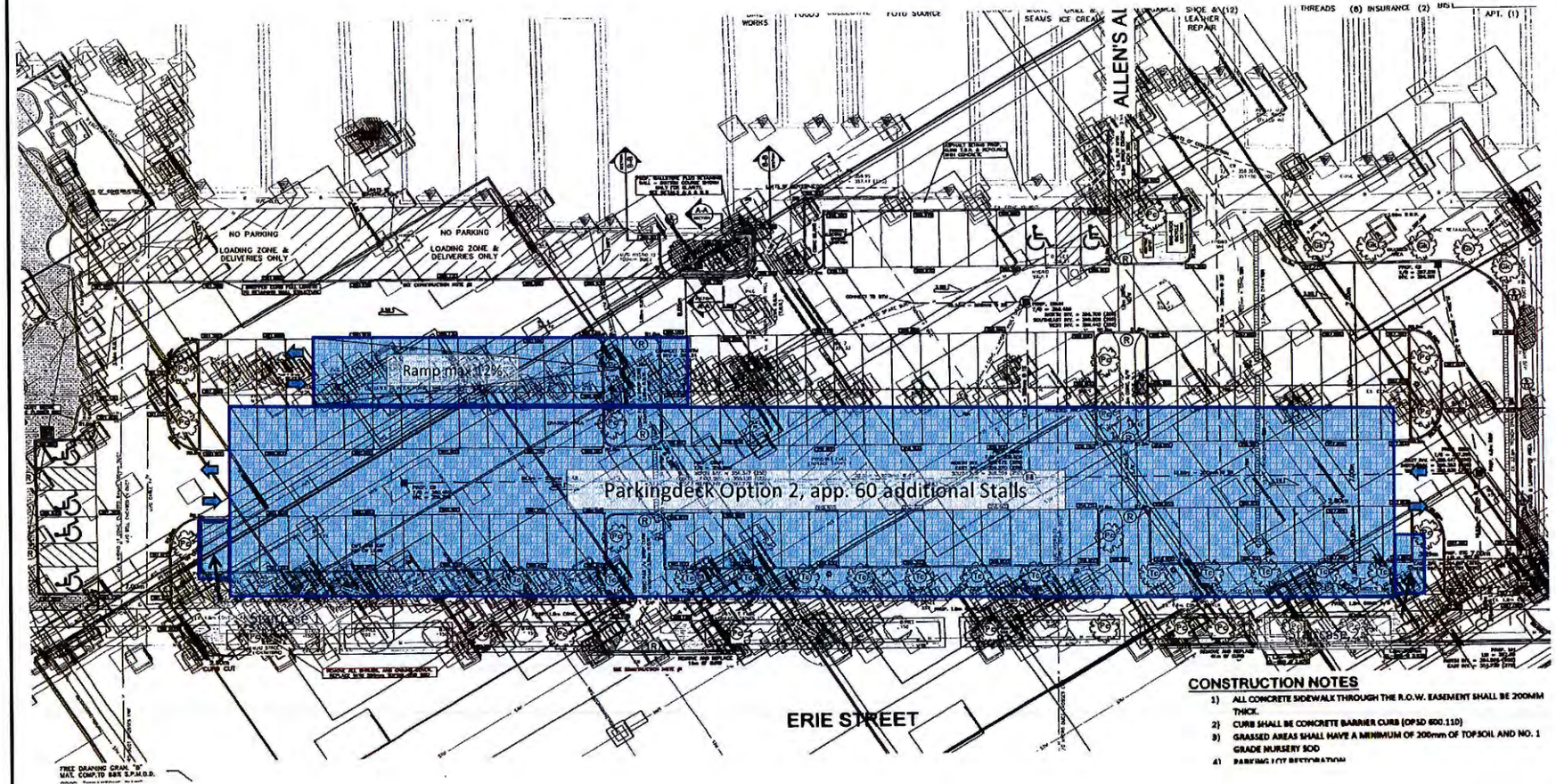
Thank you for the opportunity to provide this quotation. Please don't hesitate to contact us for further discussion or clarification. We look forward to working with you on this project.

Yours truly,

NEWTON PARKING STRUCTURES LTD.

Edwin (Ed) Newton
President

MS:jb
Encl.



NOTES:

Newton Group
NEWTON GROUP
41 MASSEY ROAD
GUELPH, ON N1H 7M6
Tel.: 519-822-5281

PROJECT:

91 Erie Street
Municipal Parking Lot

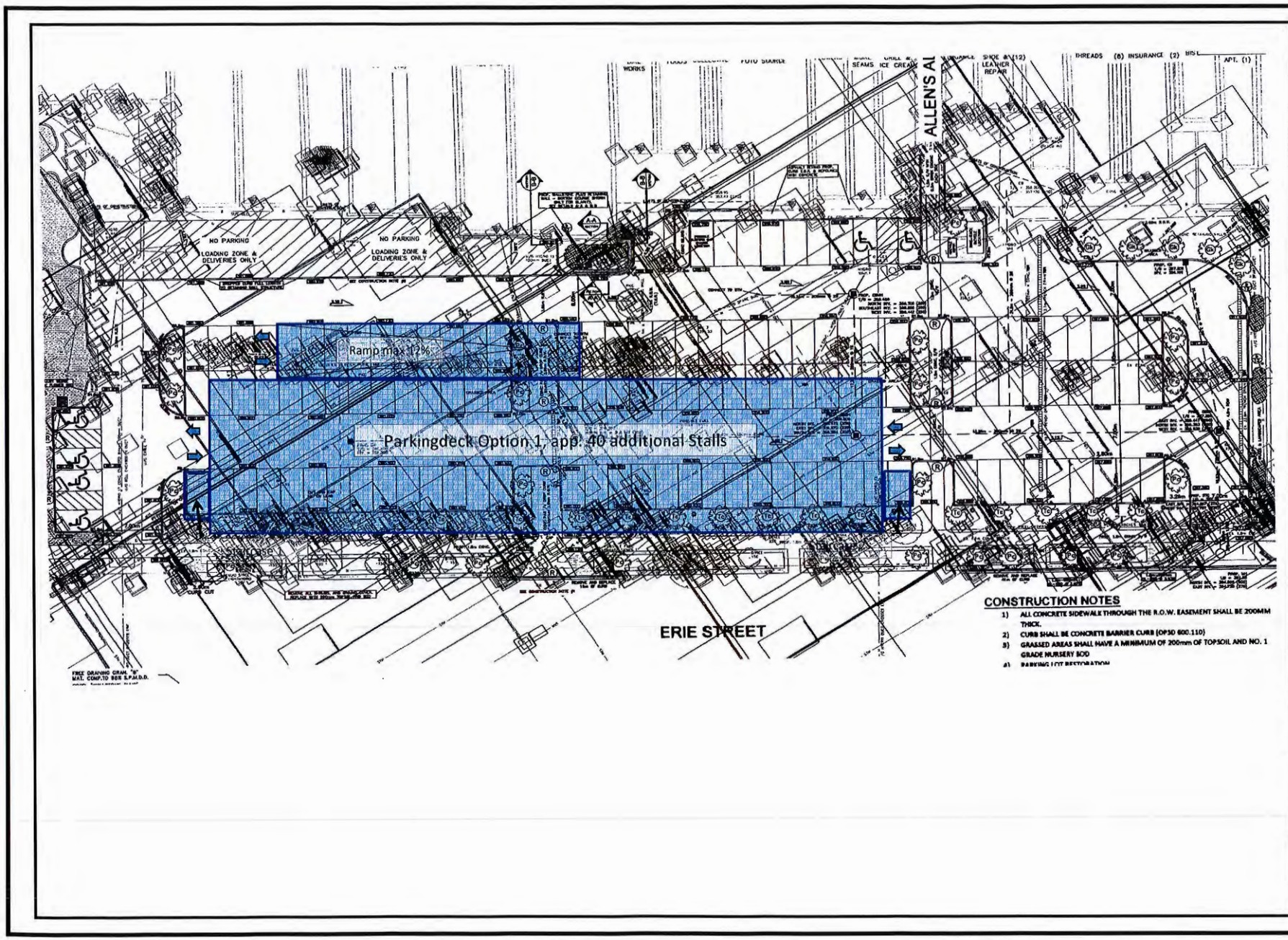
TITLE:

Site Plan
Option 2

DRAWING NO.:

DRAWN BY:

DATE:



NOTES:

Newton Group

NEWTON GROUP
41 MASSEY ROAD
GUELPH, ON N1H 7M6
Tel.: 519-822-5281

PROJECT:

91 Erie Street
Municipal Parking Lot

TITLE:

Site Plan
Option 1

DRAWING NO.:

DRAWN BY:

DATE:

[eSCRIBE Department]

MANAGEMENT REPORT

Date:	April 24, 2019
To:	Infrastructure, Transportation and Safety Sub-committee
From:	Tatiana Dafoe, Deputy Clerk
Report#:	ITS19-032
Attachments:	Erie St Parking Lot 2019 Open House Summarization Erie St Parking Lot 2019 Comments Received

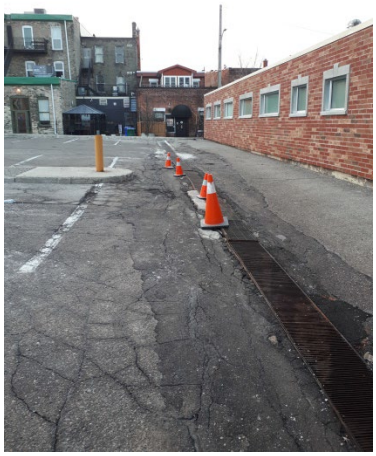
---

Title: 2019 Erie Street Parking Lot Improvements Open House

Objective: To present the comments and concerns from the open house on the Erie Street parking lot improvements.

Background: The Erie Street parking lot contains 141 parking spaces and is located in the downtown core of the City of Stratford. In 2014, City staff undertook a review of reconstructing the Erie Street parking lot and following completion of the review, the project was deferred and no improvements were made.

The infrastructure in the Erie Street parking lot is nearing the end of its service life. The pavement structure requires replacement and its current state of disrepair resulted in sections of the storm infrastructure failing in 2018 as the image shows below.



As a result, motorists were unable to drive over this section and an emergency repair was undertaken. This reduced parking and the overall functionality of the parking lot as repairs were being prepared and made. Repairing infrastructure as it fails does not address the issue and is often more costly. More involved maintenance will be required for the parking lot until it is completely rehabilitated or replaced. The pavement structure shows signs of substantial fatigue and overall failure. The retaining wall structure shows signs of deterioration. A detailed assessment and design may improve upon existing conditions in a cost effective manner. In preparing to address the deteriorating infrastructure nearing the end of its service life staff included funds in the 2019 Parking Capital Budget to undertake a review of the Erie Street parking lot, including consideration for design and reconstruction once again.

Analysis: On February 22, 2019 a notice of Open House containing project information was mailed to property owners and residents within 120m of the lot. Information about the open house was also included on the City's website and social media sites and in the Town Crier.

The open house was held on March 6, 2019, in the City Hall Auditorium from 4:00pm - 6:00pm. The Deputy Clerk, the Customer Service Clerk II from the Clerk's Office, the Project Engineer, and the Engineering Design Technician were available throughout the open house to answer questions raised by attendees. Individuals who were unable to attend were asked to submit comments through the City's website by March 20, 2019.

A total of 13 people were in attendance at the Open House and a total of 17 comments were received by the deadline of March 20, 2019.

Attached to this report is:

- An open house summarization containing a detailed list of questions asked at the open house and staff's corresponding responses and responses to activities from the open house; and a
- list of feedback received on the comment cards and through the City's website.

Overall, the project received both positive and negative responses. A majority of responses indicated there should not be a loss of parking as a result of this project. Staff are in agreement and hope to maintain or increase the number of parking spaces in this lot. Additional comments include:

- keep the design of the lot status quo and address infrastructure issues;
- do not construct a parking structure;
- construct a parking structure;
- improve pedestrian and vehicle sightlines;
- remove an entrance to improve sightlines;
- do not remove an entrance;
- do not remove delivery zones;
- complete construction in two phases to minimize impact on businesses;
- create a cycling path through the lot to Allen's Alley;

- add additional short term parking; and
- a traffic study should be done on vehicle queueing at the Erie Street and Ontario Street intersection as it may impact the functionality of the parking lot.

The next step of this project is to prepare a conceptual design with preferred options. The design and preferred options would be presented at a public open house to seek feedback. Following the collection of feedback, staff will prepare a second report recommending a preferred design.

At the Open House, staff presented the following tentative schedule for this project:

March 6, 2019	Open House – Information Gathering
April 24 – May 28, 2019	ITS Sub-committee, Committee & Council – Report on Feedback (For Information Purposes Only)
June 2019	Open House – Conceptual Design with Preferred Options
July 22 – Sep 6, 2019	ITS Sub-committee, Committee & Council – Report Re: Selection of Preferred Design
November 2019	Detailed Design and Construction Open House
Nov 27 – Dec 16, 2019	ITS Sub-committee, Committee & Council – Open House Feedback Report
January 2020	Tender Issued (subject to budget approval)
February 2020	Tender Closed
March 1, 2020	Construction Starts

Financial Impact: The 2019 capital budget included $100,000 to evaluate the condition of the Erie Street parking lot, gauge public opinion and develop a design plan for desired improvements.

Staff intends to forward the construction of the project to the Finance and Labour Relations 2020 Budget Committee for consideration as part of next year's draft budget submission.

Staff Recommendation: THAT the report entitled "2019 Erie Street Parking Lot Improvements Open House" be received for information.

_____

Tatiana, Deputy Clerk

_____

Michael Humble, Director of Corporate Services

_____
Rob Horne, Chief Administrative Officer

Corporate Services Department
Clerk's Office
1 Wellington Street
Stratford ON N5A 6W1

(519) 271-0250 Ext. 237
www.stratford.ca

March 6, 2019

Erie Street Parking Lot Improvements Open House
Questions, Comments and Responses

The following list includes questions, comments and responses generated from the Erie Street Parking Lot Improvements Open House, held March 6, 2019, from 4:00 pm to 6:00 pm at the City Hall Auditorium.

Question 1: Will there be development on the site or a parking structure?
Response 1: No it is not anticipated that development will be considered. A parking structure is being considered, along with a variety of other options.

Question 2: Will a parking study be undertaken?
Response 2: No a parking study will not be undertaken. The study completed in 2015/16 advised there is sufficient parking in the downtown core and this study accounted for changes to the parking inventory such as the removal of parking spaces in Market Square

Question 3: When would construction commence?
Response 3: The earliest start date for construction is March 2020.

Question 4: How would construction be completed, in one phase or two?
Response 4: While it would depend on the design, construction could be completed in two phases to limit the impact on residents and businesses. Consultation would be undertaken on preference for completing construction in one or two phases.

Question 5: What is the purpose of the Erie Street Parking Lot Improvement project?
Response 5: Purpose is to develop and plan for addressing infrastructure deficiencies and issues. This process will consider all options including, but not limited to, keeping the lot status quo, reconstruction and a parking garage.

Question 6: Will accessible parking spaces be maintained?
Response 6: Yes, accessible parking spaces will be maintained.

Question 7: How many spaces were proposed to be lost with the original design for the lot?

Response 7: It was suggested 30 spaces were going to be lost with the original design presented in 2014 but that number could not be confirmed.

Question 8: How many parking spaces could be lost and what will affect the number of lost spaces?
Response 8: Until a design is completed we are unable to advise how many spaces could be lost. The intent is to maintain or increase the number of parking spaces, however the City needs to comply with current City standards outlined in the Zoning By-law which could affect future designs.

Question 9: Is this project redundant if the Cooper site is developed?
Response 9: No, the infrastructure in the Erie Street parking lot has reached its end of life and improvements will have to be made to ensure it is safe for use and there is not a timeline for development at the Cooper site.

Question 10: If a parking structure is not added at Cooper and one is required at the Erie Street parking lot does it make this work redundant?
Response 10: No, improvements still need to be made at the Erie Street parking lot as the infrastructure has reached its end of life.

Question 11: It was questioned why this project is being considered now?
Response 11: Following the failure of infrastructure in the lot in 2018 staff identified the need to develop a plan for addressing the infrastructure issues in the lot. As part of this review, staff are considering all options.

Comment 1: Consideration should be given to mailing notices to all residents in the City or including information in the tax bill.

Comment 2: Single space meters should be put back in the lots and the pay and display machines removed.

Comment 3: Parking spaces should be maintained or increased.

Comment 4: The parking lot should remain status quo.

Comment 5: Additional 30 minute spaces should be added.

Comment 6: The infrastructure issues should be addressed but the lot should remain as is.

Comment 7: Concern with removal of any entrance of the lot as it is difficult for delivery trucks to enter and navigate through to complete loading/un-loading. Reduction to two entrances will result in traffic back-up as turning left onto Erie Street is difficult during festival season.

Comment 8: Concern with creating one lot as grading will affect businesses with steps at rear entrances.

Comment 9: We do not need a pretty parking lot, but it can be prettier.

Comment 10: A parking structure should not be added to the Erie Parking Lot.

Comment 11: Consideration should be given to adding a parking structure to the Erie Lot.

Comment 12: Underground parking should be considered as an option.

The following comments were listed on the "I want to see..." display board:

1. Minimal to no loss of parking
2. A structure, multi-level
3. Increased parking, new structure
4. Possible retail/residential, multi-use building
5. No loss of parking
6. Below grade structure
7. Condo or hotel above to generate property taxes
8. Increase in spaces
9. Parking where the stores are, close, convenient
10. No loss of parking
11. No loss of parking spaces
12. Repair the asphalt and stairs as needed
13. Remove the flower boxes in the parking area and on Erie Street
14. No loss of parking – shelter over parking pay stations
15. No loss of parking!
16. 52 gone for a cement pad behind City Hall, enough!
17. No loss of parking
18. Maintain 3 entrance
19. Maintain grade
20. Fix infrastructure while preserving parking spots and keep spending to a minimum
21. One parking lot, one way in, one way out. Space for delivery trucks (Large)

Please share your comments on the Erie Street Parking Lot Improvement Project in the City of Stratford
Better communication regarding the process & project. Leave the Erie Street parking alone – just repair asphalt, stairs etc. Need parking that is short term and replace the standing alone parking meters back with the old meters – better use of time – now paying too much to park downtown during the year No parking garage or underground parking garage. Not considered safe for people or cars. Cost is more for residents. Remove planters between spaces – in winter time dangerous walking area Remove planters from side of road on Erie Street – causes more difficulty to get out of car on passenger side. Make Cooper Site parking for theatre patrons by providing all day parking for $5 -$10. Then residents of Stratford will have parking available all year not just from Dec to April. No hotel on the premises. Takes valuable parking space.
Maintain Type A accessible spaces suitable for accessible vans. Don't like location of accessible spaces near Allen's Alley as you cannot use a ramp in these spaces. The accessible space near CIBC is good. Snow covering aisle lines at accessible spaces. No parking signs should be added along with better snow clearing.
1. Validity of this survey is negated by the ability to respond anonymously. Why was it done this way?

2. Need for additional parking seems paramount by all. In a city that relies so heavily on tourism, parking supply has fallen behind demand. 3. The precise location of the Erie parking lot is ideal for a multi-level parking garage, as it resides both at the intersection of two high traffic highways as well as being central to downtown activities, 4. A multi-level parking lot at Erie would negate the need for so many parking spaces in Market Square, which should be a pedestrian oasis. I would suggest reducing Market Square parking to a few time ruled spots (a short term stopping zone). Note there would not be a need for disabled parking provided ground level spots were made available in the Erie parking garage. 5. These days, architects have been able to make above ground parking structures aesthetically pleasing. (hanging gardens, art murals, etc) 6. Perhaps in the design, some floors could be allocated to local large and small businesses, so that prime Ontario street shoppers' parking would be available to customers and not business owners and staff.
If you have to upgrade the existing sewer and drainage then do so but DO NOT loose any parking spots. Improved sight lines onto Erie St might be nice, but for many years people have figured it out, same with pedestrians, so we don't need pedestrian routes. We need more parking downtown where the stores are. So maybe consider making a parking garage, in either the upper or lower lot. If the City keeps getting rid of parking spot close to business then it will be on them, when said business close. and yes we could park at the cooper site, but I can't walk from the cooper site to the bank and then back again. So the bank and the pharmacy downtown have already lost my family's business because during the Festival season we can not find quick, close parking and we are but one family. Don't LOOSE any more parking downtown.
I'm in favour of repairs and improvements to existing facility, but strongly opposed to any spending on a tiered parking

structure.
Increase the safety of the lot should be a high priority. Too many near misses inside the parking lot and trying to exit onto Erie Street. Try to improve the beautification and signage from its current condition would be nice too. No parking structure!
- No loss of parking spaces - Remove parking on parking lot side of Erie Street, as sightlines are difficult when trying to exit from the parking lot
If one entrance was removed would that increase number of parking spots? In my opinion gaining parking is of most importance!!!
First, the passage that the city is referencing where people drive is called an "aisle", not an "isle", which is short for "island". What I want to see is an above-ground, aesthetically pleasing parking structure that takes the pressure off the Market Square parking, so it can be eliminated entirely -- eventually. Keep it open, airy and safe, not just with lights but with other means as well. Make the rate there as low as possible for a three year period, to incentivize and train people to park there. Yes, it would be expensive, but let's remember that it is a long-term investment, not a short term expense. Create a lane behind the Wellington St. stores to allow deliveries. At the same time, install proper theft-proof bike racks both on the ground floor of the structure and along Wellington St., but taking one or two parking spaces for bikes.
I would not like to see the loss of any parking spaces in this parking area.
Maintain or increase parking spaces, improve sightlines at Erie Street, potential structure & better payment system. I work downtown and hear from a number of people, particularly seniors, who do not understand the pay by plate

machines that they have stopped parking in the lots and circle the streets or park illegally and unsafely, or simply don't come downtown anymore.

I think the lot works pretty well the way it stands, however I believe it needs repair in some areas, I think making it one complete lot with one entry and one exit makes sense. This would create more spaces.
It would be great if the construction could be done in sections to minimise disruption to business.also perhaps at a time of year when business is slower

I also feel that people don't know about the lot, perhaps it could be promoted more and Allens alley could be promoted also as easy access to downtown

I would not like to see any loss to the delivery zones behind the Wellington Street businesses. I'm attaching a picture from yesterday to show how busy it gets.

Hope that a solution is found that helps business, patrons and Stratford in general.

I feel that the Erie street lot has functioned well at providing parking for the downtown as it is for the past 40-50 years and as such the design should be maintained as is. There is a need to keep 3 entrances/exits in order to allow the proper flow of vehicles and delivery trucks in and out of the lot without causing major backups for those exiting or entering the

lot. If the middle entrance were to be closed, the northern exit would be backed up and nearly impossible to turn left out of due to the traffic that is often waiting to cross Ontario street especially in the tourist season when many cars are heading down to the river and the theatre. If one of the many delivery trucks is unloading in the lot, traffic will again be backed up if there is not some sort of break in the rows of parking. I also feel that changing the grade will negatively impact our back door traffic and deliveries which we rely heavily on from our many couriers and Canada Post delivery vehicles for our postal outlet. I also feel it will impact the private parking area behind Ross's Bikes, Sirkel and Carmans. We cannot afford to lose any parking spaces out of that lot as we have already lost many in front of our businesses. I feel that with the city's large debt load that the least expensive option to repair the infrastructure in this lot should be explored and that the usefulness of the lot should be maintained which means fixing the drainage, and repairing the base and resurfacing the lot while removing the old worn out benches and bricks and repairing the retaining wall. This could be done in two stages, one in each end of the lot so as to reduce the impact of the construction on surrounding businesses customers. By only repairing the lot rather than redesigning it, new codes will not be needed to be met and we can maintain the existing inventory of parking spaces.
Thank you.

On a personal level I live close enough to downtown that I walk for almost all my errands, but if I am going to buy anything heavy or multiple purchases I do like to have a car close enough by that I can drop things off at. For business, I park downtown three to four times a week, for either 15mins or about one to two hours. I appreciate that I can park close to the businesses that I work for and would like that to continue. Walking from the Cooper Site really isn't an option due to time constraints, being able to park close to the business is the only way I can meet my deadlines in a day.
Any loss of parking spaces in this area will make it harder for some of the downtown business to continue business as usual. Many companies make deliveries (sometime of heavy objects) from their stores so being able to have a vehicle close at hand is the most cost effective. If the vehicle was parked away from the store, the cost of having to pay an employee to get the vehicle and then return it several times a day gets expensive.

I would like to see a feasibility study on a parking structure, I have seen other structures and they can be built to look quite nice with the correct green space and/or artistic flair. We could encourage longer term (employee) parking on the higher levels and leave the lower levels for those that only need short term parking. I wonder if we could get the Festival to rent one floor or section and they could sell passes to people for the Avon Theatre. I am not sure what the objections are about a parking structure but I think we should continue to revisit it as I believe that it is the truly the only solution

for the long run. Figuring out a better spacing/routing for delivery trucks would help the car drivers as well as the truck drivers.
I would like to see clear and safe routes for pedestrians. This is very important because all drivers become pedestrians when they get out of their cars!. Safe and inviting pedestrian paths leading to downtown are important. Secondly, I would like to see a marked cycle path. Cycling on the downtown streets (especially Ontario) is dangerous, and this parking lot provides a way to get to Market Square while avoiding some crazy intersections. If there could be a cycle path linked to Allen's Alley with signage for cyclists to dismount and walk through the alley, that would be ideal. There's cycle parking on Wellington that riders can walk to from there if they are staying in the area.
Loss of parking spaces in the downtown core should be done with extreme precaution and consideration. Possibility of construction done in stages, so part of lot is still usable at all times during construction. Alternate parking spaces available during construction and after if their is a loss of space. Consideration of increasing downtown parking spaces with parking garage/multi-level infrastructure. Public notice if there will be loss of parking spaces to the lot sent out publicly before construction plan is finalized.
There is absolutely no need for a parking structure in the Erie Street lot . On your average day the lot is not even close to being full. I strongly oppose the idea of taking money from the city's reserve fund for a parking structure. I understand that city counsellors may sometimes hear complaints from locals that they have trouble finding a parking spot directly in front of the store they are going too. But there certainly is parking available downtown especially if you're willing and able to walk a few blocks. Money from the reserve fund would be better used to add a pedestrian crossings (with painted lines on the roadways) in our city so that it's clear and easy for people to walk a few blocks from the parking that is already available.

CITY OF STRATFORD

ASSESSMENT OF STRUCTURED PARKING ON ERIE STREET LOT

SEPTEMBER 1988

READ VOORHEES AND ASSOCIATES
DON MILLS ONTARIO

TABLE OF CONTENTS

CITY OF STRATFORD
ASSESSMENT OF STRUCTURED PARKING ON ERIE STREET LOT

1. STUDY PURPOSE

The Downtown Development and Parking Committee has been reviewing the need for additional parking in downtown Stratford. City Council on June 27, 1988 approved a recommendation of the Committee to carry out a study of a parking structure on the Erie Street Lot. The study was to provide conceptual drawings and cost estimates for whatever structure was determined to be appropriate. Therefore, the analysis required identification of other items that afffect the feasibility of a structure on this site. This extends to a review of need, and a review of any alternatives to such a project that might be available.

In presenting this scope of work, the report covers the following topics:

- overview of parking needs in the downtown
- concepts for a structure on Erie Street
- site construction constraints
- functional design and appearance of the structure
- cost estimates
- financing
- alternatives to an Erie Street structure
- recommendations

2. OVERVIEW OF PARKING NEEDS

There are two types of parking activity that constitute the main demand for downtown space, short duration customer/visitor parking and longer duration or "all day" employee parking. The two types have quite different characteristics, and the requirements are best provided for in different ways. The principle need of the former is convenience and therefore prime

location relative to destination, while the latter has to be low cost to be attractive. There are of course variations within each of these two categories. Some visitor parking can be all day and therefore does not have to be in a prime location, and some employee parking is by people coming and going through the day and therefore has to be reasonably convenient. Nevertheless, as a general principle the short duration supply should be centrally located and the longer duration parking can be on the fringe of the downtown.

The design hour for the visitor parking component is a Friday afternoon. Currently in this design period the parking supply in the Albert lot and upper Erie lot, in Market Square, and the on-street parking around the centre core zone, are all used at or close to capacity. The privately owned Woolco underground lot is also full in the peak hours. These spaces form a well defined concentration in the centre of downtown which represents the high parking demand business activity zone.

The recent 1986 parking study indicated that it would be desirable to have about 50 more spaces for visitor parking within this heavily used core area. However, there is no easy way of adding spaces in these highly convenient central facilities. The consequence of not adding spaces is that the visitor demand is met at a slightly lower level of service in terms of more circulation and searching for space by drivers, and a longer walk from parking spaces that are available on the edges of this primary demand zone. Part of the supply on the edge of the core is the south half of the Erie Street lot.

A desirable feature of short term parking that currently is not available in Stratford is attendant parking. This service would mean that parkers need not worry about elapsed time nor have to predetermine how long they will be staying as is the case now with meters.

Employee parking is an all day demand and for design purposes is more or less the same on all weekdays. Employees obviously prefer as convenient a parking location as is possible, but to save cost a longer walking distance

is a trade-off that is readily made. The City has initiated efforts to increase the amount of employee parking available in the downtown, selling permits for some municipal lots, leasing space at the Zion and St. John churches, and just recently leasing part of the Cooper-Bessemer property for public parking. As downtown development proceeds and there is more employment in the area, there will be an increase in employee parking demand.

It is reasonable for the City to attempt to provide space for employee parking, but such projects have to be at reasonable cost, should not preclude future options, and must fit into the downtown fabric. The consequence of a shortage of employee parking is that there is some additional use of short term parking space which aggravates any visitor parking deficiency, there is use of local streets around the downtown for all day parking, and there is a ferreting out and use of less than ideal parking locations including increased use of yards and lanes for parking. To some extent when there is limited employee parking there is also a reduction of travel to the downtown by car, either by car pooling or transit riding. These latter two effects are desirable in principle, but the shift that actually occurs is not large and does not relieve the other symptoms noted above.

The best test of the need for and the adequacy of employee parking facilities is the usage of existing facilities. The free church lots are well used. The Cooper-Bessemer initiative with $1 per day parking is still quite new and the potential usage of this lot will not be indicated for several months since parking patterns only shift gradually.

The 1986 surveys indicated that 600 to 700 downtown employees have to find parking outside the core area each day. Some make private leasing arrangements and some seek out free on-street space. The net demand that the City should use as a guide for its efforts to provide employee parking is difficult to quantify because there is a varying relationship among usage and cost and location. There are several hundred potential parkers who would change their current parking habits if the price and location of a

given lot was attractive, but each alternative is unique in this assessment.

3. CONCEPTS FOR ERIE STREET LOT

The north end of the Erie Street lot is a suitable location for additional visitor parking that would serve the core zone as defined earlier. The south end is less convenient, but is one of the secondary locations that meets any central short term deficiency that develops. The lot is also very suitable for employee parking in terms of locational convenience, but such use should not be allowed to preclude the more important visitor parking supply.

The near term parking requirements do not justify a multi-level garage at this time. A parking structure in Stratford will only be justified if there is a pressing need for a significant amount of additional visitor parking. While there is always some proportion of garage use that is employee parking, the initial rationale to build a structure has to be based on serving visitor rather than employee parking. A structure for a large amount of employee parking is not usually practical as a municipal initiative. Therefore if a garage on the Erie Street lot is ever built, without it being part of a comprehensive redevelopment of the block, it should be at the north end of the site. A garage at the south end will not serve the prime downtown visitor demand quite as well.

Therefore if there was to be a structure built on the Erie Street lot at this time, a single level is the most that should be considered. The requirement for 50 additional spaces for visitor use is not a critical shortage, part of the alternative supply of spaces to meet this demand being on the south half of the same Erie Street lot. The difference in level of service that visitor spaces in a structure on the north half would provide does not warrant the cost of a garage or deck for this purpose.

It was noted above that use of the Erie lot for employee parking should not preclude its availability for visitor parking. The concept of a deck in order to add employee parking is a form of structured parking that is worth evaluating at this time. Whenever a deck concept is suggested it is prudent to consider the possibility of eventual expansion with additional floors, but in this case there is little likelihood of a multi-level garage being justified on the south end of the lot.

4. CONSTRUCTION CONSTRAINTS

The dimensions of the lot are sufficient to accommodate a reasonably efficient parking structure floorplate. However, there is the need to maintain service access to the adjacent property that fronts on Wellington and backs onto the Erie lot. Truck deliveries and garbage pick-up are made from the parking lot side of these existing buildings. Therefore it is necessary to maintain truck access to the rear of the properties on the east side of the lot. This means leaving a sufficiently wide lane adjacent to the buildings, and sufficient height clearance for trucks on the access to the service lane.

There are some utility lines and vaults on the parking lot that have to be either protected in their present location or relocated to allow construction of a structure. There is no physical limitation with the utilities, but this is a cost impact particularly if the vaults have to be relocated.

The site slopes form north to south, especially on the south half. A structure will have to adapt this condition into the layout and operation, but this is not a major problem.

The existing parking lot has been very attractively landscaped within the lot as well as along the Erie Street frontage, and there has also been a significant upgrading of the building faces alongside the lot. This standard should be maintained in any addition to the lot.

5. FUNCTIONAL LAYOUT

As discussed earlier, a single level is the most parking that can be justified on the lot at this time. The most efficient layout and design for a single level deck on the south half is shown on Figure 1.

The plan would create a deck over the south portion, starting at the break in elevation that now exists on the site. Parking is maintained over the entire lower level, but some excavation is required to keep the same number of spaces. The upper level essentially becomes a continuation of the surface parking level on the north portion of the lot, but sloping up rather than down as the ground level does now. The abrupt change in elevation is eliminated, so the raised deck would probably be more effective as a supply for the downtown core zone.

The deck would be at a higher grade than is necessary just to permit parking on the lower level since sufficient clearance for trucks has to be provided through the garage as this would be the access route to the service lane at the rear of the Wellington properties.

The layout shown on Figure 1 adds 100 more spaces to the Erie Street lot. Since there will have to be a substantial charge for this parking, 100 spaces is probably more than adequate as the number of spaces that would be used for employee parking.

6. APPEARANCE

The physical appearance of the structure on the site is an important issue since it is visible from one of the main arterials in Stratford, and also given that the existing lot has been treated very attractively. Figure 2 is an elevation showing the relationship of the deck to the street line. The architectural treatment of the panels can be of various kinds, but this can be investigated in more detail if such a deck was to be built.

The lower parking area will be open on three sides, to Erie Street and to the Wellington side and adjacent to the Stratford Hotel at the south end. The north end will be closed as this is where the deck comes up over the lower level. The upper deck of course is open on all sides. Parapet walls would be placed all around the upper level, and would be optional on the lower level.

The layout used for costing has interior columns within the parking area as a means of reducing cost. A clear span design has a neater appearance but would have about a 15% cost premium.

7. COST ESTIMATE

The deck shown in Figure 1 has been costed in sufficient detail to have a reasonable idea of the total cost of such a project. A cast-in-place design was used for this exercise to get typical costs. A precast design could be chosen if desired, with the total costs likely to be in the same range. Figures 3, 4 and 5 illustrate the preliminary design used for the cost estimates.

The costs by major component are as follows.

1.	Excavation and backfill	3500 cu. yd.	@ $12.	$ 42 000.
2.	Concrete supply	1400 cu. yd.	@ 100.	140 000.
3.	Form, place, finish	39000 sq. ft.	@ 9.	351 000.
4.	Reinforcing steel	300 tons	@ 950.	83 000.
5.	Precast concrete elements			50 000.
6.	Floordrains			13 000.
7.	Lighting (2 levels)			50 000.
8.	Miscellaneous metals			8 000.
9.	Protective coating "CONSEAL"	31000 sq. ft.	@ 2.50	80 000.
10.	Paving and utility relocation			250 000.
11.	Other items			100 000.
12.	Fees and contingencies (25%)			290 000.
		TOTAL		$ 1 457 000.

Extraordinary amounts have not been shown for any utility relocation or for special landscaping. It has been concluded that with the proposed design the existing utilities will cause only minor conflict, and the existing landscaping along Erie Street can be maintained for the most part.

The total cost of $1,457,000 is very high when related to the net addition of 100 spaces. This is a result of the need to virtually rebuild the existing 84 spaces on the lower part of the lot. The per space cost for the entire 188 space project is $7,750, but using only the 100 spaces added the incremental per space cost is $14,570.

8. FINANCING

The revenue side of the parking operation also has to be looked at to get the full financial impact picture. The 100 additional spaces would not be heavily used as metred space for visitor parking since the location is not in the prime demand area. Therefore the highest revenue potential is most likely related to employee parking. A monthly rate of $40 is estimated to be the optimum level that could be charged for this parking to maximize revenue. An annual revenue of about $40,000 is the most that would be generated by the spaces added by this project.

The annual operating costs for the downtown parking facilities would increase, although the 100 added spaces as an increment on the existing operation is not large. The biggest cost impact would be from the financing charges. If the entire cost of the structure is debentured, over a twenty year period the annual carrying charges will be about $175,000. It is obvious that the above noted $40,000 annual revenue is not even close to being able to carry the cost of the parking structure. A significant payment will have to come from another source to pay for a structure on this site.

9. ALTERNATIVES TO ERIE STREET STRUCTURE

Other possibilities for parking in the downtown should be looked at, given the high cost of the structured parking option.

For employee parking, the Cooper-Bessemer site is a good alternative. The major concern is that this is only a temporary solution in that the new owner has plans to develop the site. Nevertheless, such interim use of fringe area property is a typical way in which employee parking is provided in many cities. The supply varies over time, but some property is usually in a state of transition and can be used for parking. The $1 per day charge for this parking area is modest, and usage should increase. The eventual level of usage of this lot will be a good indicator of the demand for municipally organized employee parking.

The purchase of land around the downtown in locations that are equivalent to the Cooper-Bessemer site is the alternative to relying on the leasing of transitional sites. Initial costs always seem high, but many cities find that they eventually can resell the land which recovers the investment and also enables the City to assist with land assembly that permits a useful downtown area project to proceed.

It is possible to construct some spaces along Cobourg Street by extending the street grade and creating a lot similar to the York Street facility. This will impact on the green space that now exists, but the work could be done in an attractive manner. The principal choice in such an initiative is the visual impact versus the provision of more parking. This would not be an inexpensive process, but probably less costly than the structured parking cost estimated for Erie Street.

It is important that the existing on-street and other public parking spaces be managed in a way that best achieves the parking program objectives. Part of this management is to have a rate structure that ensures that the prime spaces are used for short term convenience parking serving the customer/visitor demand. Therefore it is recommened that the meter rates in

the high demand core area be maintained at a high enough level that any long term meter feeding is dicouraged. This will maximize the avialability of the prime spaces for short term parking.

For the short duration visitor parking component that was discussed earlier, it would be useful to place about 30 meters on the Ontario Street lot adjacent to Ontario Street. The remainder of the lot could remain as employee permit parking. The purpose of this change is to relieve the on-street parking demand on Ontario Street, which in turn should have some benefit in relieving the high demand on the Albert Street lot. This is a ripple effect that is the next best alternative to actually being able to add spaces right in the Albert lot.

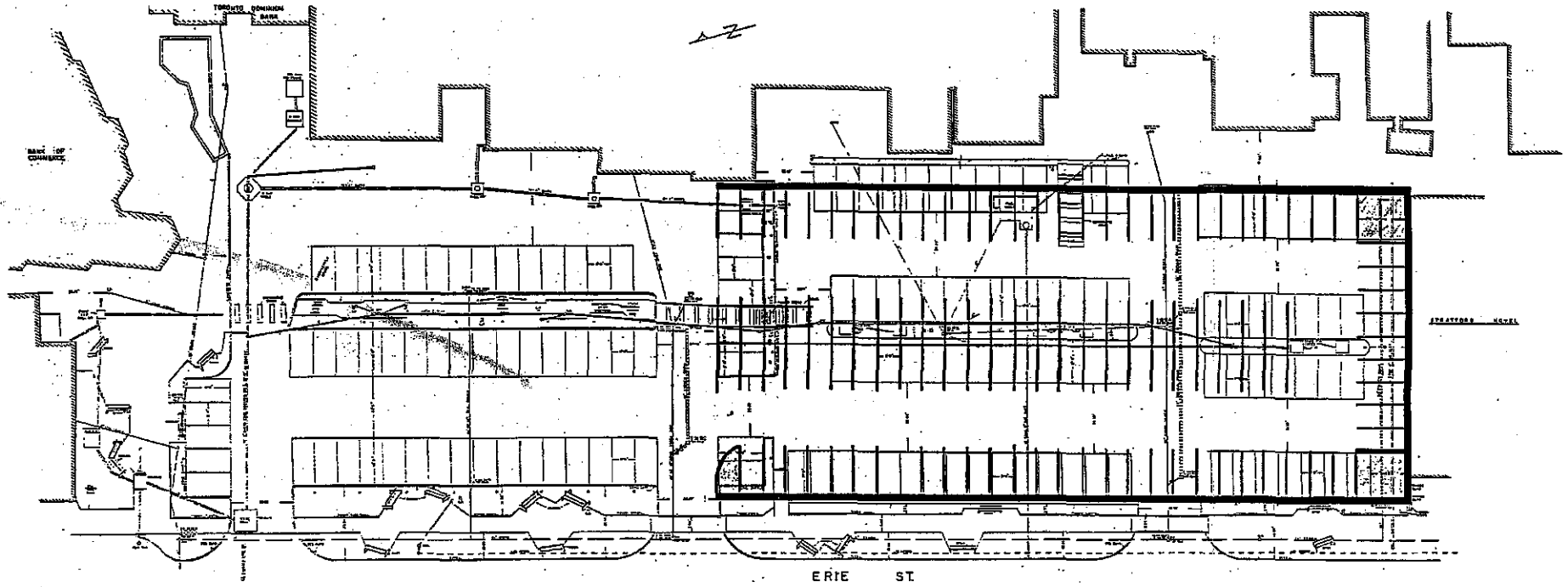
10. CONCLUSIONS AND RECOMMENDATIONS

The addition of more parking on the Erie Street lot is a desirable objective. However, the cost is not justified by the likely benefit for visitor parking. The location for additional employee parking is very good, but the high cost to construct a deck over part of the lot cannot be carried by the rates that could be charged for all day permits.

The leasing of part of the Cooper-Bessemer site for public parking should be continued. Its usage will be an indicator of the need for additional employee all day parking.

The cost of acquiring other property around the edge of the downtown should be investigated and compared with the cost for the Erie lot as estimated in this study and the cost of leasing space on the Cooper-Bessemer or other site.

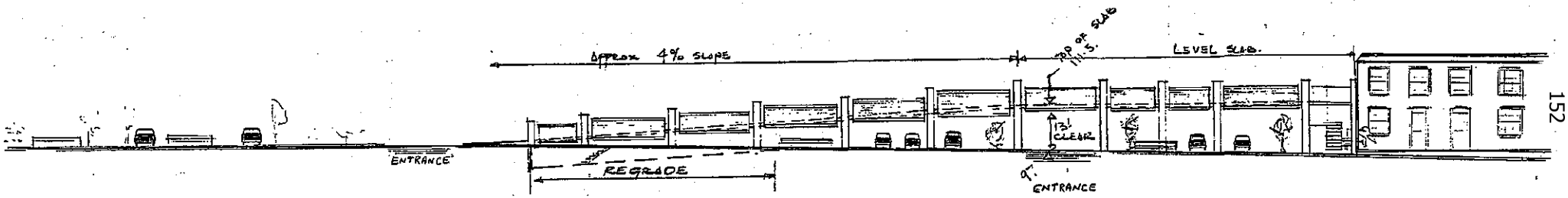
If additional fringe area spaces are to be provided, other construction opportunities should be investigated before the Erie Street option is selected.



LOCATION AND LAYOUT FOR DECK ON ERIE STREET LOT

SCALE: 1" = 40'-0"

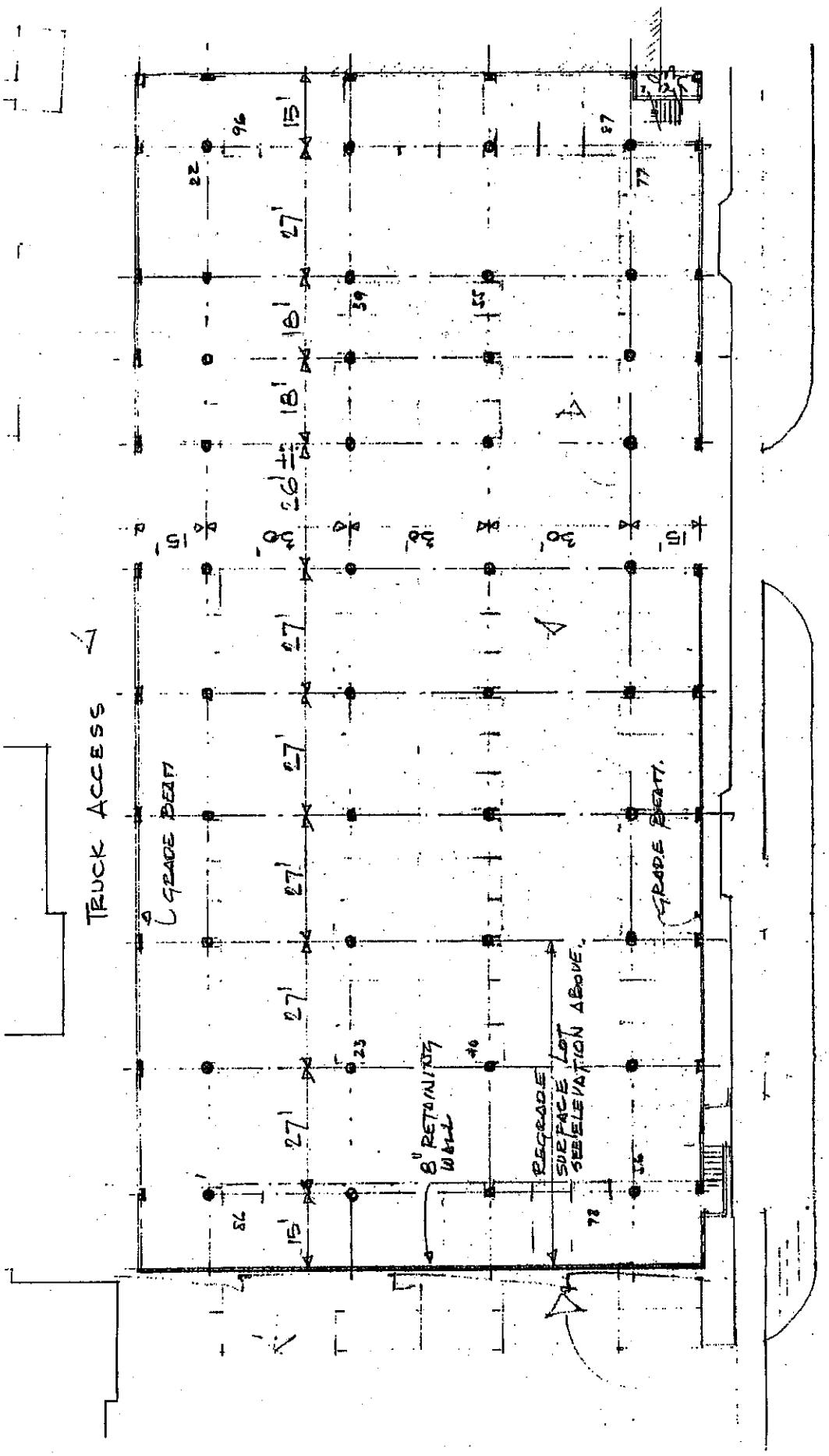
FIGURE 1



ERIE STREET PARKING DECK
WEST ELEVATION

N.T.S.

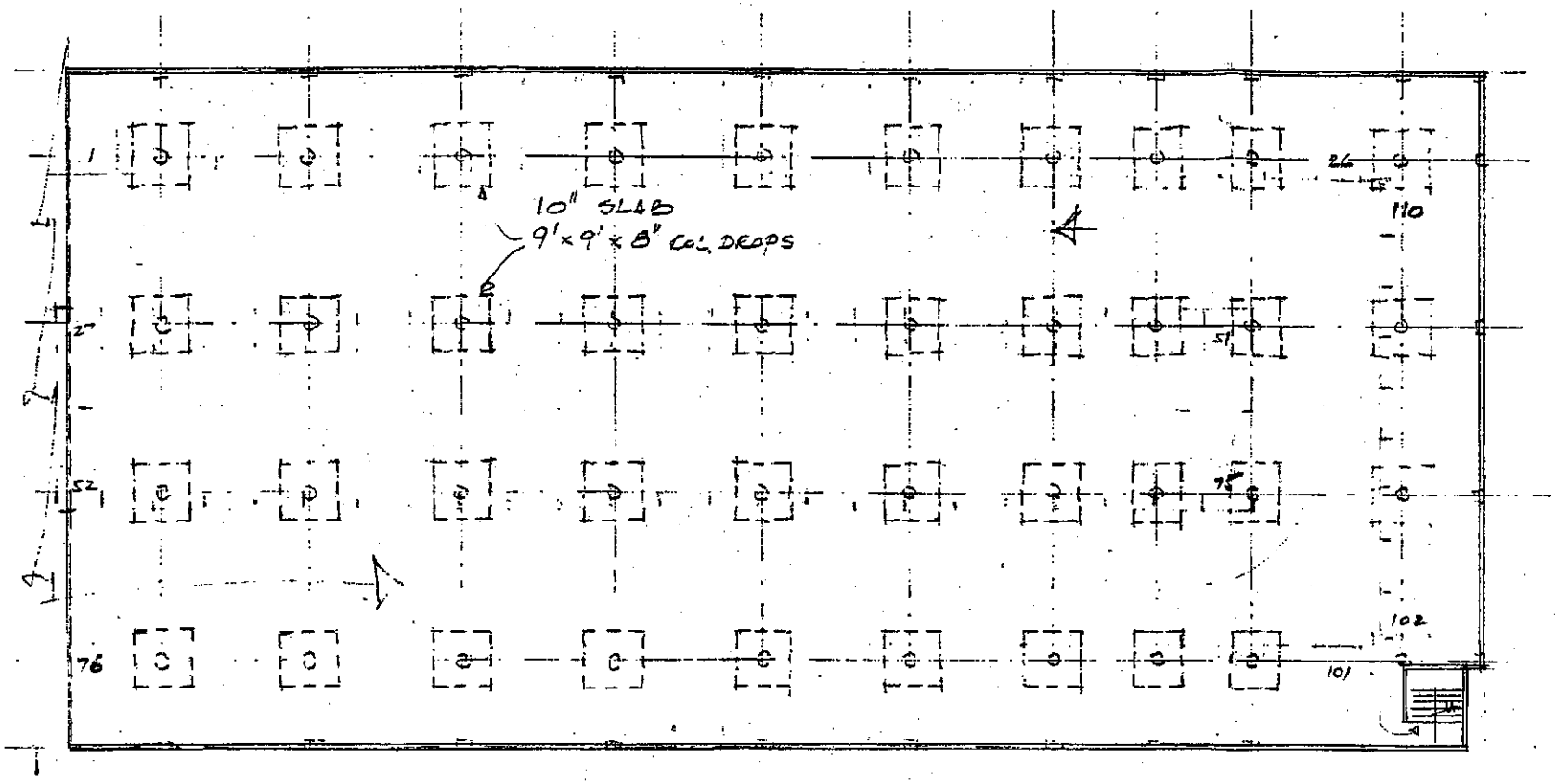
FIGURE 2



ERIE STREET PARKING DECK
GROUND LEVEL AND COLUMNS

SCALE: 1" = 20'-0"

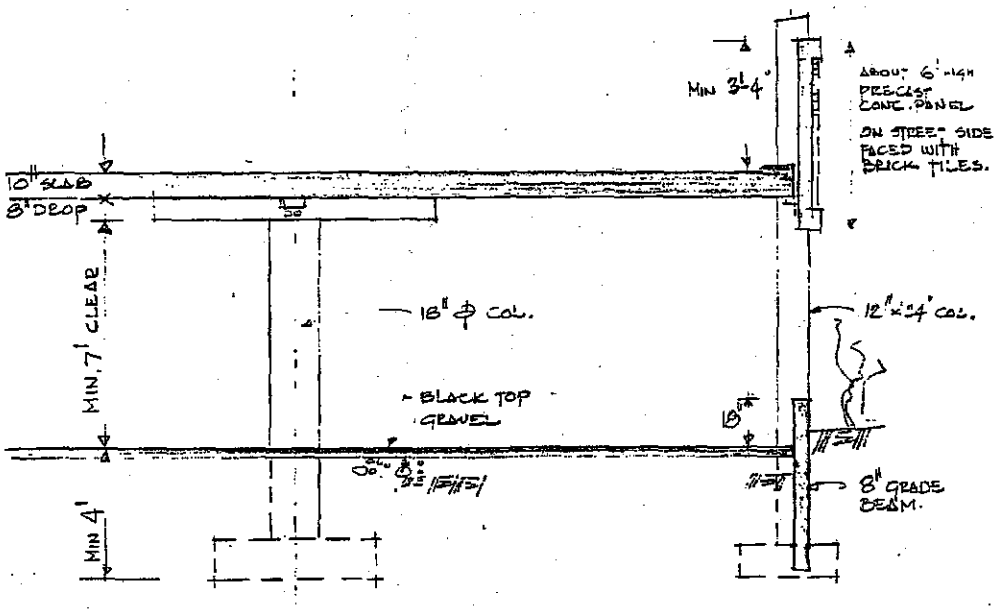
FIGURE 3



ERIE STREET PARKING DECK
TOP LEVEL SLAB

SCALE: 1" = 20'-0"

FIGURE 4



TYPICAL SECTION

N.T.S.

GENERAL NOTES:

1. STALL SIZE ASSUMED TO BE 9'-0 x 18'-0 EXCEPT UNDER DECK BETWEEN COLUMNS 27'-0 APART, 8'-6 x 18'-0

2. CONCRETE
   - CONCRETE SHALL MEET REQUIREMENTS FOR CLASS A EXPOSURE AS PER CSA STANDARD CAN 3-A23.1.
   - SHALL NOT CONTAIN CALCIUM CHLORIDE.
   - SHALL HAVE A MINIMUM CONTENT OF CEMENTING MATERIAL OF 320 KG/M^3
   - SHALL HAVE A MIN. 28 DAY STRENGTH OF 30 MPa
   - MIN. COVER FOR TOP REINFORCING — 40 MM.
   - MIN COVER FOR BOT REINFORCING — 25MM.

3. REINFORCING
   - GRADE 400

4. SLOPES AND DRAINAGE
   - THE DRAINING SURFACE SHALL HAVE SUFFICIENT SLOPE, AFTER LONG TERM DEFLECTION, TO PROVIDE POSITIVE DRAINAGE. MINIMUM SLOPE 2%
   - DRAIN LOCATIONS: NON-RAMPED FLOORS; ONE DRAIN PER 400 M^2 OF FLOOR AREA AT LOW POINT. RAMP FLOORS; AT BOTTOM OF EACH RAMP.
   - TOP OF DRAINS TO BE SET LOW TO PREVENT PONDING AT DRAINS.

5. SERVICES
   - METAL ELECTRICAL CONDUITS JUNCTION AND FIXTURE BOXES SHALL NOT BE EMBEDDED WITHIN THE CONCRETE SLAB.
   - EACH FLOOR SHALL BE PROVIDED WITH WATER SUPPLY FOR WASHDOWN OF PARKING STRUCTURE.
   - DRAINS AND PIPES EMBEDDED IN CONCRETE SHALL BE NON-METALLIC OR LOW COPPER ALUMINUM ALLOY, COATED TO PREVENT GALVANIC CORROSION.

6. CORRISION PROTECTION
   - SUSPENDED SLAB SHALL BE PROTECTED BY CONCEAL 300 BY CONCRETE SEALANTS.

TYPICAL SECTION AND GENERAL NOTES

SECTION 5

Technical Report A - Parking Demand Analysis

Downtown Parking Strategy for Stratford Ontario

D Sorbara Parking & Systems Consulting
5/20/2016

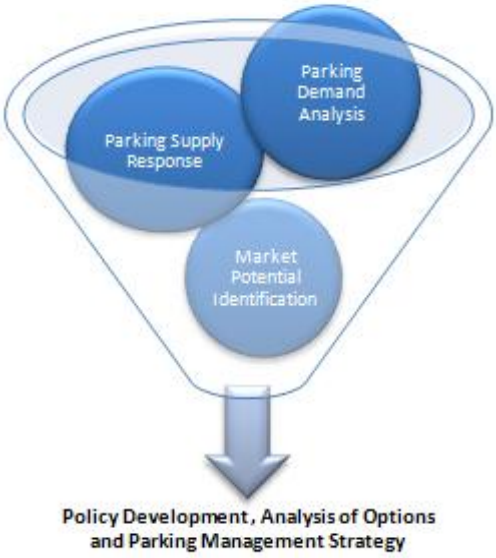
Contents

FIGURES

TABLES

Project Methodology

In the course of this parking management study, three data collection tasks are conducted. They are: Parking Demand Analysis, Parking Supply Response[1] [to the demand] and the Market Potential Identification. The results of these three tasks feed into a fourth task: Policy Development and Analysis and then into a fifth task: Parking Management Strategy.



This report speaks to Task 1: Parking Demand Analysis and informs:

- **what** is attracting people to the downtown;
- **when** are they in need of parking spaces;
- **how long** do they typically need parking; and,
- **What** factors are important to visitors to the downtown in **choosing their parking space**?

Technical Approach to Parking Demand Analysis

The essence of parking demand analysis is to capture, interpret and understand the profile of the **parking market**. Parking space is considered as a **product to sell to the public**. The parking demand analyses are specifically geared towards identifying the **share** of the parking market that can be expected to **"buy"** the product.

The extent and the nature of the "market" guide the decision to **locate** a new facility, or expand an existing one. The parking user profile will dictate the operational method, the parking rates (if applicable) and the capacity of each facility.

The specific ***objectives*** of this process are:

- Develop a set of peak hour parking demand rates for visitors and employees relating to land uses;
- Identify and summarize the trip characteristics specific to certain land uses (duration of stay, rhythm of trips over the course of the day, week and season, number of stores visited, etc.); and
- Determine the range of walking distances (how far people are willing to walk to and from a parking stall) relating to visitor and employee trips.

The ***process*** to meet these objectives involved the following:

- Build a profile of the land uses that attract visitors, employees to the downtown study area.

[1] The concept of *parking supply response* surveys is synonymous with the terms: parking utilization studies, Licence plate surveys, turnover and duration of stay surveys.

- Present an on-line survey to capture travel demand characteristics from the larger community of interested persons.

- Research other comparable studies to provide a measure of performance against which we can compare and contrast the Stratford experience.

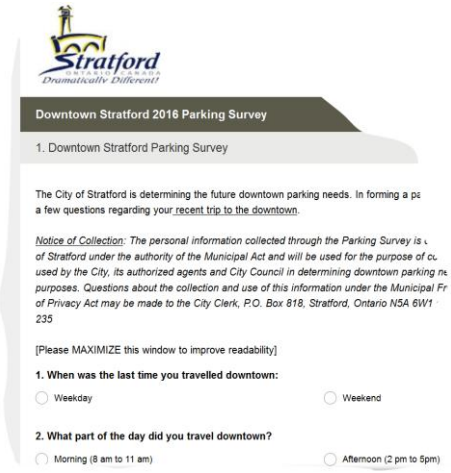


Figure 1: Sample of Online Form

The ***result of the demand analysis process is*** included in this report and covers:

- A summary of **current land uses** (floor spaces);

- A set of survey-derived "made in Stratford" visitor and employee peak hour parking demand rates (expressed as 1 space for every "x" amount of square metres of a specified land use – retail, office, etc. A general set of such ratios are also discussed in this report for comparative purposes);

- A discussion of trends in land use activities in the study area that will enhance our understanding of emerging characteristics of the future;

- Insights into the current experience with the public parking service offered through the analysis of the internet survey responses;

- A **walking distance distribution** (between parked vehicle and primary or first destination) for different trip purposed customers that serves the process of marking the level of customer service; and,

- **Spatial** analysis of the nature and amount of land use in the study area will provide a notion of **sub-areas** and the interaction of these sub-areas with one another. Such level of analysis is required since people walk from parking supply on one block to a destination on another block**.** The relationship between "***where*** *people park"* and "***where*** *they wish to go"* cannot be accommodated satisfactorily in an **overall** view within each study area, but rather on a more market-based and sub-area view.

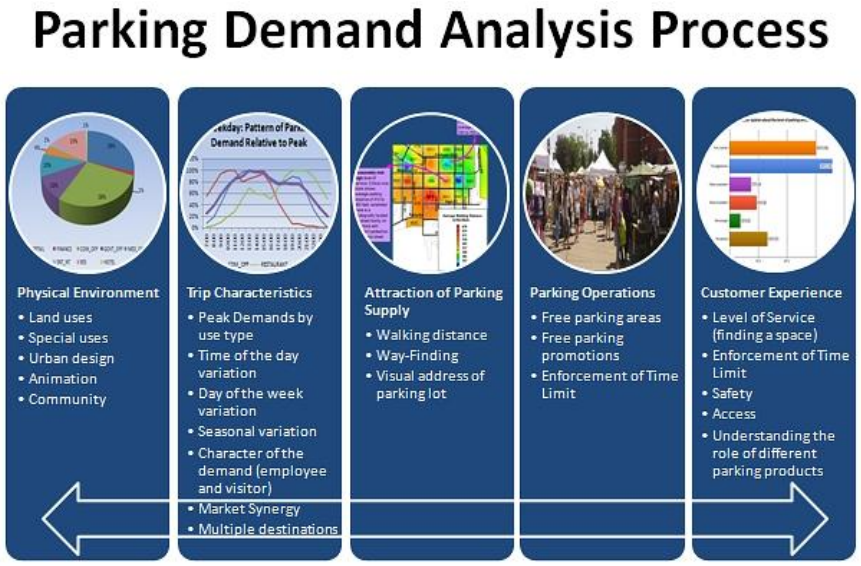
> *Spatial market analysis will provide the framework for answering questions related to the displacement of current parking space in one area and its impact on another.*

This chart serves to provide you with a map of the process through this report. We have identified five factors that impact the parking demand as:

- The Physical Environment
- Trip Characteristics
- Parking Supply
- Parking Operations, and

- The impact that Customer Experience may have on parking demand.

Figure 2: Illustration of Parking Demand Analysis Process



From a planning point of view these factors measure the extent and type of parking demand and assist in the evaluation of the **level of service** that is currently delivered by the municipal parking service. Specifically, the study examines:

- Land uses that draw customers on a consistent basis – personal services such as hair care/drug stores, medical services, entertainment venues, recreation facilities, grocery stores for example;
- Land uses that interact off each other – entertainment use such as the Theatres, special (seasonal) events in the commercial area and pre- or post-theatre activities such as restaurants or dessert cafes;
- Land uses that exhibit **temporal** variation of their demand over the course of the day (uses that attract customers at different times of the day serve to make efficient use of parking supply)- from coffee shops in the morning and afternoon to dessert/pastry shops, luncheon dining to formal sit-down dining in the evenings;
- Land uses that provide a **multi-destination** experience and therefore stretch the time spent in the downtown and promote the "collective" role of public parking space[2];
- The geography between the attraction (the land use) and the parking supply service – the **walking distance**;
- The physical landscape of the commercial land use – how compactness and density play key roles in parking space allocation and in level of ambience in the study areas; and,
- The competitive commercial market that draws customers to and away from the downtown.

The next sections elaborate on each factor on Figure 2. Each factor is shown and discussed as discrete, but the reality is – as represented by the two-way arrow on Figure 2 –there is a significant amount of interaction among these factors.

[2] Collective parking space refers to space that serves a broader area versus a parking space that restricts its use to a specific site.

Analysis of Factors that Shape the Parking Demand Profile

Factor 1: The Physical Environment

A familiarity with the land use activity is a necessary input to our understanding of the relationship between parking demand and parking supply. Floor areas were obtained from the field, visual and internet inspection of the downtown and through a comparison with previous studies[3]. Land use classified by type *of activity* is a critical input because different types of land use exhibit different:

- Peak hour parking demand rates;
- Patterns of parking demand over the course of a day;
- Patterns of parking demand over seasons of the year; and different
- Peak demand days of the week.

Current Land Use Profile

The **geographic scope** and the quantities of land use for the investigation of the parking demand are on **Table 1**.

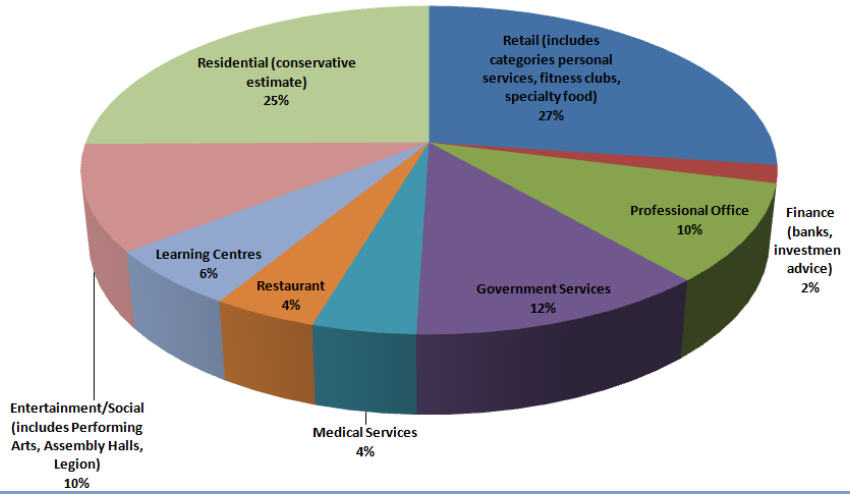
These land use data are **estimates** of space and type of use. Table 1 is an extract of only those land uses that have an impact on public parking demand in the study area. Typical for many downtowns, primary land use activity is comprised of commercial offices and retail. The service and financial investment services as well as banking represents a small proportionate share of the total space, but as will be discussed in greater detail, these activities generate a significant number of customers each day. They represent a vital component to the characterization of the customer market - one that returns to the study area on a daily or weekly basis thus creating a core of the transient community in the downtown. The uniqueness of Stratford's downtown land uses is reflected in the **theatre** component and in the geographic layout of the roads that are non-traditional (triangular and block faces that are longer than other more traditional urban designs found in downtowns).

Table 1: Estimated Quantity of Floor Space by Land Use Type (Sq. Meters)

Table 1: Estimated Quantity of Floor Space by Land Use Type (Sq. Meters) - Downtown -	
Land Use Activity	**Quantity (Sq. Meters)**
Retail (includes categories personal services, fitness clubs, specialty food)	38 920
Finance (banks, investment advice)	2 496
Professional Office	13 819
Government Services (Courts, Library, City Hall, Police services, etc)	19 982

[3] City of Stratford Cooper Site Building: Community Workshop & Recommendations, Malone Given Parsons LTD, October 2013. As well, City of Stratford: Assessment of Structured Parking on Erie Parking Lot, Read Voorhees and Associates, September 1988.

Table 1: Estimated Quantity of Floor Space by Land Use Type (Sq. Meters) - Downtown -	
Medical Services	5 874
Restaurant (Fast Food, Sit-down, Cafes, etc)	5 937
Learning Centres	8 149
Entertainment/Social (includes Theatres, Assembly Halls, Legion)	14 870
Residential (conservative estimate)	35 982
Estimated Total Space	**143 029**



The intensification of the residential land uses in the downtown means that the market for entertainment, and daily goods (food) and services (financial, personal care) will continue to expand. The development of a resident community will require some parking space for storage but in term will reduce the number of parking spaces required to service visitor parking.

Figures 3 to 6 - drawn from the BIA's website - serve to give some spatial context and a notion of the quantity of commercial services in the Stratford downtown.

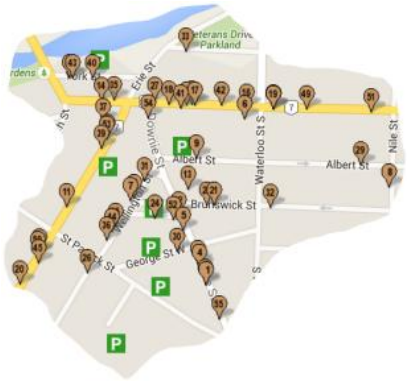


Figure 3: Location of Food Related Land Uses [from BIA website]

Figure 4: Location of Professional Services [from BIA website]

Figure 5: Distribution of Retail Land Uses [from BIA website]

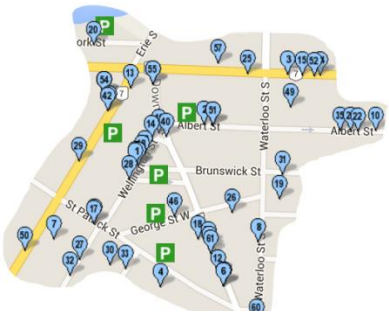


Figure 6: Distribution of Services [from BIA website]

Reflecting on the above the following salient findings are offered:

- There are over 55 food services (fast/take out, sit-down etc)
- There are over 70 professional services that include: accountants, lawyers, health care, financial investment advisors, real estate etc.
- Over 100 retail (19 Fashion Ladies, 13 Specialty and 3 gift shops, etc)
- Over 90 service outlets that include hairstylists (18 of them), health care (7) and fitness centers (5). This classification on the BIA site includes the University of Waterloo as well.
- The general breakdown of the floor space in the study area is primarily **residential**, **retail** and **office** in nature with close to half of the total surveyed buildings.
- While the categories of **banks** and **restaurants** are relatively small in comparison to others, they nonetheless represent a significant impact on the volume and - as we shall see later - on the pattern of parking activity over the course of the day.

1. Services such as finance and medical and hair care establishments are critical to the draw of visitors over the course of the day. Such uses serve to parlay into multi-destination trips in the downtown area which in turn increase duration of stay. Such uses also tend to attract visitors on a more regular basis – weekly or monthly for example. In terms of parking demand then, these particular land use categories provide a set of sustained visitors to the downtown – they provide a pivotal base for our parking supply user market.

2. The quantity of the various land uses is important to know, but from a parking demand analysis point of view, it is the **spatial distribution** of that land use that drives **where** we need to provide support parking spaces.

3. Lastly, from a building-by-building perspective the commercial space is concentrated in a dense building form. The facades of the buildings along Ontario, Wellington and Downie form a solid unified commercial visual address along the horizontal, and residential, service and offices that sit on top of the grade level commercial use along the vertical. This urban form serves the following important input to the study of parking demand:
    - People driving along Ontario, Wellington and Downie can more easily see the shops as the solid urban facade presents a “billboard” of sorts;
    - Once the motorist finds the intended primary destination point, the focus of the motorist turns to reading the signs that direct them to parking space – be it along Ontario, Wellington or Downie in an on-street space or directed to an off-street parking space; and
    - The transportation network of streets provides the various channels that allow the motorist to safely park their vehicle or negotiate movement in and around the downtown.

This range of uses will play into the computation of parking demand as a number of different land use types attract parking demand at varying peak hours of the day, varying days of the week, and at varying magnitudes. The interplay of these factors will provide an estimate of the potential size of the parking demand. **Walking distance** to and from parking space and these land uses will help distribute that parking demand to the parking supply.

Shaped by the analysis of walking distance to and from parking space and primary destination, we chose to view how key land use types, (retail, office, medical and personal services) are served by the key parking facilities in the study area. In this way, these two study deliverables were formed: the *identification of where potential parking supply opportunities* exist, and the measurement of a ***customer level of service***.

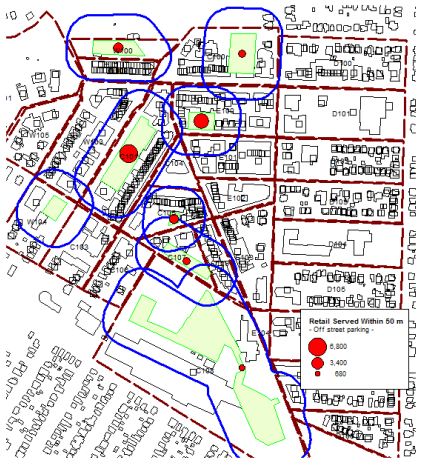
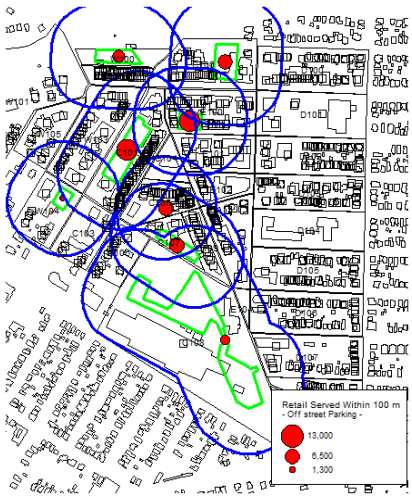
Current and Potential Level of Market Service

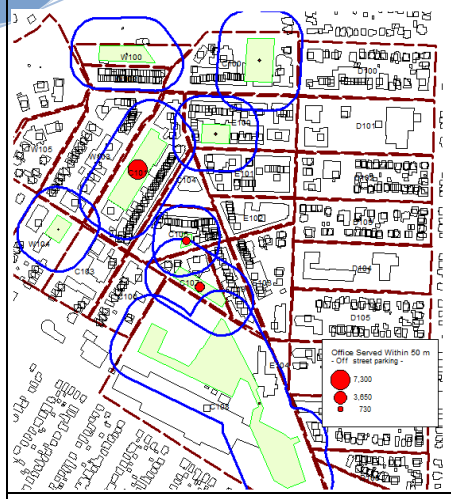
Table 2 describes the distribution of various key land uses relative to the off street parking facilities provided by the municipality. Here the geographic scope is 50 and 100 meters from the center of each off street parking facility. The online survey results point to this as a walking threshold for shorter stay trips to the downtown.

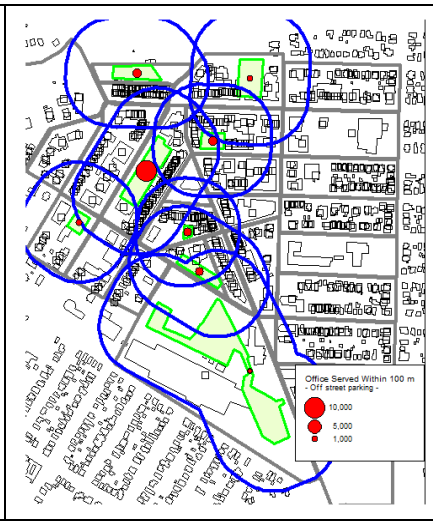
The size of the relative red dot serves to indicate visually the physical relationship between the potential parking demand generator (the land use) and the major parking infrastructure (the off street carpark). Important relationships to maintain it seems are:

- Erie
- Albert
- Cobourg, and
- Perhaps surprising the opportunity that the St Patrick Street lot has.

Table 2: Proximity of key sources of attraction within 50 and 100 Meters of Municipal Off-street Facilities

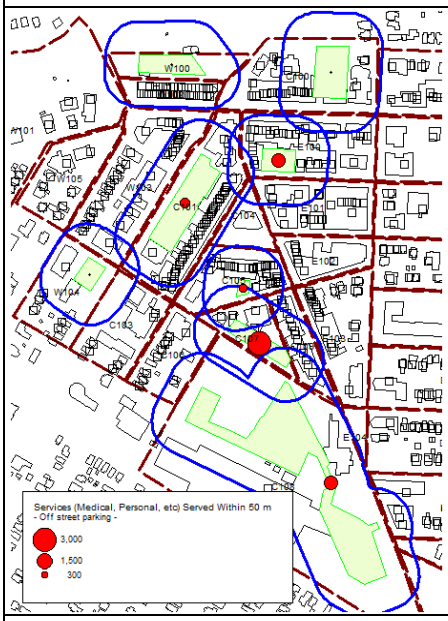
Retail Attraction Relative amount of retail space within 50 and 100 meters of each major parking site. The size of the red dot illustrates the relative amount of retail floor space.	
	
Office Attraction Relative amount of office space within 50 and 100 meters of each major parking site. The size of the red dot illustrates the relative amount of retail floor space.	

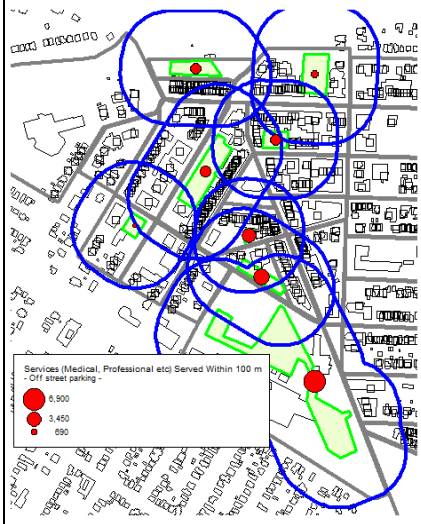




Service Attraction

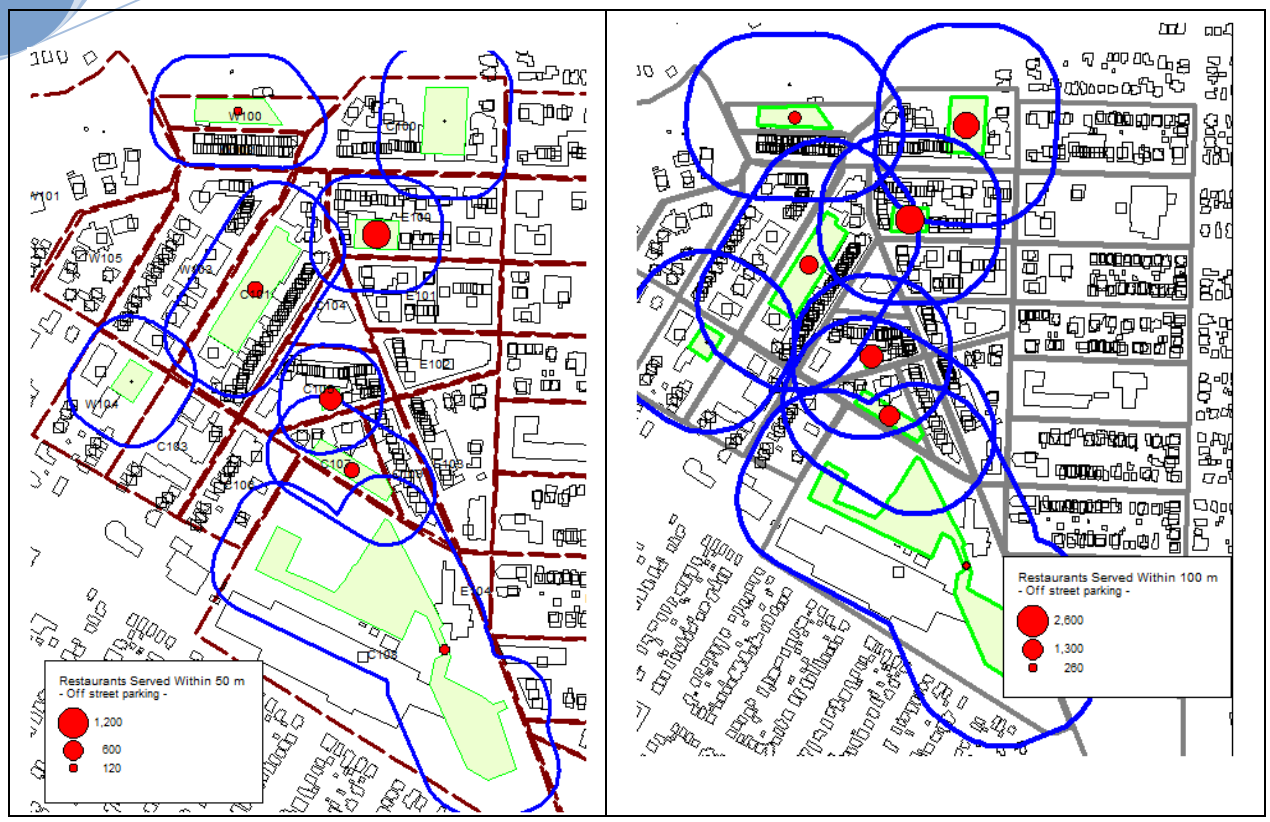
Relative amount of service space within 50 and 100 meters of each major parking site.
The size of the red dot illustrates the relative amount of retail floor space.





Restaurant/ Food Attraction

Relative amount of restaurant space within 50 and 100 meters of each major parking site.
The size of the red dot illustrates the relative amount of retail floor space.



One measure of the level of service provided by the public parking supply in downtown Stratford is to extract from the maps above the quantity of various key land use activities and determine how much of that quantity is within 50 or 100 meters of a major off street public parking facility. As will be discussed later in this section 100 meters is the measure of a very high level of service as it represents not only the average walking distance from a parked space to a primary destination point as determined from the online surveys but also reflects approximately a 2 to 2:30 minute walk.

Table 3 below shows retail, office and restaurant land uses that are within that 100 meter threshold walking distance. The above 100 percent figure is indicative of overlap of two or more off street parking facilities that can service the demand within that threshold.

The "Personal Services" land use activity category is shown to be under-serviced. There might be an explanation for this under-service (represented by the below 100 percent value in the right-most column) as these uses tend to be spread over a larger area than retail for example. As well, some of the buildings that are used for personal services (hair salons, some medical, lawyers, accounts etc) may be conversions from residential to these uses and as such may be located away from the core of the downtown itself.

The current parking supply system is in excellent **position** to service the parking demands attracted by retail, office and restaurants for certain. Note that the major attraction of summer time volume- the Avon Theatre - is not within 100 meters of any of our off street municipal parking facilities.

Table 3: Current Level of Service

General Land Uses	Quantity of Use Within 100 m of all off street carparks	Quantity of Use Estimated within the Study Area	Quantity within 100 m divided by total Quantity of the use in the downtown
Retail	**51879 sq. Meters**	**38920 sq. meters**	**133%**
Office	**21532**	**13819**	**156%**
Food/ **R**estaurants	**8967**	**5937**	**151%**
Personal/Professional Services	**20906**	**25532**	**82%**
Note	**Over 100 percent means that the use is serviced by a number of overlapping market capture areas;**		

Potential Changes to the Physical Environment and Nature of the Downtown

Over the course of this parking study a number of potential physical changes to the land use have been brought to the forefront. In addition to those physical changes that may occur in the downtown there are broader operational initiatives in mobility and its integration with current and future technology that will impact how we move to and from our homes and businesses in Stratford. The changes in the physical and operational environments will inform and shape the way in which we deliver parking services.

Physical Changes to the Downtown

The project team informed this parking study with the following potential developments in the downtown that should be considered:

- Expansion of the University of Waterloo campus located at the southern fringe of our study area; and it subsequent impact on the student demand for accommodation in the downtown.
- The re-purpose and re-development of the Cooper's Site building industrial site located also on the southern fringe of our study area where our free parking is currently serving downtown parking demands.
- The re-purpose and re-design of the area known locally as "Market Square" that envelopes City Hall.

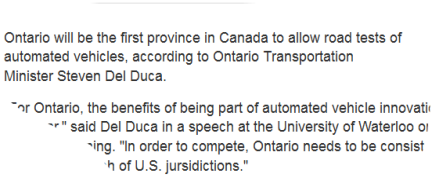
These changes directly impact the **quantity** of parking demand that we need to consider in our long term planning strategy and the **character** of the downtown that in turn begins to shape the type of parking markets that will emerge in time. Specifically consider:

- A resident population requires a set of services that satisfy the day to day living requirements (food and personal/medical services).

- A resident population grows into a community. This community becomes more engaged in its surroundings by protecting it from invasive traffic and demanding a set of urban design standards that encourages a more pedestrian environment.
- A resident population requires parking space on-site for their own vehicles and more likely to face a conflict with their visitors and people who are shopping, dining and engaging in commercial activities.
- A year-round entertainment and community focus point such as Market Square generates pedestrian traffic that needs to be woven safely into the existing urban transportation network.
- Both Cooper and Market Square redevelopment areas currently provide critical parking inventory that serves current downtown visitors and employees.
- Market Square redevelopment concepts to date have had to consider the temporary re-location of the town's transit hub.

Within the scope of this parking strategy study, we want to be able to inform this planning process with a framework that allows us to manage the parking services effectively. We want to be able to provide evidence that serves to find suitable alternatives to parking infrastructure that will still provide the expected level of service to our customers. Within this study's scope we want to indicate clear alternatives.

Technological Changes and their Impact on Future Parking Services


Ontario will be the first province in Canada to allow road tests of automated vehicles, according to Ontario Transportation Minister Steven Del Duca.

For Ontario, the benefits of being part of automated vehicle innovati
" said Del Duca in a speech at the University of Waterloo o
ing. "In order to compete, Ontario needs to be consist
h of U.S. jurisdictions."

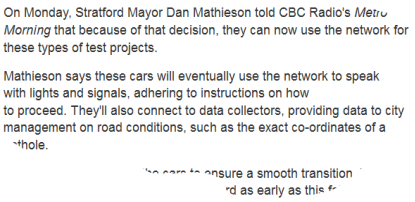
Technological changes have and will have an impact on our mobility means, on the quantity and ultimately the need for parking. This parking strategy needs to acknowledge that changes in the way we move around town will impact the urban landscape. The technologies are:

- Driverless vehicles;

- Shared economy or "dial-up" service;

- Continuation of internet based shopping for and purchase of services and products from the comforts of your home or office, and

- Technology that finds and directs to vacant parking space for you.


On Monday, Stratford Mayor Dan Mathieson told CBC Radio's *Metro Morning* that because of that decision, they can now use the network for these types of test projects.

Mathieson says these cars will eventually use the network to speak with lights and signals, adhering to instructions on how to proceed. They'll also connect to data collectors, providing data to city management on road conditions, such as the exact co-ordinates of a
thole.

nsure a smooth transition
d as early as this f

Driverless Vehicles and Shared Economy

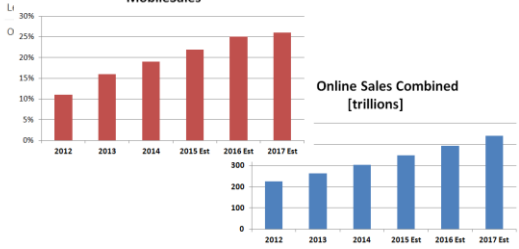
Stratford stands out a major player in this technological development. Mayor Mathieson discussed the testing program now underway in Stratford. The Province of Ontario also made it clear that it is investing in the provision of infrastructure to service automated vehicle innovation. The technology is fairly clear to most so there is no need to describe it in any great detail here. Important to our study is

the potential impact on the way in which we think about parking. A scan of commentary on this technology finds the following key points:

- Combining the driverless vehicle with the "shared economy" technology, the on-demand service will not require a vehicle to rest in a parking space. Circulating around the block looking for a vacant parking space is not necessary as a driverless vehicle need only to pick up or drop off its passengers. Remember that a vehicle spends 96 percent of its time parked.
- Infrastructure changes are required so that this technology works - from clear network sensors, availability of charging stations to broadband wireless network that allows for communication between vehicles and that infrastructure.
- Most analysts believe that this technology will provide a safer and more efficient mobility service to us. It will also promise a cleaner environment as it is based on non-fossil fuel technology.
- Industry is well into the development of vehicles that can operate as such.
- Dialing up the service will be economical when compared to the outright purchase of your own vehicle.
- The technology will likely not reduced road congestion, however it will reduce the traffic that circulates looking for parking spaces (estimated to be of the order of 35 to 45 percent of the total volume)

Internet Shopping

Top Consumer Reasons For Shopping Online	Percent of Survey Citing Reason
Time Saving	73 %
More Variety	67 %
Easy to Compare Prices	59 %
No Crowd	58 %
Lower Prices	55 %
Spend Less on Gas	40 %



A second change is the growing use of the Internet in the conduct of shopping. (See http://www.statisticbrain.com/total-online-sales/ for more detail. The statistics shown in this section are from this site). The extracted figures (USA figures) underscores the growth in the value of online sales but more interesting to our study is the range of reasons for shopping online. The internet presents time savings and the ability to broaden the scope of potential stores that sell the item, and easier to compare prices. Each reason has an element of physical travel time, and inferences to the process of driving and parking a vehicle. Reasons related to travel are of course not exclusive to downtowns but shopping in general. The impact of the internet then is broader in its scope as it has changed the process of purchasing consumer goods and services. Perhaps the impact of the internet directly on downtowns is that it supports a modified vision of the role of the downtown – will the downtown become a centre of cultural and civic activity.

Online Shopping Statistics	Percent
Percent of online user who have made an internet purchase	87 %
Percent of online user who have made a purchase multiple times	59 %
Percent of retail sales that are made online	9 %

John Winter of Winters Associations describes the internet sales being more specific to electronics, books and music. Winter in a radio interview (Wei Chan, Ontario Morning on Saturday April 6th 2013 on CBC)

noted that the sectors that are most vulnerable to both internet sales and the influx of the "big box" stores are: small "mom and pop" stores and **downtowns**! The discount stores are continuing to dominate the retail landscape. Winter suggests that price and shopping in a climate controlled environment are the key reasons for the big box success.

Within a dynamic market place that features the aforementioned "big box" destinations, how do citizens define the downtown and its linear, compact and specialty store landscape? How do citizens define the role of their downtown in their business, cultural and community experience in Stratford? Is that role changing over time?

Physical changes to the downtown may occur through new developments, re-developments and changes to the infrastructure that will impact the attraction of parking demand to the downtown. Potential developments are discussed and woven into the computation of future parking demands below. At this point, these developments are limited in details of quantity and type of use changes but their discussion serve to form the potential opportunities that may arise in the near and longer term planning horizon.

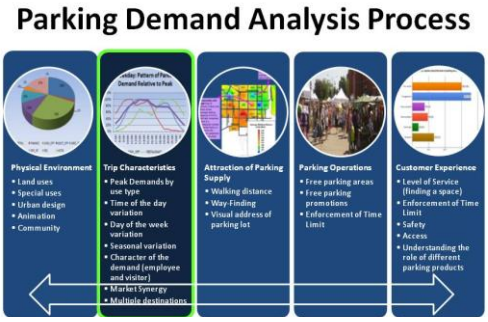


Figure 7: Parking Demand Analysis Process - Trip Characteristics

Factor 2: The Dynamic between Land Use Type and Trip Characteristic

We now turn our attention to the inherent differences that arise among different land uses in terms of trip characteristics, namely:–**patterns** of parking demand over the course of the day, week and season; **magnitude** of parking attracted per land use type and other trip characteristics that assist in defining the parking demand.

Parking Demands by Land Use Type

While feedback from visitors and employees, and employers regarding the state of balance between the parking demand and the parking supply is important, a solid unbiased computation needs to be presented as well. This metric is expressed typically as the peak number of parking spaces demanded for every 100 square metres of land use. The magnitude of the parking ratio is the result of the cumulative effect of a number of trip characteristics, such as:

- The type of land use (retail, office, restaurant, and services, etc);
- Each land use may peak at different times of the day;
- Each land use may peak at different days of the week;
- Each land use may peak on different months of the year;
- Observed work trip parking demand is impacted by:
    - Compressed work week,
    - Holidays,

  - Absenteeism,
  - Work from home, and those who
  - Leave the work place during the day as part of the work.
- Each land use may attract volume of traffic that is already parked in the area for other purposes – in other words, there is an element of "market synergy"; and,
- The effect of parking once and having multiple places to visit.

Detailed computation will be presented in the section: Current and Future Market Opportunities. Suffice to say at this point that although the major land use categories had some empirical data to back up the parking demand ratio used for the generation of parking demands over the study areas, some land uses required some estimation based on previous land use type specific analysis.

Temporal Variation of Parking Demand Makes Efficient Use of Supply

The *parking characteristics* of the downtown are driven by the land use mix and the temporal (time of day) variation in business activity. This temporal variation forms a rhythm of parking requirement and provides the opportunity for parking spaces throughout the downtown to be *time-shared*. For example, morning parking demand is generated by a number of medical and commercial offices, personal service and coffee shops throughout the commercial area. Within the mid-morning to late afternoon, incoming traffic is related to the attraction of general and specialty retail stores, financial institutions as well as the lunch time restaurants. Evening or matinee attractions at the Avon, Studio and Tom Patterson (1800, 260 and 410 respectively) provide significant traffic to the downtown but also provide a market for quality sit-down restaurants. The parking supply as such is constantly used and re-used by many different clients throughout the day.

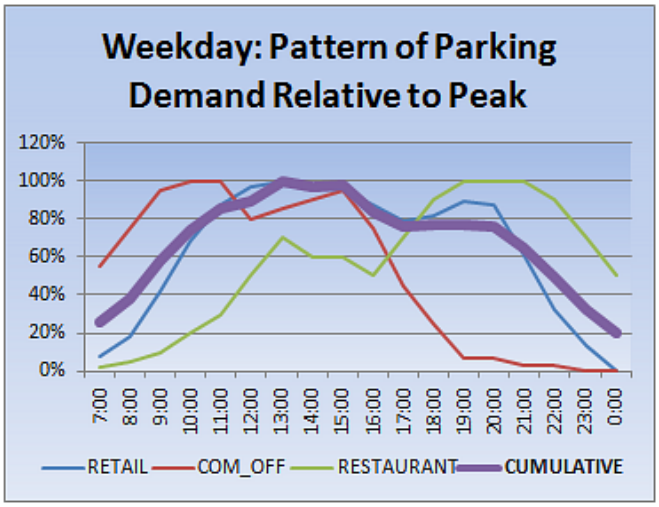


Figure 8: Theoretical Temporal Patterns of Parking Demand for Typical Land Uses

The temporal variation of parking demand by land use type is a crucial concept because people who observe specific developments in an area of the downtown often over react to their impact on the balance between parking demand and supply. It is important then to understand that different land uses generate different patterns of demand over the course of the day. And often, these differing individual patterns complement one another to make efficient use of the same parking supply. Further, as will be developed later, these characteristically different patterns of individual parking demands, come together to form an overall pattern of parking demand over the course of a weekday or weekend. It is the resulting peak or set of peak points on this collective view of parking demand that becomes the focus of comparison of parking supply to parking demand.

Figure 14 shows the interplay of sample land uses – each curve represents the pattern of parking demand over the course of a typical weekday. The thicker "Cumulative" line one each chart represents the aggregate pattern of parking demand that would be formed by these individual land uses. Thus, while individual land uses form different patterns of parking demand -peak demand occur at different times of the day, the cumulative overall demand pattern shows that parking space can be shared among these different land uses.

In determining peak parking space requirements in a downtown or commercial strip setting, their calculation is not a matter of adding individual peak parking demands, but rather to construct a model of these individual peak parking demands over the course of a day – the peak parking space requirements then becomes the aggregated cumulative effect of the individual land uses.[4]

The process also requires an iterative approach. While best practice review, empirical evidence provided by the online surveys, and consultant's experience are valuable inputs to the calibration of these temporal factors, the ultimate test is to match what was observed in the field through the use of the parking supply. The way in which the *supply* responds to the parking demand is the subject of the next technical report, but presented here are the results.

Table 4: Temporal Variation Factors for Selected Land Uses

Estimated Temporal Variation Factors for Selected Land Use Activities for a Typical Weekday			
Land Use Type	**Morning**	**Afternoon**	**Evening**
Retail	25% (see note)	100%	75%
Office	100%	75%	10%
Restaurant	25%	75%	100%
Entertainment – Theatre	5%	90%	100%
Social	75%	75%	100%
Recreation	80%	80%	100%
Note: 25 percent of the peak retail parking demand occurs in the morning time period			

Multiple Destinations for a Trip

The interplay of for example, coffee shops with offices, restaurants with retail and office, and theatrical performances with restaurants, serve to remind us that parking demand based on a specific set of land uses must account for *sharing* of a trip. On one trip to the Downtown by car, on average, one parking space served 2.2 destinations (online internet survey results indicated 67 percent of the respondents had 2, 3 or more destinations). This is a key factor that serves to reflect the parking demand generated by a specific land use in a more collective and interactive downtown context.

[4] When we conduct a parking supply response study we are evidencing the cumulative or aggregated result of the myriad of different patterns of parking demand that are generated by the wide variety of land use types in the downtown. What we are observing then is the resulting composite view of varying parking demand patterns expressed over the course of the day.

The impact of this factor is a downward pressure on the parking supply requirement - as one parking item is shared among a number of different destinations, different trip purposes, and different trip durations. Municipal parking space is characterized by the use of its product - parking space - by a number of different sources of demand. The municipal parking system does not work in an environment where one space serves only one destination - that would make the system oversupplied, inefficient and unsustainable in the long term.

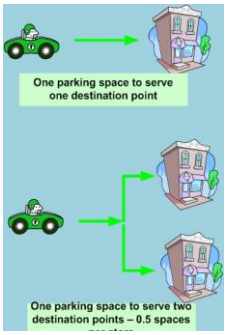
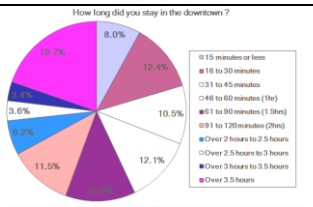
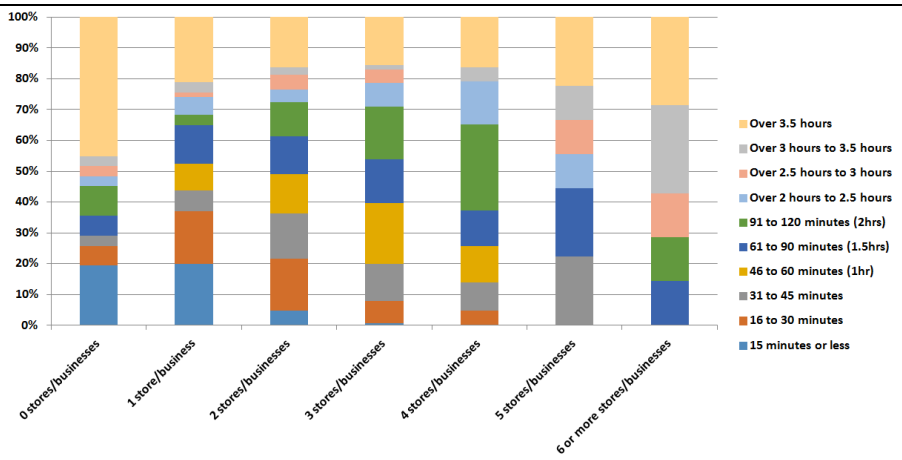


Figure 9: Sketch of multiple destinations associated with one parking location

Table 5: Customer Durations of Stay and Number of Destinations



Duration Spent	Average # Destinations
15 minutes or less	1.16
16 to 30 minutes	1.78
31 to 45 minutes	2.33
46 to 60 minutes (1hr)	2.37
61 to 90 minutes (1.5hrs)	2.31
91 to 120 minutes (2hrs)	2.72
Over 2 hours to 2.5 hours	2.44
Over 2.5 hours to 3 hours	2.68
Over 3 hours to 3.5 hours	2.97
Over 3.5 hours	2.05
Grand Total	**2.20**



Generally speaking the longer the duration of stay the more destinations. For the purposes of design of the parking strategy we will use the average 2.2 destinations per visit.

The effects of multiple-destinations that are served by one parking space have been incorporated in the parking demand ratios that are described in the section: Determination of Current Parking Demand.

Market Synergy – Walk-ins [Captive Market Effects]

The downtown is not only a central shopping destination point, but it also draws employees each day. These employees create a "built-in" and readily serviceable market for linked commercial services throughout the course of a day. An office worker for example drives to the downtown and parks their vehicle. Their prime destination is the workplace. However, over the course of the work day, that employee may walk over to a coffee shop; may visit a bank; and, may visit a restaurant over lunch break. **All of these linked destinations were serviced in most cases by one parking space**.

This *market synergy* serves to reduce the quantity of parking spaces required in such a setting. Parking space serves the primary trip to the downtown and subsequently a number of non-work trips may be generated – all of whom do not necessarily require another parking space. The online survey indicates

that **12 percent** of the trips within the downtown start from a work place within the downtown. Relative to other downtown studies that the consultant has reported on this level of walk-in is about half the number.

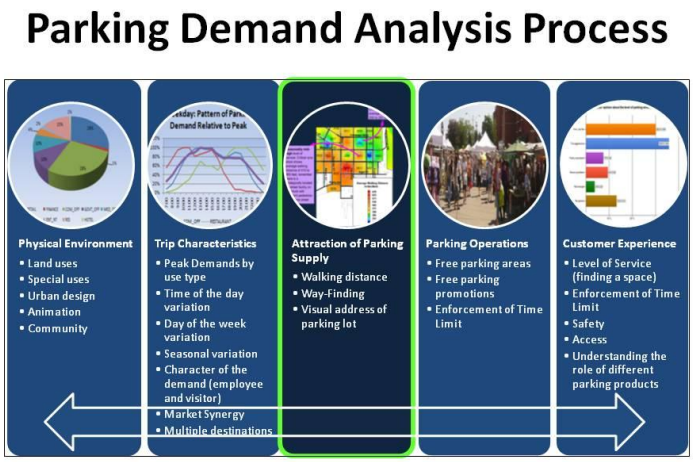


Figure 10: Parking Demand Analysis - Attraction of Parking Supply

The potential impacts of not finding a convenient parking space:

- Parking illegally and taking a chance that they will not be caught by enforcement officers;
- Choosing to park in free un-regulated areas of the downtown;
- Choosing to park on spaces that are offered by business owners on site;
- Choosing not to pay for the use of parking space that is perceived to be inconvenient relative to trip destination or purpose;
- Increasing the traffic in the area due to motorists circulating the transportation network looking for parking space;
- Increasing the stress related to finding that perfect parking space;
- Lowering the customer experience with driving downtown for other-than-necessary trip purposes

Factor 3: The Dynamic between Parking Demand and Parking Supply

The graphic serves to help navigate the discussion of the potential impacts that spatial distribution of public parking supply has on parking demand.

As part of the study of parking demand that would be attracted by a number of different land uses, it is important to account for the difference between *demand for parking* and *demand for parking within a convenient distance from one's primary destination*.

As such, it is critical to determine if a parking problem is a result of not finding an available space immediately in front of the primary destination or a result of not finding an available space within a reasonable walking distance of that primary destination. As well, it is important to determine if the parking problem that customers speak of refers to on-street or the off-street parking products or both.

Role of Walking Distance to the Definition of a Parking Problem

Walking distance impacts the process of selection of the parking product, and serves to form the notion that parking supply is either over- or under-supplied in an area. Similar to other retail or service products – accessibility to the consumer is a critical factor in achieving the optimal delivery of the

service. Contemporary retail and service enterprises make use of advertisement, the Internet, and word-of-mouth techniques to draw their consumers. Parking is no different in that it needs to respond to and cultivate its consumers.

Parking has a significant challenge in that its response to the market demand is constrained by the physical environment. On-street parking supply is by and large fixed capacity. Off-street parking "franchises" may present opportunities for expansion – from surface to multi-tiered structures, but not only at a significant cost but also is constrained by the geometry of the site. Not every surface lot can be converted to a parking structure without serious investigation from traffic, aesthetic, economics and operational points of view.

The act of parking a vehicle in a particular location is a synthesis of a number of customer decisions. The process entails an investigation of:

- How far are people willing to walk to and from a parking space to primary destination?
- What factors influence the selection of a parking space?
- Does the customer know what the municipal parking system is selling in terms of its location, its cost, condition of sale (time restrictions, for example) and level of service (what kind of access control, payment options, secured environment)?
- From a transportation network point of view, how is the product (parking space) integrated (street access and pedestrian connections after one parks their vehicle)? and,
- How is the product (parking space) advertised to the customer – signage, pedestrian routes and safety look and feel?

The **amount of time** it takes to find a parking space forms the consumer's perception of whether or not there is a "parking problem". Finding an available parking space that meets the consumer's value of time, distance and cost serves to paint the picture of parking demand versus parking supply differently than the situation where a consumer has to circulate the streets to find an available space. The study provides this kind of data through the online survey tool, as well as, research conducted by the consultant helps to assess how well the parking supply is positioned to service the demands of a number of different market segments (customers).

As previously stated, the theory is that a municipal parking service provider "sells" its product to those within a specific geography; the **extent of that geography** is impacted by a number of factors, such as:

- Expected duration of stay (theory is the shorter the duration, the less distance to and from parking space);
- The cost of the parking service (theory is the higher the cost, the less distance to and from the parking space – value of convenience is therefore expressed in terms of cost and location);
- The availability of parking supply/service relative to one's primary destination;
- The weather plays a factor in determining how close or far that key distance should be;
- The time of day the trip takes place (security during the evening);
- The urgency of the trip –

The **purpose of the trip** impacts the perception of whether or not there is a parking problem. For example if the purpose of the trip was to make a medical appointment, then one might be expecting to find an available parking space immediately in front of the medical office. On the other hand, if the trip purpose was not site-specific or time-constrained such as a stroll, window-shopping, having a coffee; then one would expect that the visitor would spend more time looking for spaces available within a larger geographic scope.

The analysis of walking distance serves to identify parking space that is **marketable** to various types of customers and as such it does impact **where** and what **type** of parking services are in demand**.**

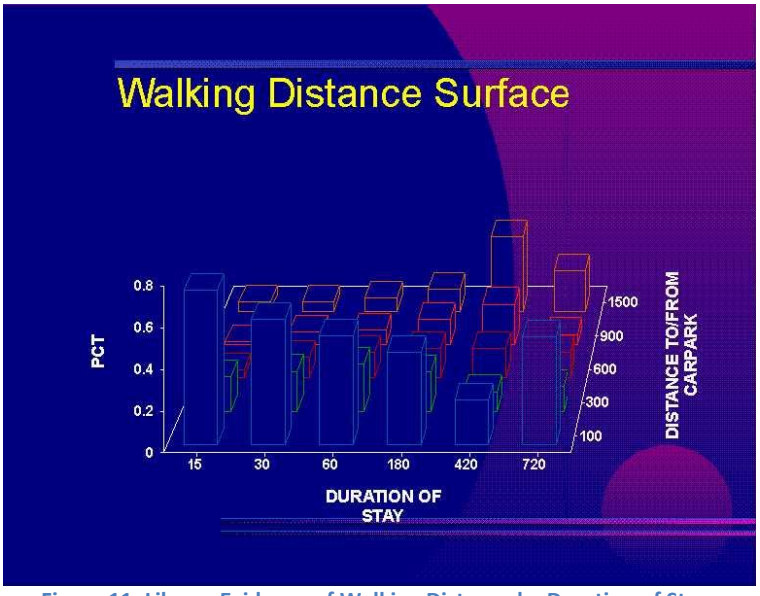


Figure 11: Library Evidence of Walking Distance by Duration of Stay

Figure 11 helps to visualize the impact of duration of stay, cost of parking and walking distance derived from many downtown parking studies over the years. As walking distance is a product of many factors: trip's duration of stay; cost of parking and availability of parking space, the ultimate selection of parking space may result in actions that may not be so predictable or rational.

The online survey responses provided insight into the walking thresholds that currently are exhibited in the downtown. This walking pattern will be critical in the estimation of parking demand/parking supply response at the block level. The value of knowing this threshold in our parking investigation is to help to determine the market for on- and off-street parking space.

Where I Parked	Primary Destination Within Same Block
C100 - Cobourg	*52%*
C101 - Erie lot	*67%*
C103	33%
C104 - Market	*66%*
C105	28%
C106	83%
C107	60%
C108 - Free Parking	*12%*
C109	20%
D101	57%
D102	**100%**
D103	67%
D105	0%
E100 - Albert	*71%*
E101	75%
E102	47%
E103	50%
E104	**100%**
W100 - Library block	**100%**
W101	0%
W102	**100%**
W103	69%
W104	0%
AVG	**55%**

With the discussion above as a background, the results of the analysis of walking distances, walking times and implied levels of service are presented in the sections that follow.

The snippet to the right shows the number of online respondents who found parking space on the block that also contained their primary destination point. For example, 52 percent of those whose primary destination was on block C100 found a parking space to serve that trip on the same block.

We offer these observations:

1. Fifty-five (55**)** percent of respondents parked their vehicles and had their primary destinations on the very same block.

- For those who parked on a **municipal off street** parking facility, surveys indicated that **83 percent** were able to find a space within 5 minutes, while those who parked on an **on-street** parking space **63 percent** were able to do so. This is not unusual as on-street space is clearly a preferred choice and clearly much more restrictive in terms of inventory. As well, **73 percent** of those survey takers who chose to park on a **private customer** only parking facility were able to find space within 5 minutes!

Duration	11 to 15 minutes	6 to 10 minutes	Less than 5 minutes
15 minutes or less	2.38%	9.52%	83.33%
16 to 30 minutes	5.36%	23.21%	69.64%
31 to 45 minutes	8.89%	24.44%	62.22%
46 to 60 minutes (1hr)	10.53%	19.30%	70.18%
61 to 90 minutes (1.5hrs)	10.34%	22.41%	56.90%
91 to 120 minutes (2hrs)	7.69%	25.00%	63.46%
Over 2 hours to 2.5 hours	6.67%	13.33%	73.33%
Over 2.5 hours to 3 hours	12.50%	25.00%	56.25%
Over 3 hours to 3.5 hours	9.09%	27.27%	54.55%
Over 3.5 hours	5.56%	14.44%	74.44%
Grand Total	7.44%	19.47%	68.27%

Figure 12: Duration of Stay versus Search Time [Off-street Users]

- Often the perception that parking supply is deficient to the needs of customers is based on the **relative amount of time it takes to find a vacant parking space against the amount of time that they wish to stay in the downtown**. **Figure 12** shows on average 68 percent of the survey takers who found space within 5 minutes those who had durations of 15 minutes or less a significant portion (83%) found that space within 15 minutes. Closer to the average duration of stay of customers in the downtown - just under two hours, the average 5 minutes or less service delivery was of the order **63 percent** with a significant 25 percent of 1:30 to 2:00 hrs duration needing 6 to 10 minutes to find a space. So we are still able to deliver the service within ten percent of the total time a customer wants to spend in the downtown.

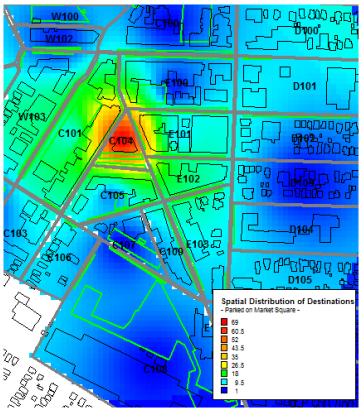


Figure 13: Spatial Distribution of Destinations from Market Square Block (C104)

- Market Square (C104) and Erie lot's Block C101 represent 46 percent of the total online destinations. The facilities on these prime blocks serve two-thirds of the parking demand attracted by its uses. Be mindful that the Market Square block offers 68 on-street parking spaces while the Erie block provides 227 spaces including a 136 off-street parking facility. The 66% - 67% capture rate is an indicator of a high level of customer service.

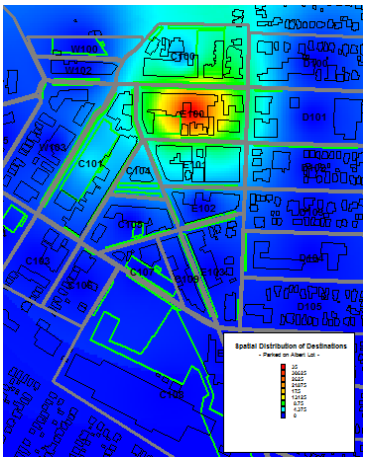


Figure 14: Spatial Distribution of Destinations from Albert Block (E100)

- The market capture area for those with destinations on the **Albert St** lot is shown on Figure 14. We have established that this block like many other primarily serve demand attracted by land use activities on the block itself, but note that there are indications that demand generated across Ontario St and on the south side of Albert is being serviced as well. Our field crew indicated that virtually on every observation period on the Wednesday of both the July and December surveys, there were vehicles circulating the Albert St municipal parking lot looking for space. Clearly this is a key parking infrastructure investment.

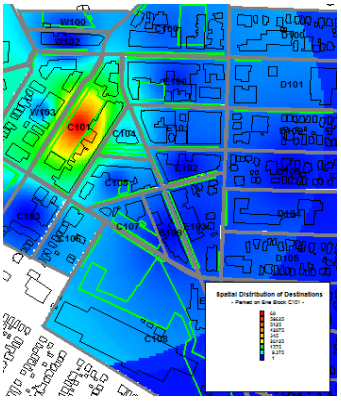


Figure 15: Spatial Distribution of Destination from Erie Block (C101)

- The shape of the service area for parking space within the Market Square (Figure 13) block is very focussed on that block's demand generators but we can

see the green hue beginning to show up in blocks east and south.

- The parking spaces here served parking demands generated by 9 other blocks in the downtown showing its relative strength and importance to the delivery of service to demands attracted outside of its own block boundaries.

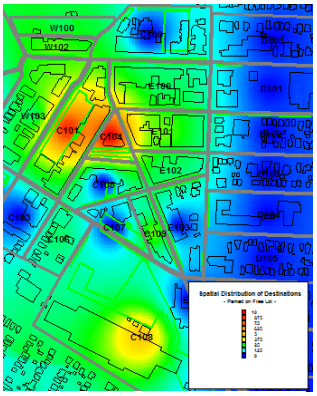


Figure 16: Spatial Distribution of Destinations from Free Lot (C108)

- The third key block - Erie lot C101 - continues the theme of serving largely the demand generated on its own block

  location (Figure 15). In addition the market capture area is spreading to the block immediately west and east of it. The latter is of course where the City Hall Annex building is situated. Pertinent to current "buzz" regarding the Market Square re-development it was found through our online surveys that this block's parking space inventory serves **12** other block areas in the downtown.
- The distribution of destinations of those who are parked on the "free" Cooper lot on our Block C108 located at the very bottom of the downtown (Figure 16) serves to remind us of how parking location, level of service and price of that service interplay.

The 280 spaces serve block activities - University of Waterloo and the Community Centre (recreational activities). In addition however, customers of this free service will walk 520 meters to/from the City Hall Annex building (W103) or 430 meters to the Market Square or City Hall block.

This block's spatial coverage is just one block short of the Erie lot block with 11 different block destinations reported in the onine surveys.

Table 6: Walking statistics derived from surveys

Total Distance	Average	STD	Lo95	Hi95	Blocks
2526	101	4	99	103	C100 - Cobourg
6930	69	3	68	69	C101 - Erie
1055	176	28	154	198	C103
6031	58	4	57	59	C104 - Market
2088	116	10	111	121	C105
366	61	14	50	72	C106
329	66	11	56	75	C107 - St Patrick
16372	381	30	372	390	C108 - Free Parking Areas
826	165	30	139	191	C109
1673	239	21	223	255	D101
184	92	0	92	92	D102
569	190	42	142	237	D103
232	232	0	232	232	D105
17105	349	87	325	373	E100 - Albert
7070	354	96	312	396	E101
6644	391	45	369	412	E102
5004	417	44	392	442	E103
260	260	0	260	260	E104
6429	918	0	450	918	W100 - Library block
328	164	29	124	204	W101 - York
1359	272	0	272	272	W102
3506	270	76	228	311	W103
689	344	12	328	361	W104 - Kalbfleisch

Walking Distance – To/from Demand and Supply

Table 6 summarizes total distance, average distance, standard error (plus/minus) and a statistical range formed by the 95th confidence limits. The distance measurements are those from blocks where people parked to blocks where the primary destination was located.

The spatial distribution of the average block walking distance shown on Figure 17 again illustrates that shorter walking distances [Blue] are currently found on the core blocks.

Walking Distance - Time Taken

The walking distance results also indicate not only physical distance to and from parking space and destination but also the range of 123 to 154 meters for visitors in the downtown translates to roughly a walk of 2 minutes and 45 seconds to 3 minutes and 25 seconds. Physical distances to and from parking space and primary destination can be traversed in varying times. The paths presented by the free lot block's parking to the City Hall/Market Square block are ones that save time over distance through laneways, and other short-cuts that are present. The mid-block pathway connection directly through the Wellington St building face to the Erie parking lot provides time-saving and weather protected pathway to destinations east of the parking lot. Thus time taken to reach primary destination and not necessarily the physical distance plays a significant role in defining the coverage that various parking facilities have in the downtown.

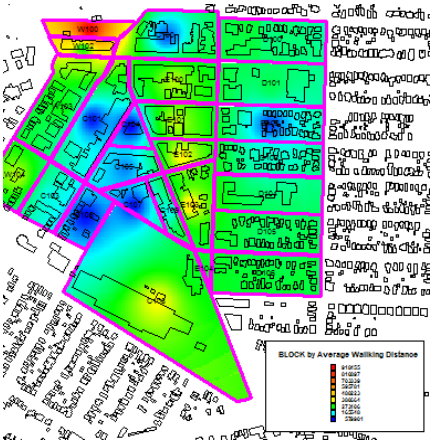


Figure 17: Field Surveyed Spatial Distribution of Average Walking Distance

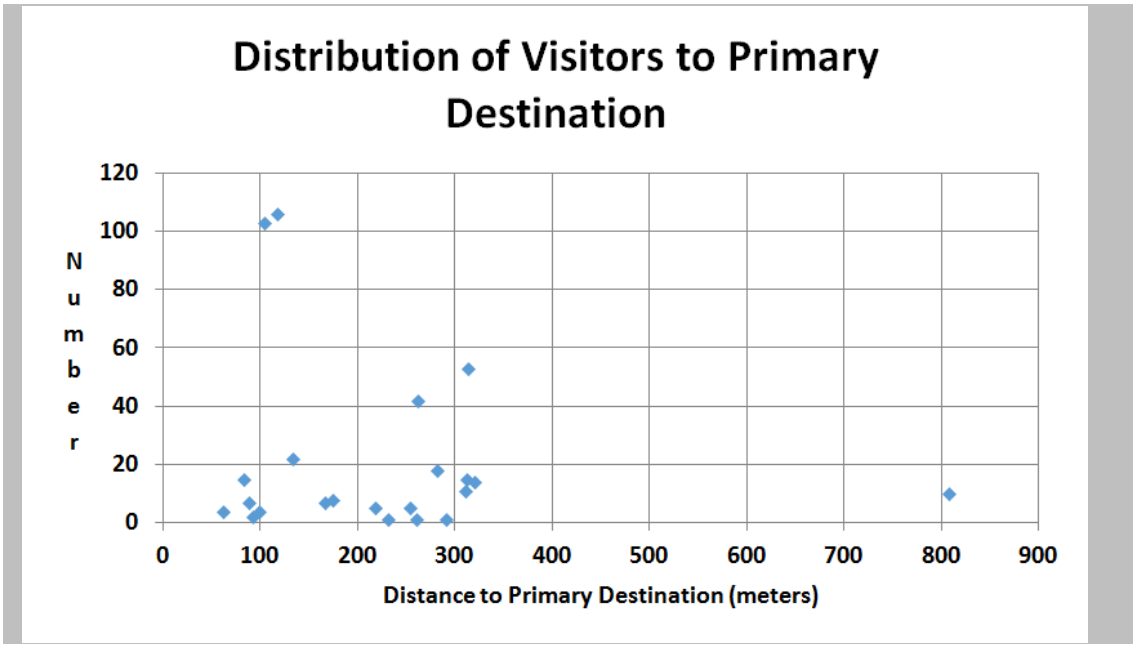
Walking Distance – Implied Level of Service

Table 7 illustrates the **distribution** of walking distances that emerged from the online survey responses with distance in meters along the horizontal axis and number of responses along the vertical axis. The illustration gives a visual cue to the general high level of service that currently exists. A typical measure of the level of customer service as it relates to the location of parking space to the primary *destination is the magnitude of that service for **90 percent** of the customer* demand. In other words, at what distance from primary destination do at least 90 percent of our customers find their parking space?

Based on the results of the downtown customer surveys, 90 percent are served by parking space that is located 300 to 315 meters from their primary destination (or about 6 minutes). More impressive is that **46 percent** of those surveyed walk about 100 to 105 meters (or 2 minutes) to their primary destination! Compared to other downtowns that the consultant has studied Stratford's distribution of walking distance is consistent. The distribution that we found here points to a very high level of customer service currently. That level of service presents one of the targets that customers are now used to seeing met, and it also serves to form a challenge to the parking service delivery as physical changes occur in the parking supply due to developments in and around the downtown.

In the next two sections let's talk about walking distance and the customer service expectations of two major customer types: work-related customers and shorter stay visitors to the downtown and how the expectations of each type impacts the parking service delivery model.

Table 7: Graphic Showing a Measure of the Level of Customer Service



Work Trip Market Segment

Public parking managers rely on the judicious allocation of off-street parking space to work market segment through the sale of monthly permits. The number of permits is limited as it would be prudent to make enough parking inventory for the service of higher volume, broader customer base short stay visitors. In contrast to parking space that is marketed to the shorter stay – first-come first-served group, the allocation of monthly parking permits is most often done through subscription, or a lottery approach.

As such, the designation of specific parking areas to specific employees/employers distorts the spatial distribution. Market forces are skewed to operations - that is, only to those locations that sell permits.

Parking space for the work trip is limited – not only in physical terms, but also by the need to provide enough of that limited inventory to meet shorter stay customer needs. Further, the temporal difference between the two markets presents a challenge. The work market arrives earlier to the area and has first "pick" of the parking spaces while the shoppers, visitors arrive to the area some time later. The municipal parking system is forever trying to balance these two markets for its limited products.

The municipality is not always the sole provider of employee parking space. Depending on local zoning requirements, urban design and planning standards, private development sites within the downtown can also provide parking exclusively for their employees –on-site or on a collective privately operated off-street parking facility. In terms of walking distance the factors that influence *where* employers and their employees park their vehicle during the day are as follows:

- Reasonable price and the acceptance that parking in the downtown has a monetary value;

- Relationship of cost of parking and the distance to and from their destination (again the theory is this: the consumer would balance cheaper (or in Stratford's case: free) parking rates against longer walking distance);
- Availability of private space either on-site or in a shared private off-street lot; and,
- Requirement for work-related parking space very close to work place of employment is directly related to the type of work done during the day (one may require vehicle to load and unload goods, for example).

We recognize the challenge of finding a parking space for those workers that are either part-time employees or have afternoon shifts. The schedule presents a challenge because they would have to compete with transient visitors to the downtown.

Visitor Trip Market Segment

Visitors to the downtown exhibit different decision process when choosing where to park relative to their primary destination. Firstly, in some cases, there is no primary destination as people may choose to travel downtown to browse shops rather than specific stores. Because of this their parking decision may be largely a result of:

- How they approached the study area (from which streets);
- The cost of parking; and the level of, and
- Prior knowledge of where the available spaces are in the area.

Depending on their anticipated duration of stay in the downtown, convenience plays a significant role in their decision. As addressed by the comments received from respondents, the role of the on-street parking supply is crucial to this type of customer.

The configuration of the municipal off-street lots in the downtown features pedestrian links that directly bring a parking customer to the core street of Wellington and Ontario streets. This is the case with municipal lot on Erie and to a lesser extent for Cobourg and Albert.

Factor 4: The Dynamic between Parking Demand and Parking Operations

Figure 18 serves to focus our discussion in this section on the potential impacts that our public parking operations may have on parking demand in general and the whole customer parking experience specifically.

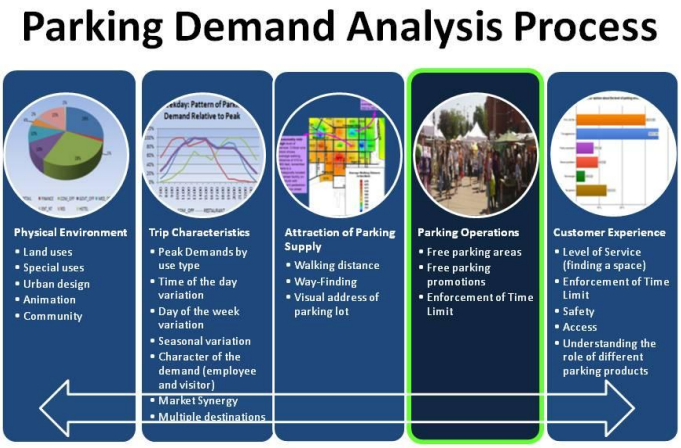


Figure 18: Parking Demand Analysis - Impact of Parking Operations

Potential Impact of Free Parking Supply on Non-commercial Areas - Downtown

In the downtown there are few streets that provide free parking[5] and of course the major surface lot (280 spaces) on the southern fringe of the downtown. A perusal of the online survey responses however did not indicate any reflection on the possible conflict that arises when commercial activity spills over into residential areas. This lack of concern may be an expression that there is little in the way of impinging on residential and that supply within the commercial area manages the demand adequately.

The use of this un-controlled[6] parking supply is only managed through the enforcement of the time restriction (72 hours in the case of the Cooper lot). Enforcement of un-controlled parking space is labour intensive and time consuming practice. There may be an opportunity to implement the more contemporary technique of License Plate Recognition technology to reduce the investment of time in maintaining time restrictions.

The provision of free parking and its impact on walking distances is documented in prior sections of this report. The walking threshold for both longer and shorter stay customers (250 and 100 meters respectively) is completely shattered with recorded distances of 300 to 350 meters to/from that Cooper lot. Thus the traditional relationship of duration of stay and walking distance is shattered when price of parking is taken into account. From a parking planning point of view, if cost recovery for the parking service is not a business requirement for the municipality, then all parking can be distributed to the fringe areas of the downtown, producing a very different landscape in terms of service and land use.

The other potential policy action may be to begin to think about the acceptance of "re-parking" in the downtown. This concept allows a customer to pay for parking within time restrictions as today, but to be

[5] On-street areas such as Church St, Erie St south of St Patrick, Wellington St south of St Patrick, and some areas east of Waterloo St South.

[6] Un-controlled as in there is no pay and display machine or meter.

allowed to move their vehicle to any space within the study area within that time restriction. More simply this technique asks the customer to pay once and park anywhere within the defined commercial area without having to pay again.

Impact on Parking Demand of Municipal Parking Promotions

Many municipalities have incentive programs that feature free parking. While it is difficult to determine if this feature directly contributes to the decision to drive a vehicle or not, such programs show some community spirit. Notices of such events on the pay and display machines help to create a unified event that serves to bring the community together.

Examples of promotional programs currently available to customers are:

- Free Sunday parking
- Free Saturday parking December 1st to April 30th
- Car free Fridays in June, July and August

Other municipalities offer of value-card or Smart-card to customers is an example of a current "coupon" type of promotion. Pay and Display units can accept and thereby discount the purchase of time on the unit. Customers can "top-up" or purchase more time on the card through online interaction with the sponsor of the card. Combine this "electronic purse" concept with a cell phone link to its sponsor to either update or purchase and the customer will more easily be able to pay for parking.

As the public parking program is a support service to the commercial areas, it will become involved in discussions on "special events" or promotions. The mandate of the public parking organization is to remain self-sustaining – that is, to be supported only through its revenues and not a draw on the town's general revenue base but it also accepts the role that it can play in fitting into the commercial and community fabric of the area that it serves.

Potential Impact of the Enforcement of Time Restriction

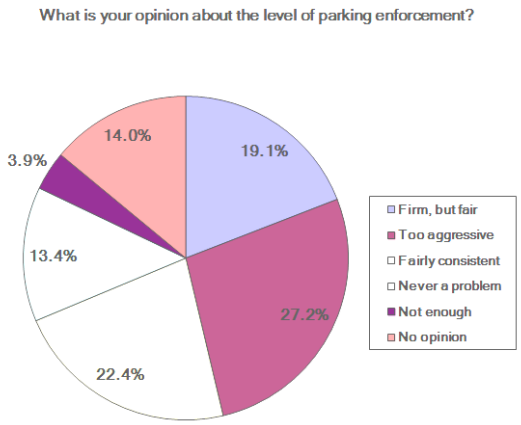
In all parking operations, large and small, parking enforcement has an important role to play in parking management by optimizing the limited supply (i.e. increased vehicle turnover) of parking spaces provided to the public. Regular enforcement officer patrols are necessary for the following reasons:

- to deter and discourage abuse by motorists that over-stay the time limits or refuse to pay the metered rate;
- to improve pedestrian safety (i.e. vehicles parking on sidewalks or creating obstacles or blocking intersections)
- to promote community safety by ticketing vehicles parking illegally near fire hydrants, fire routes or stalls reserved for motorists with disabilities; and,

- To ensure the efficient delivery and exchange of goods and services to businesses by enforcing loading zones.

It is recognized that parking enforcement has grown in controversy and no one likes getting parking tickets. The public and motorists should realize that enforcement is required for their own safety and broader benefit of the community. Public awareness programs that explain to motorists what to look for when they park and why the various restrictions are in place will help foster improved understanding of enforcement practices.

Table 8: Customer Responses to Online Enforcement Questions



A necessary component of parking management is the enforcement of parking regulations, particularly as they relate to the restriction of time spent on parking spaces. Certain types of parking space are obviously more attractive than others for one hour parkers, two hours or more parkers and all-day employee parkers and so on. Clearly, on street space is critical to the service of the very short stay customer parking market. This space is convenient and self-advertising. Since a significant proportion of people visiting are of the short stay type, such spaces need to turn over at a rapid rate to provide a high probability of servicing that market.[7]

Multi-space pay and display units and/or single metered space controls the duration of use through the concept of maximum amount of time one can purchase. Enforcement of on-street space in the downtown commercial areas provides the necessary mechanism to ensure that convenient and self-advertising on-street parking space presents opportunity for a number of different customers. Over use of time-restricted on-street space impacts the volume of traffic on residential and side streets by those customers who are forced to circulate to find available parking space. Herein is the challenge to the parking program: market the role of the **off-street parking** resource as an attraction to longer stay customers' needs through its advertisement and priced in order to draw customers to it.

[7] On street parking plays a role in slowing down traffic and providing a buffer between pedestrians on a sidewalk and vehicles on the street.

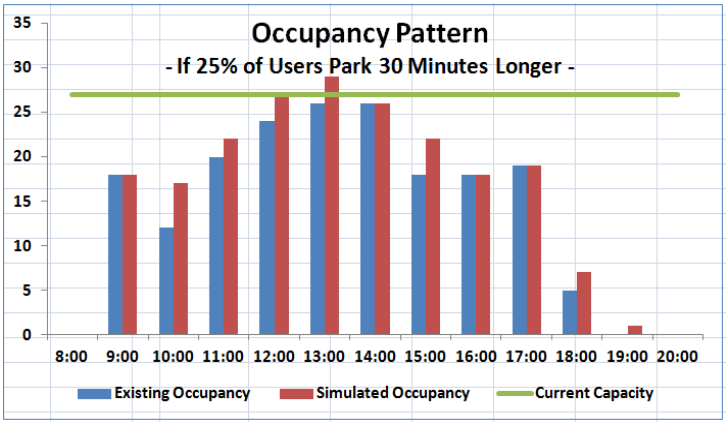
The following analysis serves to demonstrate the "unintended" impacts of over-staying on a parking space. One of the key underlying elements of this parking study is to highlight the reasons enforcement is needed as well as to measure of current effectiveness of the enforcement practices in the downtown. And just how important is it to manage the duration of stay on a parking space?

We wanted to illustrate the effect of staying 15, 30 or 60 minutes more on a metered or pay and display parking space than is currently the case. For the purposes of investigation of the impact of staying longer on the limited on-street parking spaces, we constructed the following laboratory:

- Pooled all of the visitors that parked on the 27 spaces on the south side of Market Square;
- Through our parking space utilization surveys we are able to construct vehicles arriving, departing and accumulating over the course of a typical high volume December survey day;
- We then made an assumption in order to **isolate the impact of staying longer**, namely: that for the purposes of this analysis we would assume that we do NOT attract any new volume or customers to the area; and,
- Projected the impact on the use of these on-street parking spaces if say 25 percent of the current volume stays 30 minutes longer than today.

This results in a higher occupancy of space –beyond practical capacity. The scenarios here make the assumption that volume and patterns of arrival of customers is held constant and only the duration of stay changes.

The impacts of the above changes to average duration of stay are:



- If everyone stays 30 minutes longer, the occupancy of space would increase by 14% on average over the course of the day;
- The increase in occupancy would result in periods of over capacity between noon and 13:00 in the after.

So, the price we pay for not enforcing the time limit is severe in terms of the pressure on limited space resources. The impact therefore of increasing the time restriction is to create a chronic high occupancy of parking space resulting in more frustration in finding an available space (since those spaces are not turning over as often). Typically, a standard used in the parking industry is that at least 15 percent of the capacity should be made available at all times over the course of the day to enable shorter times looking

for available parking space. The longer people stay on this critical on-street parking resource, the greater the difficulty in making space available to others.

Another industry standard is that to maintain this 15 percent of capacity available, the **pricing** mechanism is applied. Typically, when occupancy reaches and exceeds 85 percent of capacity, parking operators raise the parking rates to push customers to the off-street parking facilities thereby freeing up spaces for the shorter stay, higher turnover business customers.

This is not to say that staying in the downtown is not a good idea, but underscores that critical and very time sensitive on-street parking space should remain for very short stay visitors. **It is the expressed role of the off-street parking product to serve the longer stay customer.**

Factor 5: The Customer Experience

This section serves to provide valuable information regarding customer experience with public parking in the downtown. As was the case with the other four factors the graphic below serves to provide the map for the analysis.

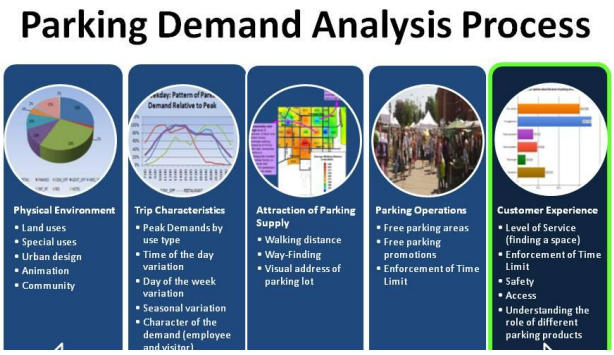


Figure 19: Parking Demand Analysis - Impact of Customer Experience

The results of online survey form the core of the discussion that follows. A copy of the online questionnaire is shown in **Appendix A – Online Survey 2016.** The public was engaged and definitely interested in parking (over 500 responses), as exhibited by the many thoughtful comments received. The fact that people not only answered the questions, but took the time to provide extensive commentary, shows a community that is concerned about the parking services provided by their municipality.

Customer Profile

Flowing from the surveys, the downtown attracts this typical customer:

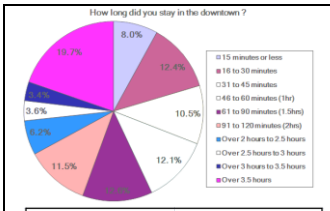
1. Eight-three percent of our responses were from customers who visited the downtown on a weekday.
2. Thirty-seven percent of our responses were from customers who visited the downtown in the morning (8 am to 11 am).
3. Thirty percent of our responses were from customers who are in the downtown for work-related or business meeting purposes.
4. Seventy-seven percent came to the downtown from their place of residence.
5. Eighty-three percent came by car or truck, with a significant 12.5% who walked from their residence.
6. Sixty-five percent of those who drove to the downtown parked on-street, and 23% in a municipal off-street facility.

Trip Destinations and Time Spent in the Downtown

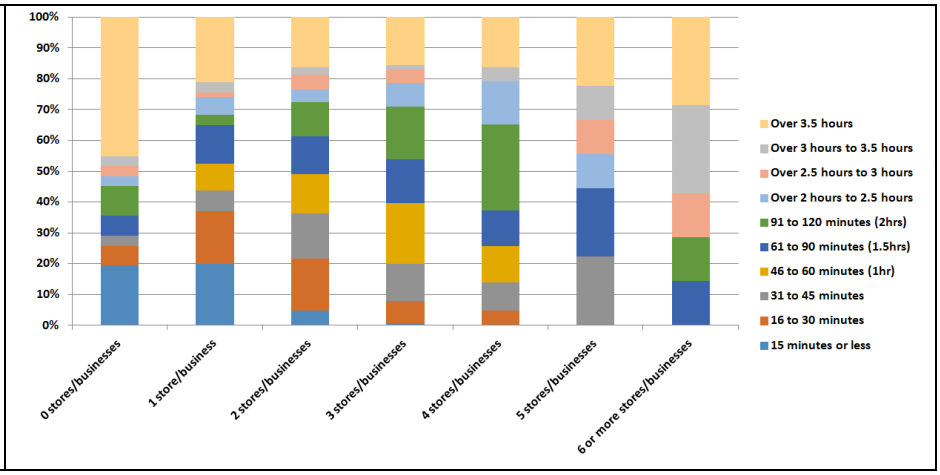
7. On average each visitor had 2.2 destination points in the downtown on their trip.
8. Top draws for visitor's primary destination are shown in red on the snippet table to the right.
9. Pulling out just those who drove their vehicles and had indicated that either dining, shopping or entertainment was their primary trip purpose, the average duration of stay is 1:53 hr.
10. Generally speaking the longer the duration of stay the more destinations.

	Frequency	Pct Distribution
Destination is outside of the boundaries shown	1	0.2%
C100 - Pazzo Taverna	27	4.8%
C101 - Rene's Bistro, The Butcher The Baker	134	23.7%
C103 - Convenience Plaza	5	0.9%
C104 - City Hall / Market Square	127	22.5%
C105 - Cora, Pizza Pizza, Carrie's K9 Cuts	16	2.8%
C106 - Parlour Inn	8	1.4%
C107 - Police Station	6	1.1%
C108 - Waterloo Stratford Campus	7	1.2%
C109 - Black Swan	8	1.4%
D100 - Tim Horton's	3	0.5%
D101 - Shoppers Drug Mart	11	1.9%
D102 - The Prune, Post Office	2	0.4%
D103 - Gentle Rain, Marley And Me	6	1.1%
D104 - Jeanne Sauve, Romeo Public School	0	0.0%
D105 - St John's United	1	0.2%
D106 - St Paul's	0	0.0%
E100 - Bentley's, Armoury	65	11.5%
E101 - TD Bank, Albert St Inn	49	8.7%
E102 - Avon & Studio Theatres	17	3.0%
E103 - Downie Street Burgers	16	2.8%
E104 - Parkette	1	0.2%
W100 - Library	14	2.5%
W101 - Park activities along river	0	0.0%
W102 - York & Ontario St shops	18	3.2%
W103 - United Way, City Hall Annex	22	3.9%
W104 - Royal Canadian Legion, Home Appliance	1	0.2%
Response Count	565	

11. About 32% of respondents stay for more than two hours. The duration of stay category – 1 to 1.5 hours – serves the broadest range of stores visited.

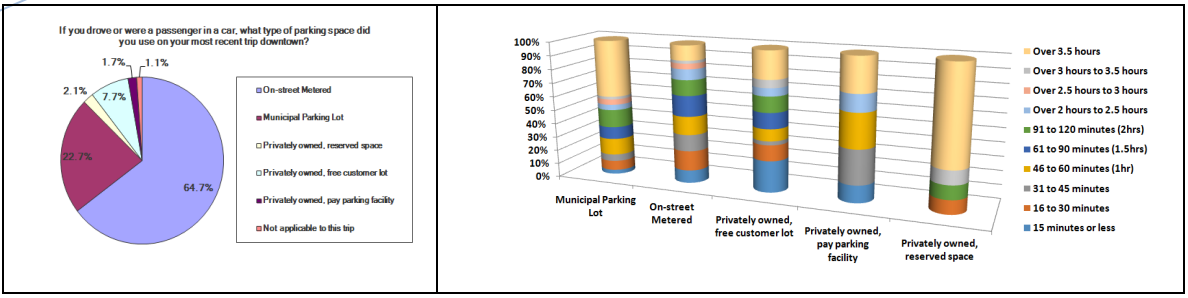


Duration Spent	Average # Destinations
15 minutes or less	1.16
16 to 30 minutes	1.78
31 to 45 minutes	2.33
46 to 60 minutes (1hr)	2.37
61 to 90 minutes (1.5hrs)	2.31
91 to 120 minutes (2hrs)	2.72
Over 2 hours to 2.5 hours	2.44
Over 2.5 hours to 3 hours	2.68
Over 3 hours to 3.5 hours	2.97
Over 3.5 hours	2.05
Grand Total	**2.20**

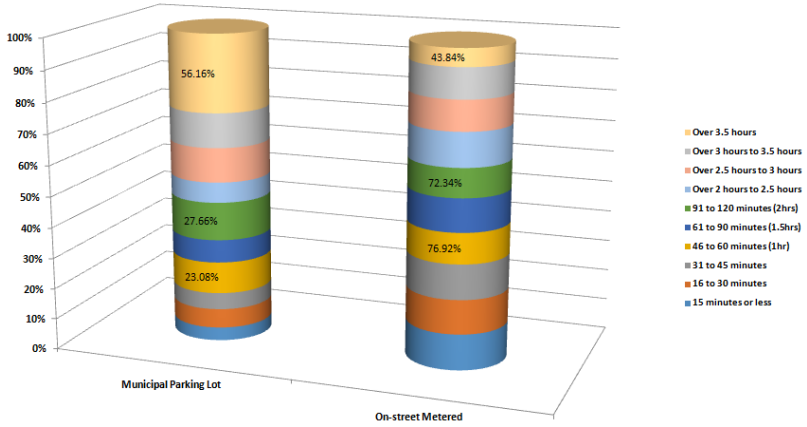


Customer Use of Different Parking Products

12. Parking Space Choice and parking space type by customer duration of stay is shown in the graphics below. Note the wide coverage of durations that the on-street service. The private customer lots (free of charge) also provide that same wide range of customer durations. The municipal off-street facilities seem to be more attractive to not only less numbers of customers but also those with longer durations of stay.



13. Looking at the parking type choice from another perspective. The on-street parking space here in the downtown has a very wide customer stay market range. The off-street space is continuing to attract customers with slightly longer durations of stay, but in most of the other durations of stay categories on-street space provides a very high level of service.



We are now prepared to define current and future emerging parking market opportunities armed with the analysis of five parking demand factors:

- The physical environment (land uses)
- The trip characteristics(duration of stay, choice of parking space type, time of arrival/departure)
- The attraction of parking demand (walking distances)
- The effect of parking operations on parking demand (pay or free), and
- Customer experience with the parking service.

Evaluation of Current Parking Demand and Supply

Having built a body of evidence to assist in characterizing current parking demand attracted by the quantity and type of land uses in the downtown, this section quantifies the volume of parking demand, distributes that demand to the various blocks in the downtown and then evaluates the balance between that demand to the supply on those blocks. The outcomes from this task feed into the Market Potential Identification which is the subject of the next major chapter of this report.

Overview of Methodology

Against a back drop of calibration of parking supply usage observed in the field against customer trip characteristics and a library of downtown studies, the following five steps were followed in order to provide a framework for the discussion of where new service areas might emerge in Stratford.

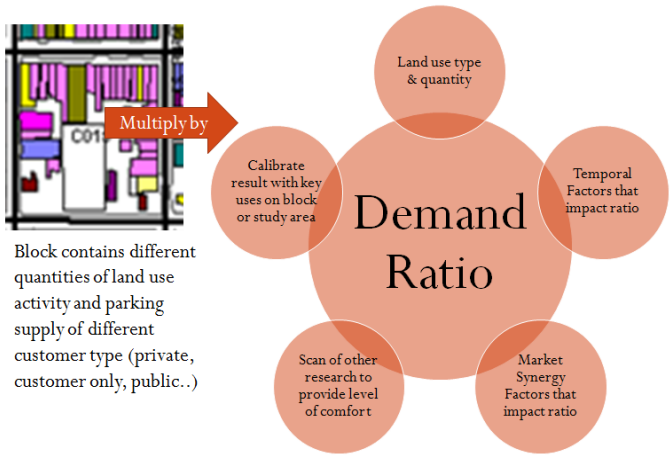


Figure 20: Generate Peak Hour Demand Ratios and Apply to Block Land Uses

1. Compute the **peak hour parking demand** attracted by the **quantity** and **type of land use** found in the downtown. These demand ratios make use of a number of factors as shown on **Figure 20**. The outcome of this process is a set of block specific quantities of long stay (employee) and shorter stay (visitor) parking demand.

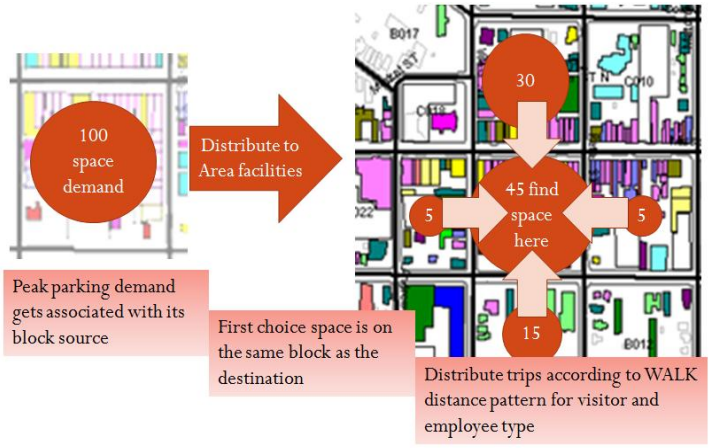


Figure 21: Distribute Block Parking Demands to Block Supply by Walking Distance

2. **Spatially distribute** that parking demand to the blocks in the downtown by applying the peak hour ratios computed in step 1 to land use quantities in each block
3. Compare the block distributed parking demands (step 2) to the block parking supply.
4. Refine the capture of parking demand by introducing walking distance. **Figure 21** illustrates this key step.
5. Through the understanding of current parking supply, and the current walking distance profile of both customers and workers, **optimize** where parking supply should be located with respect to its demand.

Step 1: Calculate Peak Hour Parking Demand

The computation of peak hour parking demands in the downtown is a result of the following:

- Peak hour demand for parking attracted by workers taking note of the effects of:
  - absenteeism;
  - density (floor space per employee);
  - mode of travel;
  - vehicle occupancy, and estimates of the number of employees present at peak hours of the day; and
- Peak hour demand for visitors taking note of the effects of:
  - multi-destinations,
  - market synergy,
  - Effect of temporal variation in the demand profile.

The computed peak hour parking ratios are adjusted to reflect a number of land use characteristics such as:

- different land uses peak at different times of the day;
- different land uses peak on different days of the week;
- different land uses exhibit seasonal variation in their peak demand; and
- The amount of walk-in trips (that is, trips that originate from people already working in each study area.

Based on parking demand surveys, and research from other studies, here are some of the values for each of these factors that impact parking demand ratios for employee:

DENSITY – ranges from 1 to 4.2 employees per 1000 square feet depending on land use type

AUTO DRIVERS – average across land use types is about 80 to 85 percent drivers

DAYTIME DEMAND – ranges from 70 to 100 percent

ABSENTEEISM/OFF SITE – ranges from 5 to 7 percent of the total employed

Employee and Visitor Peak Hour Parking Demand Ratios

The peak hour demands attracted by employee trips to the downtown shown on Figure 22 are based on the evidence:

- the results of the parking demand surveys (online);
- travel characteristics as described in the text box on previous page;
- the process of calibrating what was observed in the field (through parking activity surveys) and the computed peak hour demands generated in this section; and,
- What theoretically should be attracted by the quantity and type of land use based on industry standards and consulting experience for comparable study areas.

Land Use Activity	Employee	Visitor	Total
Retail	0.72	0.62	1.34
Services	0.72	0.80	1.52
Financial Services	0.72	1.11	1.83
Commercial Office	0.72	0.13	0.85
Government Sevices	0.77	0.39	1.16
Medical Services	0.67	1.14	1.81
Restaurants	0.72	1.08	1.80
Entertainment	0.58	4.12	4.69
Residential	1.16	0.10	1.26
General (ndustry, institutional, etc)	0.41	0.51	0.92

Figure 22: Typical Peak Hour Parking Demand Ratios (Spaces per 100 Sq. M of Land Use)

Applying the employee ratios to the estimated quantity and types of land use within the downtown generated an overall **employee** parking demand for about **750** spaces at the peak time of the day (between 11 am to 2 pm period)[8].

As for **visitor** trips to the downtown, individual land uses exhibit different peak hours over the course of the day. Some uses peak in the evening hours, some in the morning and retail generally peaks over the 11 am to 2 pm period. When different land uses come together in a downtown, one peak hour in time over the course of the day is formed. It is this composite pattern of parking demand that is the centre of the analysis of peak hour visitor parking demand ratios. [Refer back to Table 4 for temporal variation factors by land use type.]

Applying the visitor ratios shown on Figure 22 to the quantity of land use in the downtown generates a peak hour composite demand for approximately **1000** spaces.

Total Downtown Peak Hour Parking Demand

The peak hour of the day parking demand as calibrated by these parking demand ratios and by matching what we saw over the course of our field data collection, the range of peak hour trips to the downtown range from **1640 to 1840** vehicles with the mid-range target of **1740**. The range is a result of applying the 95th statistical confidence calculation to our sampled field data and therefore accounts for the seasonal difference in the data.

At this point if the demand estimates show a need for 1640 to 1840 spaces and our parking supply (including private spaces) was approximately 2140 spaces then one could conclude that there is no numeric deficiency in the demand/supply system.

[8] This is not to say that there are work related parkers who choose to park outside of the downtown study area boundaries.

However, the numerical comparison of parking supply to demand over the landscape of a study area is counter to the dynamic characteristic of parking demand and supply. That dynamic is that people walk form one block's parking supply to another block's destination point. The fluid nature then makes this overall peak use of space discussion useful only in that it provides a ready-made, easy to understand metric that gives an overall indication of the balance of parking demand and its supply.

The next steps will provide more of a market approach to the service of block parking demand by parking supply that is within comfortable walking distance. But before we can do that let us generate peak hour parking demand by block by building on the results here.

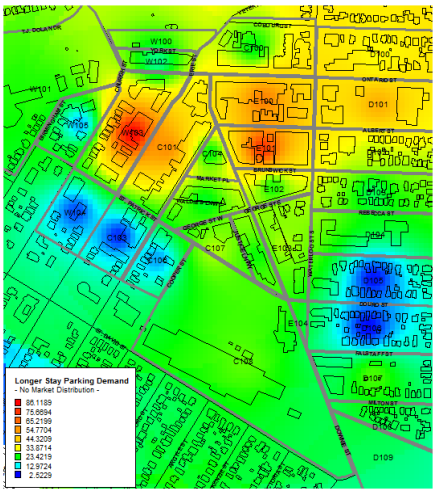


Figure 23: Work Parking Demand by Block

Step 2: Compute Block Level Peak Hour Demands

Figure 23 displays the product of multiplying peak hour **work** ratios by land use quantity (by type of use) for each block in the study area. The yellow to red colour represents relatively higher number of longer stay customers.

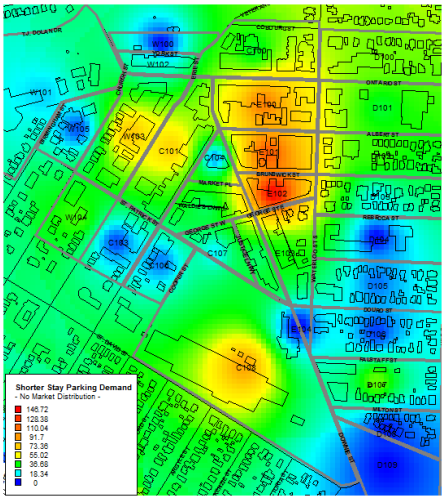


Figure 24: Visitor Parking Demand by Block

Figure 24 displays the product of multiplying peak hour **visitor** ratios by land use quantity (by type of use) for each block in the study area. The yellow to red colour represents relatively higher number of block visitor parking demand.

Finally Figure 25 displays the sum of long and short stay demand by block.

Analysis of Spatial Patterns of Demand

Step 2 results show only the product of peak parking ratios and quantity of land use. That product to repeat is the peak hour parking demand attracted by land uses on that block. The current parking supply on each block does not come into play at this point of the process – we are simply determining the extent and distribution of trips.

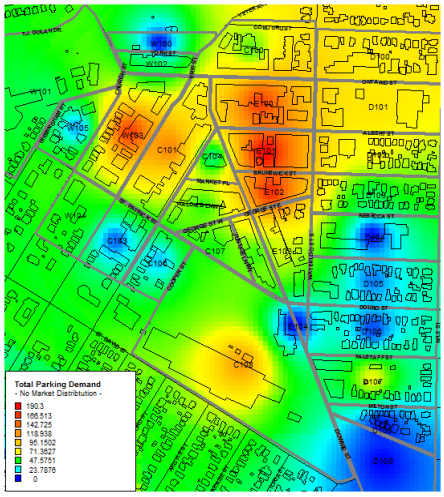


Figure 25: Total Parking Demand by Block

The result highlights are summarized here:

- Solid demand for long and short parking east of Downie north of George and well as an intense

demand generated by uses just west of Wellington north of St Patrick;

- Longer stay parking demand focus points are: west of Erie Street (annex City Hall), central corridor blocks formed by Brunswick and Ontario on the south and north and by Waterloo / Downie on the east and west;
- Short stay parking demand distribution opens up two new blocks: E100 (Ontario /Waterloo/ Albert and Downie) and C108 where the Cooper site is located;
- Major generators of longer stay parking demand are: public services as the courts, city hall and a pocket of personal service professional offices; and
- Major generators of shorter stay visitor parking demand are: theatre, retail and restaurants along Ontario corridor as well as Downie and Waterloo.

The next step is to explore the deficits/surpluses that occur when the parking demand attracted by each block is compared to the parking supply on each block.

Step 3: Compare Block Parking Demands to Block Parking Supply

Two figures in this section illustrate the result of comparing block parking demand (long and short stay customer demand) to block parking supply (long and short stay customer supply). In this way, areas in the downtown where parking supply compared to block demands are in deficit (demand is greater than supply).

Figure 26 is an illustration of the numeric comparison of parking demand and parking supply for our **longer** stay customers. Red or lighter colours represent numeric surplus when block supply is greater than computed demand.

Figure 27 is an illustration of the numeric comparison of parking demand and parking supply for our **shorter** stay customers. Blue or darker colours represent numeric deficits when block supply is lower than computed demand.

Both figures show the numeric surplus or deficiency of parking space would be if all demand generated on a block was to be serviced by supply on that block - in other words under a condition that no customer would walk from supply on Block A to their destination on Block B.

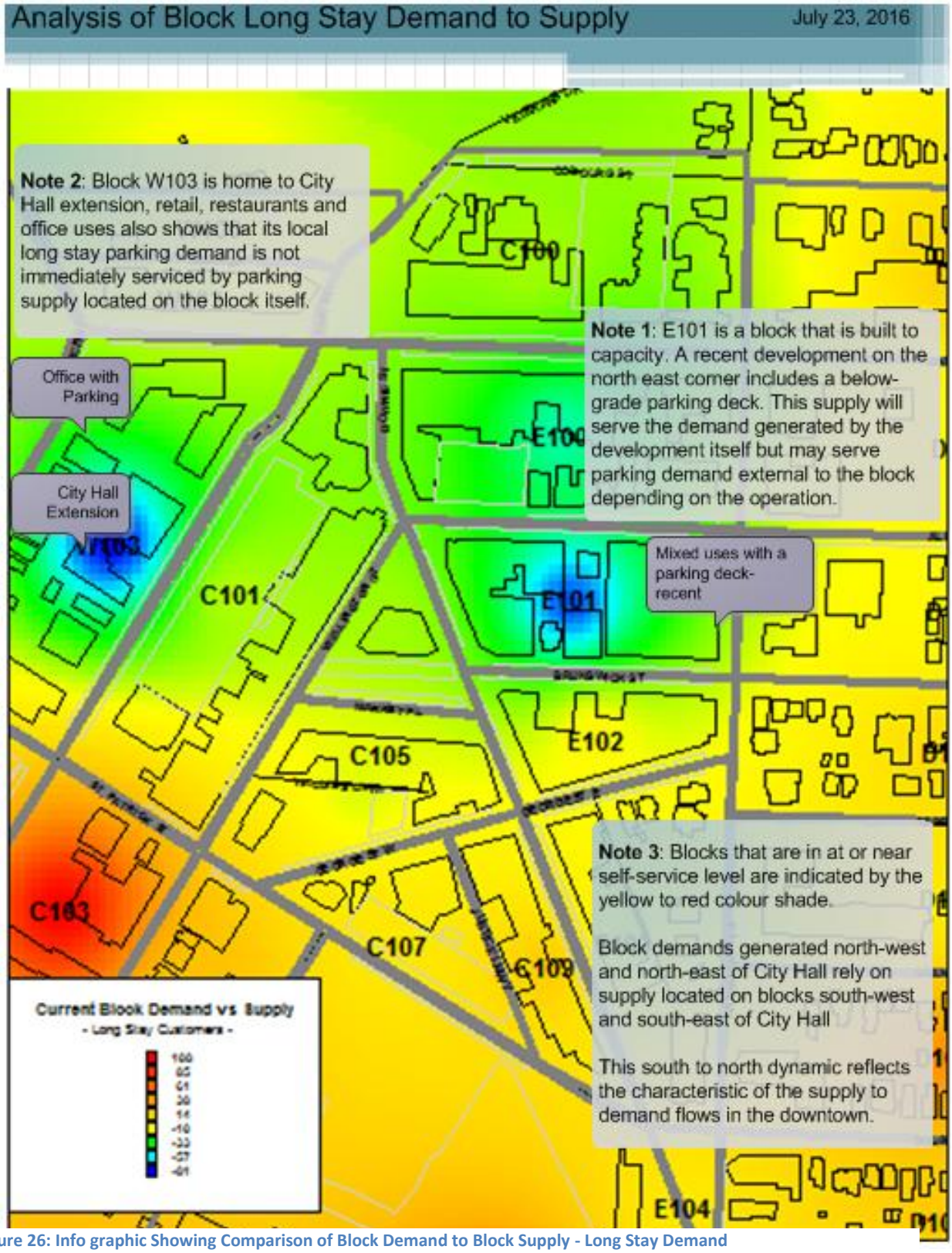


Figure 26: Info graphic Showing Comparison of Block Demand to Block Supply - Long Stay Demand

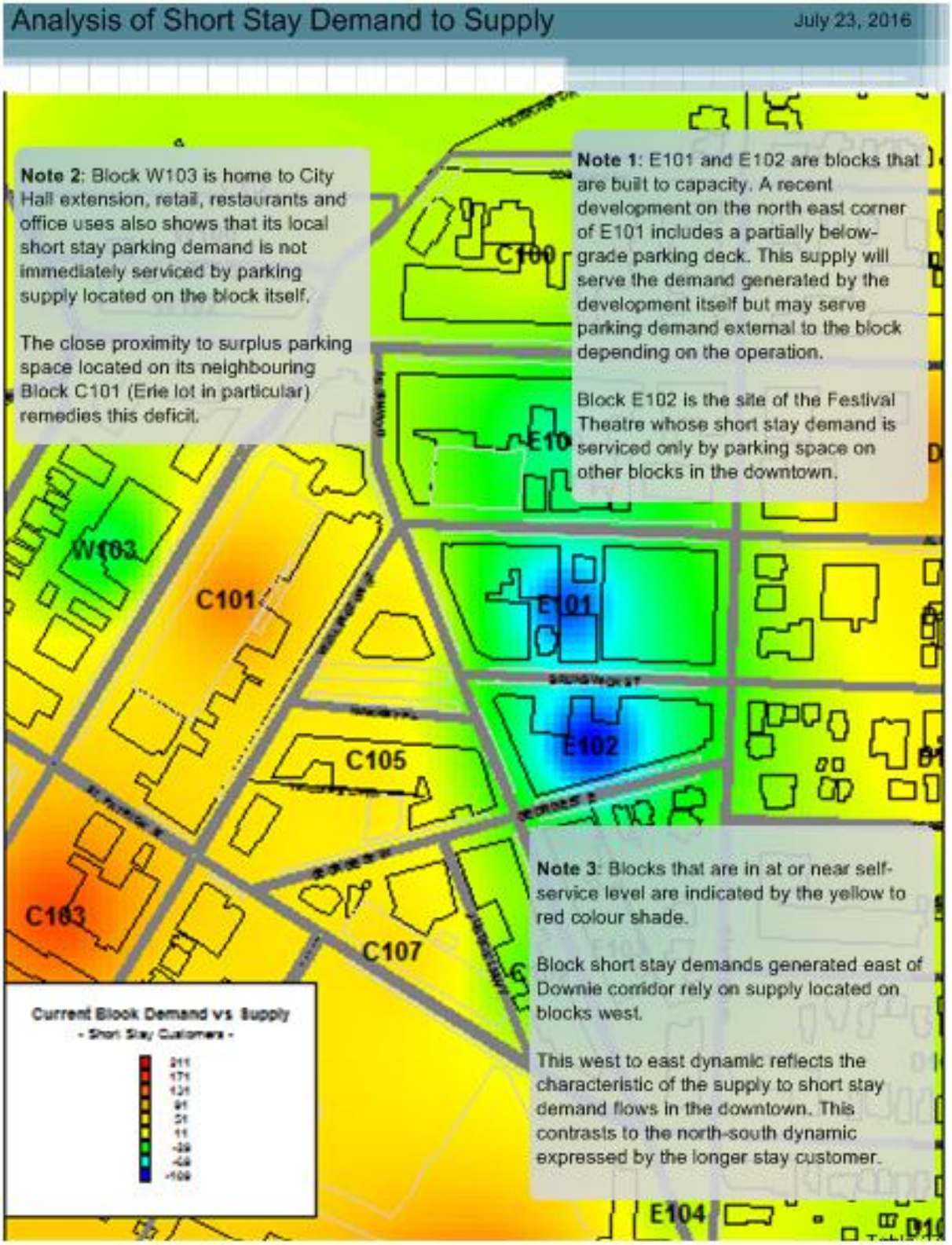
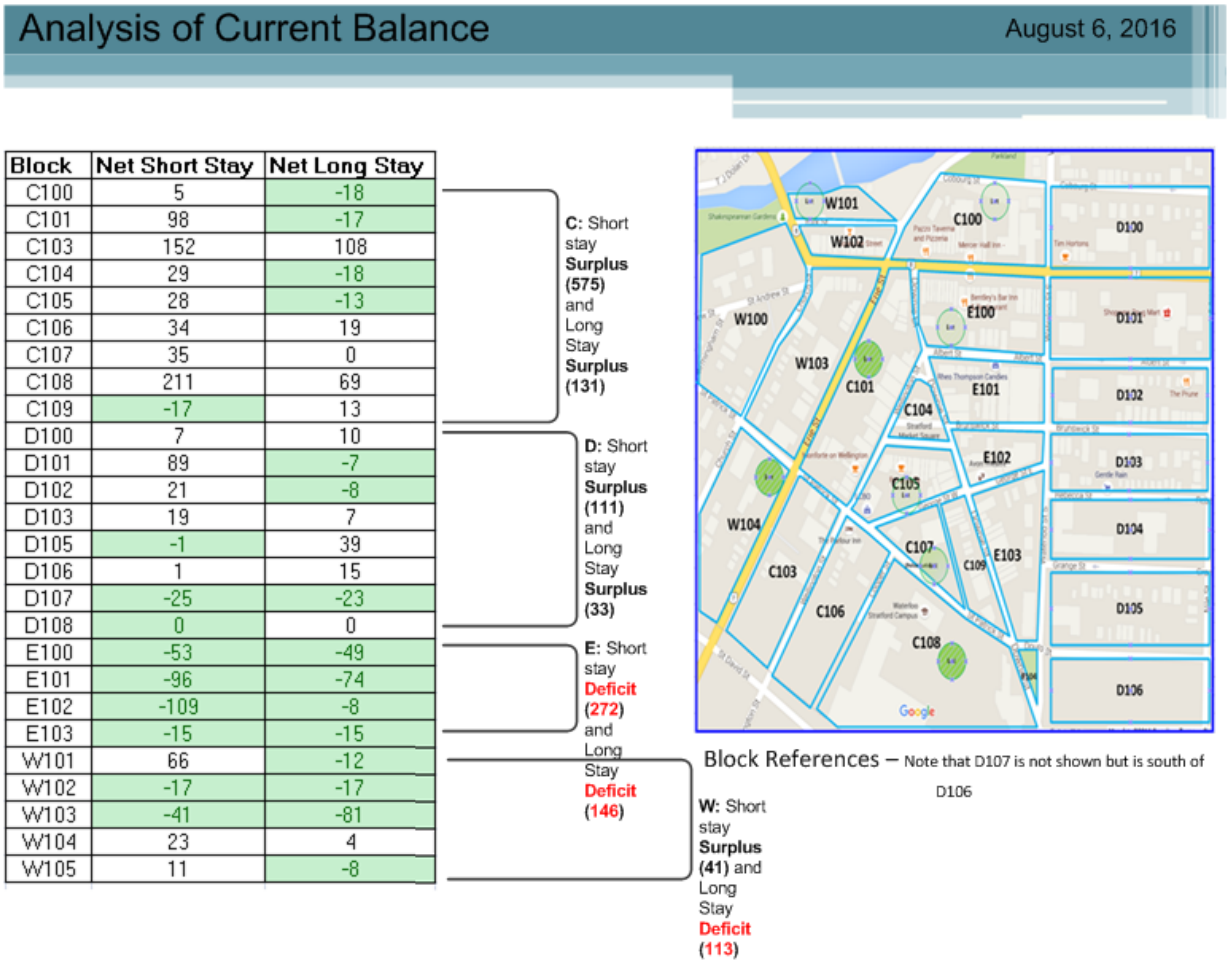


Figure 27: Info graphic Showing Comparison of Block Demand to Block Supply - Short Stay Demand

Analysis of Current Balance of Parking Demands and Parking Supply

The salient findings of the analysis of the balance between current demand and supply are annotated on info graphic Figure 28.

Figure 28: Info graphic Showing Analysis of Current Demand to Supply Balance



Block	Net Short Stay	Net Long Stay
C100	5	-18
C101	98	-17
C103	152	108
C104	29	-18
C105	28	-13
C106	34	19
C107	35	0
C108	211	69
C109	-17	13
D100	7	10
D101	89	-7
D102	21	-8
D103	19	7
D105	-1	39
D106	1	15
D107	-25	-23
D108	0	0
E100	-53	-49
E101	-96	-74
E102	-109	-8
E103	-15	-15
W101	66	-12
W102	-17	-17
W103	-41	-81
W104	23	4
W105	11	-8

The E-corridor and W-corridor show numerical deficits where parking demand is greater than the parking supply. Specifically E-corridor formed by four blocks bounded by Ontario / Waterloo / St Patrick and Downie does not have enough parking supply on the blocks to provide the highest level of customer service. Looking at the table within Figure 28 shows us that every block within the E corridor show demand greater than supply without exception. However, the supply found on the blocks that form the C corridor are clearly within easy walking distance of that demand.

The W-corridor on the west side of our downtown study area also shows numerical deficit for longer stay parking demand. As described in the land use sections of this report, the W-corridor has a number

of public institutions that draw higher number of employees. The Court, the Library and a number of financial offices draw employees and visitors alike.

If the business objective then was to provide the highest possible level of customer service - where block demand is served by block supply - then the deficits shown on Figure 28 would provide block level targets. The reality is that:

1. The physical opportunity to provide a parking space on each block is limited.

2. The cost of provision of parking supply on each block to service estimated block parking demand is prohibitive, and would require a program of property acquisition or a series of joint partnerships with current and future property owners.

3. And finally, this business target does not reflect the dynamic nature of where people park and where their primary destination is located. The Parking Management Strategy for the downtown needs to embrace quality of service, innovation of service delivery to the customer, and sustainability (economic and within the family of transportation strategies).

The next step provides a way in which we incorporate the dynamic nature of parking demand and current supply in order to formulate a parking strategy that fulfills the aforementioned strategic ideals.

Step 4: Apply Walking Distance Characteristics to Parking Demand

In the previous section, the number of block-level trips was estimated using the peak hour attraction ratios. Now we **distribute** those block-level demands to blocks within walking distance. This dynamic provides some fluidity to the parking demand and where the parking supply can be located to service that demand. The geographic distribution of the parking demands attracted by long and shorter stay visitor trips uncover areas where parking supply needs to be in proximity in order to more effectively service those demands.

The outcomes of this step build on these processes:

- Distribute the quantity of peak hour trips expected on each block given its profile of land use types [**Demand**] to surrounding blocks according to observed walking distances for long and short stay trips to the downtown;
- Compare this distribution of demand to the parking supply on each block in the downtown; and
- Determine where parking supply or its operation type might change in order to respond to the distributed parking demand [**Potential**].

Distribution of Block Level Trips Applying Walking Distance

The three figures in this section illustrate the distribution of the individual block parking demand to blocks within observed walking distances to and from parking space and primary destination**.**

Figures 29 (Long stay or work trips), 30 (Short stay or visitor trips) and 31 (total long and short stay trips) were examined and the following salient findings drive the direction of our parking management strategy:

- Based on its location - central to parking demand and within the local characteristic walking distance - **Block E101** is in position to serve significant portion of shorter stay parking demand. This block is bounded by Albert / Waterloo / Brunswick and Downie streets.
- **Block W103** - west of the Erie lot block - also is strategic to serve both long and short stay parking demand.
- The triangle formed by Blocks C108, Block E101 and Block W103 is in strategic position to provide parking service when walking distances are taken into account.
- A cautionary note is that the significant draw that Block C108 (Cooper site) shows is a result of a walking distance profile that results from a somewhat distorted market coverage; this block presents parking service at no charge; this operation characteristic lengthens the walking distance threshold for both long and short stay trip types;

What we have not done is examined the current parking supply on these key areas to see if there is a deficiency or an opportunity to raise the level of customer service.

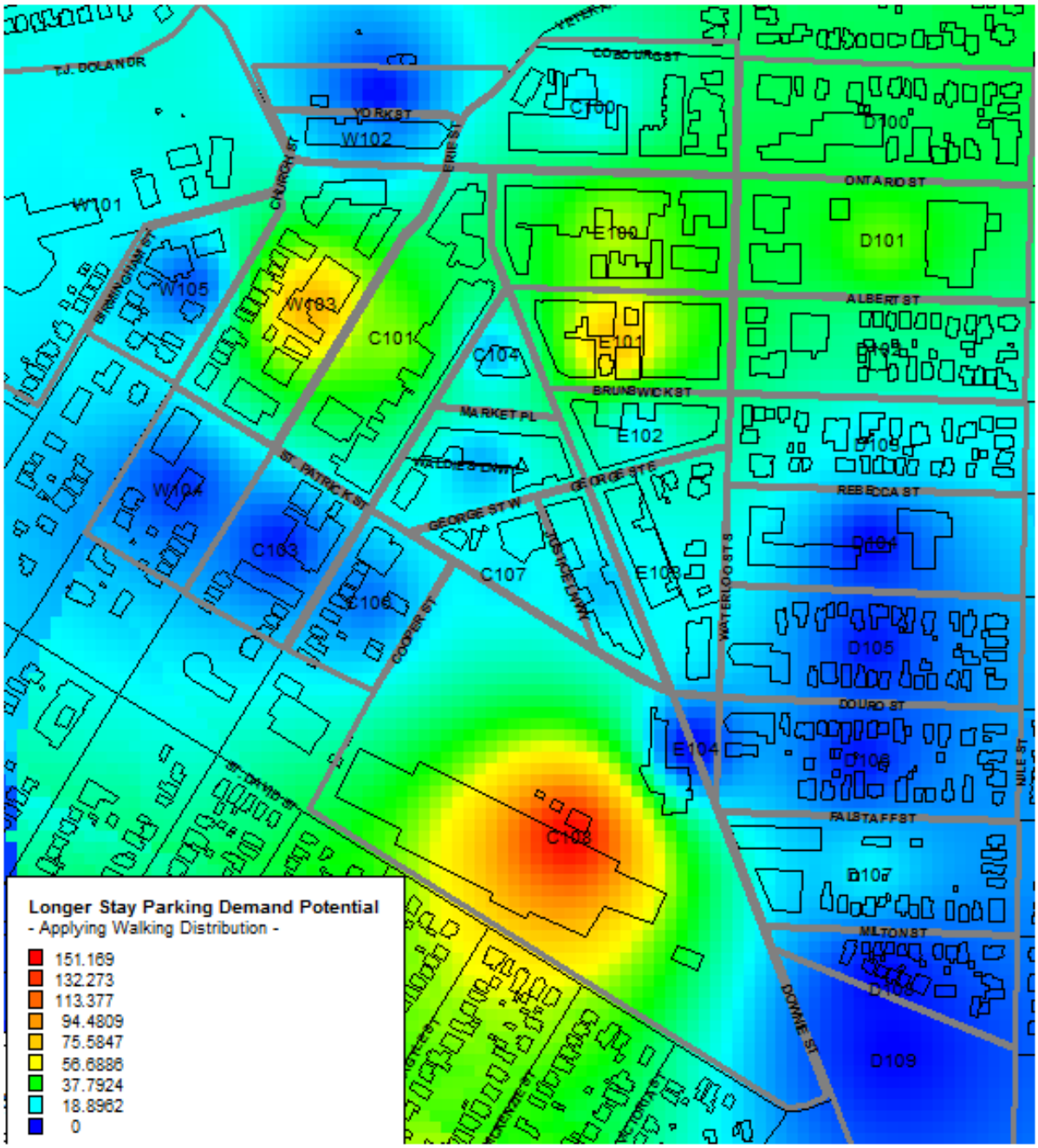


Figure 29: Long Stay (Work) Parking Demand
Applying Walking Distance

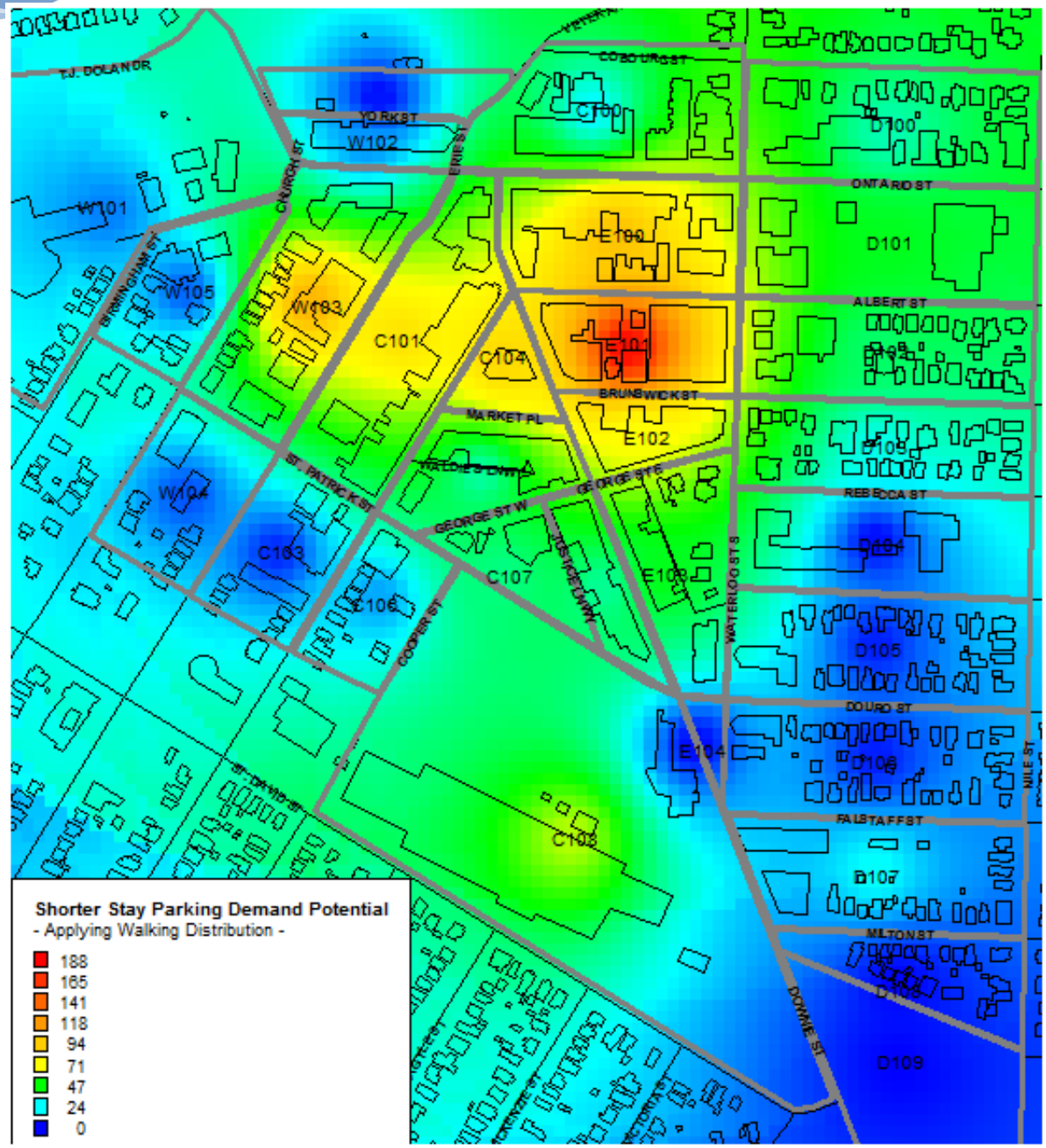


Figure 30: Short Stay (Visitor) Parking Demand
Applying Walking Distance

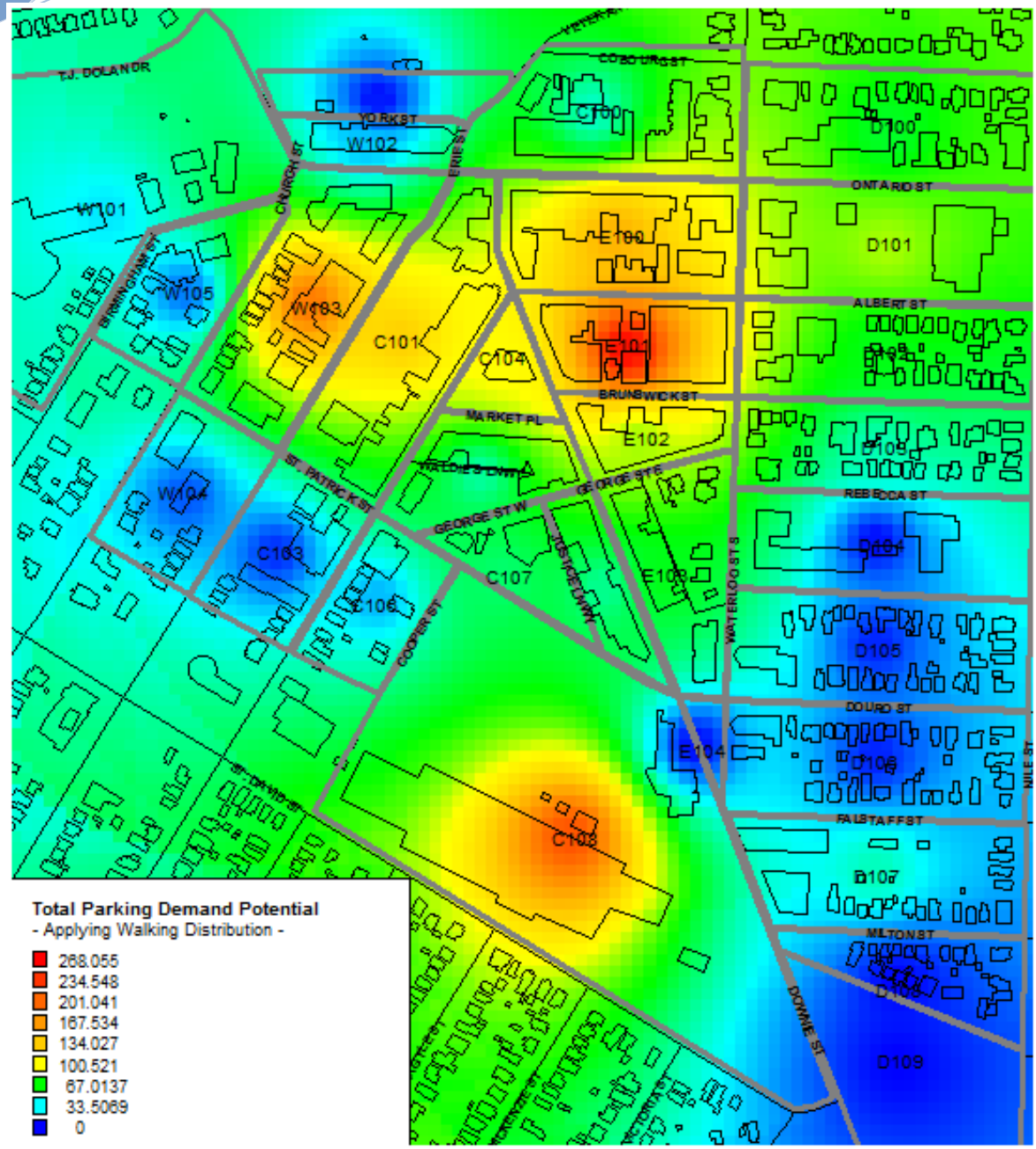
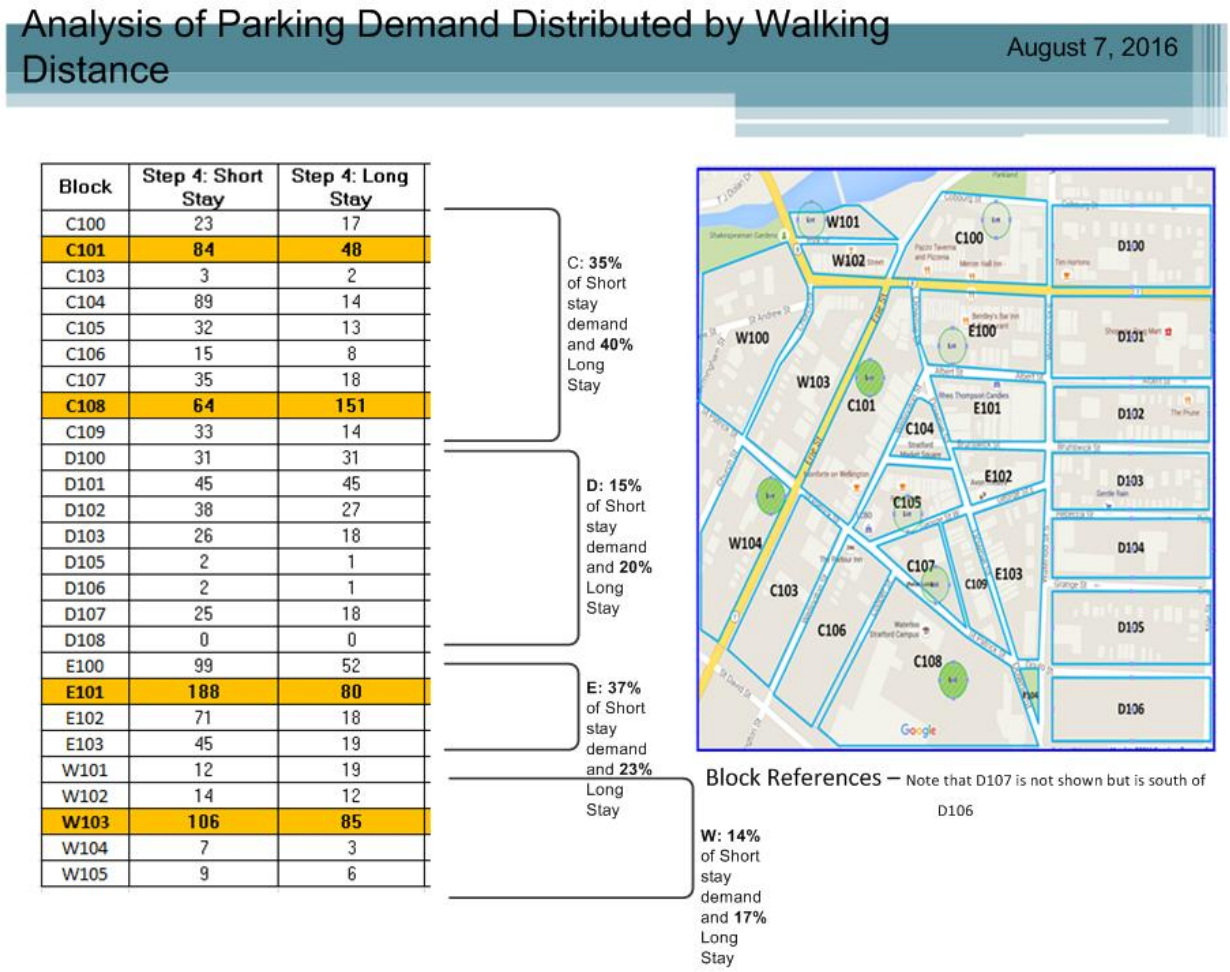


Figure 31: Total Parking Demand Applying Walking Distance

Analysis of Block Demand Distributed by Applying Walking Distance

The salient findings of the analysis of the distributed current demand are annotated on info graphic Figure 32.



Block	Step 4: Short Stay	Step 4: Long Stay
C100	23	17
C101	**84**	**48**
C103	3	2
C104	89	14
C105	32	13
C106	15	8
C107	35	18
C108	**64**	**151**
C109	33	14
D100	31	31
D101	45	45
D102	38	27
D103	26	18
D105	2	1
D106	2	1
D107	25	18
D108	0	0
E100	99	52
E101	**188**	**80**
E102	71	18
E103	45	19
W101	12	19
W102	14	12
W103	**106**	**85**
W104	7	3
W105	9	6

Figure 32: Info graphic Showing Distributed Parking Demand as per Walking Distances

The key areas of the downtown whose parking supply is marketable to short stay customers are the C-corridor and E-corridor. The ranking of blocks that are within acceptable walking distance for a shorter stay customer are: Block E101, W103, C101 and C108. Take note that the top two blocks that are in better location for customer service do not have municipal parking facilities.

The key areas of the downtown whose parking supply is marketable to long stay customers are C-corridor and E-corridor as well. The ranking of blocks that are within acceptable walking distance for longer stay customers are: C108 (free Cooper site), W103, E101 and E100. Take note that the C108 block contains a significant quantity of free parking which distorts the more typical user pay decision process of choosing where to park. In addition note that two blocks within our E-corridor are within walking distance to best serve longer stay parking demands.

Step 5: Compare Distributed Parking Demand to Parking Supply

The computed distributed parking demand is now compared to block parking supply – being careful to ownership of parking space (private versus public). The info graphic illustrates and frames a discussion of possible marketing opportunities regarding municipal parking supply and operation**.**

The key outcomes of this step are:

- It is understood that corridor E generates a significant portion of the downtown's long and short stay parking demands. Corridor E is home to one of the busiest off-street parking facility on Albert Street.
- While the demand to supply comparison shows an extraordinary deficit in both long and short stay parking space deficit, the opportunity for expansion of parking inventory within the corridor is limited.
- The parking supply within this corridor is currently at capacity in its response to this demand. Technical Report B will elaborate but important at this point is that the supply is optimally used by customers. There does not appear to be abuse in terms of customers parking beyond the three hour time limits that would mean other customers cannot share the limited parking space.
- We need to look at how the parking supply in reality is responding to the demand. Our field surveys of parking space use will provide insights into how well the parking inventory is performing.
- The most common way of expressing the balance between parking demand and supply is to quote the occupancy or peak utilization of its supply (75 percent occupancy at 14:00 hrs for example). In practical terms however, this particular metric is not very helpful because it contradicts what we have been saying throughout steps 1 to 5: the walking distance to and from primary destination and parking space provides a broader spatial perspective on the balance of supply and its demand.
- The outcome of step five (5) serves to provide the study with a spatial focus of where opportunity theoretically emerges. It does not point to specific properties within the downtown where supply can be changed in order to more effectively respond to its market.
- The balance of parking demand and supply is beyond their numerical differences. The state of balance – surplus or deficit – can and does point to potential operational opportunities. For example, note that the longer stay parking demand customer is consistently in an imbalance. Overall that customer market is in deficit position. The free parking operation at Cooper's site

however demonstrates how the parking management strategy can manipulate the parking space choice decision by selling its service free of user charges. This operational characteristic serves to manipulate customers' acceptance of longer walking distance by off-setting its cost to the customer.

- Building on the walking distance and the impact of operational characteristic, the outcome of steps 1 to 5 point to the need to measure how stable the parking space inventory is over the short and longer term planning horizon.

The next section tests the balance between parking demand and supply under scenarios of change in that parking supply infrastructure.

Analysis of Net Demand to Supply – Current Planning Horizon

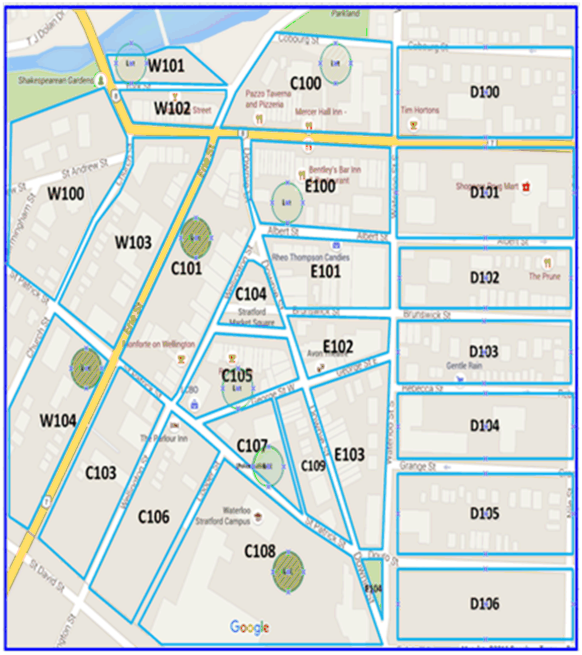
Block	Short Stay Supply	Long Stay Supply	Step 5: Net Short Stay	Step 5: Net Long Stay
C100	39	4	15	-13
C101	168	40	85	-8
C103	157	113	154	111
C104	41	5	-48	-10
C105	58	9	26	-4
C106	43	28	28	20
C107	53	31	18	13
C108	297	97	233	-55
C109	12	36	-21	22
D100	52	45	21	14
D101	123	42	78	-2
D102	62	23	24	-4
D103	38	27	12	10
D105	8	43	5	41
D106	5	17	3	16
D107	19	3	-6	-15
D108	2	0	2	0
E100	48	10	-51	-41
E101	19	2	-169	-78
E102	38	16	-33	-2
E103	22	16	-23	-4
W101	81	13	69	-6
W102	5	1	-9	-11
W103	34	5	-73	-80
W104	64	10	56	7
W105	17	2	8	-4

C: **489 space surplus of** Short stay supply and **77 space surplus** of Long Stay

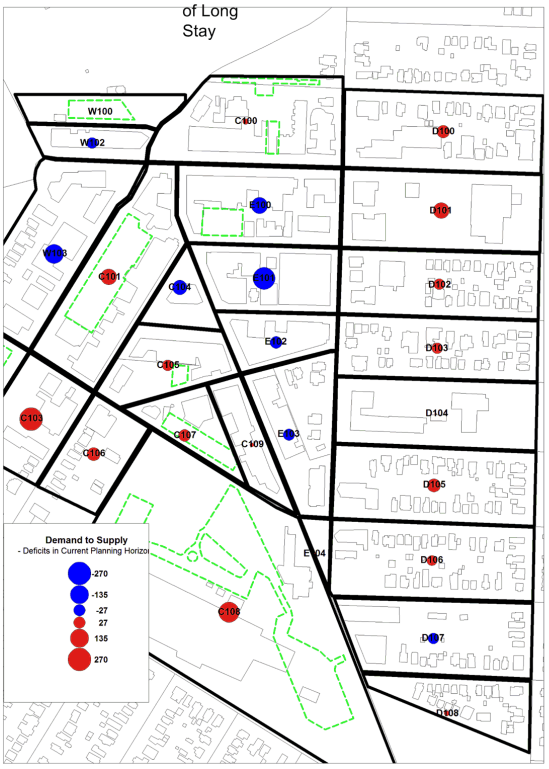
D: 139 space surplus of Short Stay and **60 space surplus** of Long Stay

E: 275 space deficit of Short stay and **125 space deficit** of Long Stay

W: 52 space surplus of Short stay and **94 space deficit** Long Stay



Block References – Note that D107 is not shown but is south of D106



Demand to Supply – Blue represents condition where demand exceeds supply on that block; Red represents condition where supply exceeds demand

Figure 33: Info graphic Showing Current Parking Demand to Parking Supply

Market Potential Opportunities Resulting from Changes

The state of balance between parking demand and supply is sensitive to the stability of the underlying conditions that determine demand and supply. Over time there will be changes to the **physical** environment that will impact the nature and quantity of trips to the downtown, and there will likely be changes to the physical environment in terms of properties that currently supply parking space that may not continue to do so. In addition that balance is affected by changes in **operations** that can impact the level of customer service and then in turn impact customer demand for space. And finally the balance can and will be impacted by the effects of **technology** on the demand for and delivery of parking service.

Assessment of the Impact of Changes

Background Analytic Framework

The downtown parking strategy study collected data that serves to identify parking demand characteristics, such as:

- **what** is attracting people to the downtown;
- **when** are they in need of parking spaces;
- an assessment of current parking operations;
- **how long** do they typically need parking; and,
- **What** factors are important to visitors to the downtown in **choosing where they park - how far are people willing to walk to and from destination and parking space**?

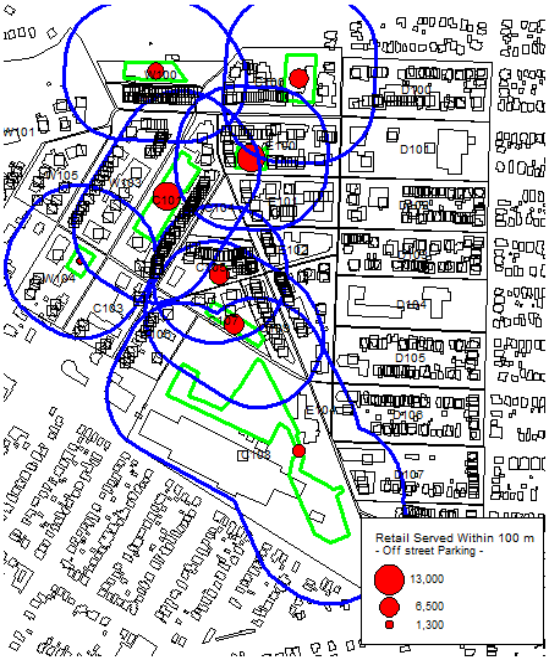


Figure 34: Retail Space within 100 Meters of Municipal Lots

The downtown parking strategy study has also collected data that serves to measure how the current parking supply (public spaces) responds to that parking demand identified above[9]. A number of metrics served to identify the customer level of service on each facility, block or collection of blocks:

- volume of users;
- durations of stay;
- accumulation of vehicles parked over the course of the day;
- peak hour(s) and average usage of our parking service;
- turnover of space (volume divided by number of spaces) to indicate level of intensity;
- the number of consecutive time periods when facility has reached 90 percent or more of its capacity; and
- A number of other metrics.

[9] Technical Report B will detail these results.

Based on the above set of data, we know the following:

1. The current off-street parking supply system is in excellent **position** to service the parking demands attracted by retail, office and restaurants for certain.
2. Figure 34 extracted from the more detailed report shows that **retail** space for example within 100 meters[10] of each off-street municipal facility. Similar assessment was done for office, personal services, medical and restaurant uses in the downtown.
3. The size of the relative red dot serves to indicate visually the physical relationship between the potential parking demand generator (the land use) and the major parking infrastructure (the off street carpark). Important infrastructure to maintain are:
    a. Erie
    b. Albert
    c. Cobourg, and
    d. Perhaps surprising the St Patrick Street lot[11].
4. The online customer survey responses provided insight into the walking thresholds that currently are exhibited in the downtown. These walking patterns will be critical in the estimation of parking demand/parking supply response at the block level. In particular they will assist in determining what the impact might be of changes to the parking space infrastructure.
5. Fifty-five (55**)** percent of respondents parked their vehicles and had their primary destinations on the very same block.

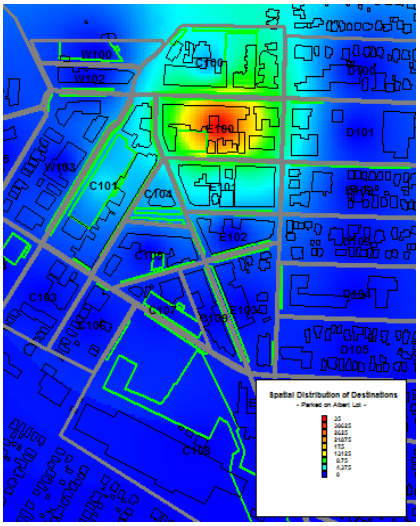


Figure 35: Spatial Distribution of Primary Destinations for Users of Albert St Lot

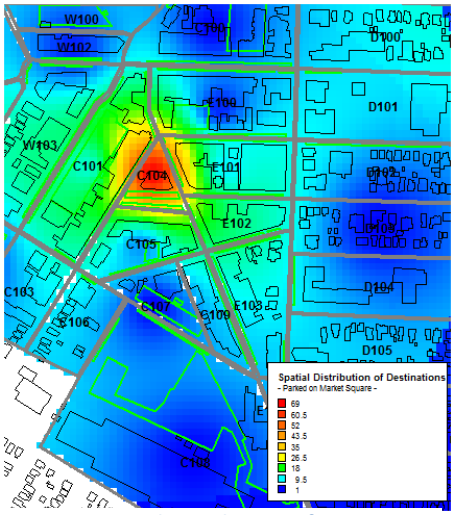


Figure 36: Spatial Distribution of Primary Destinations of Users of Market Square On-street Spaces

[10] The online survey results point to this as a walking threshold for shorter stay trips to the downtown. It represents not only the average walking distance from a parked space to a primary destination point as determined from the online surveys but also reflects approximately a 2 to 2:30 minute walk.

[11] Surprising in that field observations of the parking space users indicated that this particular facility served largely the court and police station parking demands. The facility seemed to be very site specific in scope.

6. For those who parked on a **municipal off street** parking facility, surveys indicated that **83 percent** were able to find a space within 5 minutes, while those who parked on an **on-street** parking space **63 percent** were able to do so. This is not unusual as on-street space is clearly a preferred choice and clearly much more restrictive in terms of inventory. As well, **73 percent** of those survey takers who chose to park on a **private customer** only parking facility were able to find space within 5 minutes!

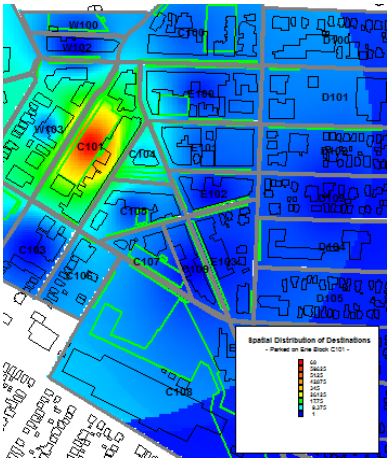


Figure 37: Spatial Distribution of Primary Destinations of Erie Lot Users

7. Often the perception that parking supply is deficient to the needs of customers is based on the **relative amount of time it takes to find a vacant parking space against the amount of time that they wish to stay in the downtown**. The study shows on average 68 percent of the survey takers who found space within 5 minutes those who had durations of 15 minutes or less a significant portion (83%) found that space within 15 minutes. Closer to the average duration of stay of customers in the downtown - just under two hours, the average 5 minutes or less service delivery was of the order **63 percent** with a significant 25 percent of 1:30 to 2:00 hrs duration needing 6 to 10 minutes to find a space. So we are still able to deliver the service within ten percent of the total time a customer wants to spend in the downtown.

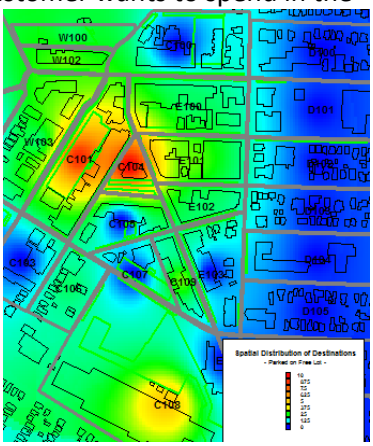


Figure 38: Spatial Distribution of Primary Destinations of Users of Cooper Free Lot

8. Market Square (C104) and Erie lot's Block C101 represent 46 percent of the total online destinations. The facilities on these prime blocks serve two-thirds of the parking demand attracted by its uses. Be mindful that the Market Square block offers 68 on-street parking spaces while the Erie block provides 227 spaces including a 136 off-street parking facility. The 66% - 67% capture rate is an indicator of a high level of customer service.
9. The market capture area for those with destinations on the **Albert St** lot is shown. We have established that this block like many other primarily serve demand attracted by land use activities on the block itself, but note that there are indications that demand generated across Ontario St and on the south side of Albert is being serviced as well. Our field crew indicated that virtually on every observation period on the Wednesday of both the July and December surveys, there were vehicles circulating the Albert St municipal parking lot looking for space. Clearly this is a key parking infrastructure investment.
10. The shape of the service area for parking space within the Market Square block is very focussed on that block's demand generators but we can see the green hue beginning to show up in blocks east and south.

11. The parking spaces on the Market Square block served parking demands generated by 9 other blocks in the downtown showing its relative strength and importance to the delivery of service to demands attracted outside of its own block boundaries.
12. The third key block - Erie lot C101 - continues the theme of serving largely the demand generated on its own block location. In addition the market capture area is spreading to the block immediately west and east of it. The latter is of course where the City Hall Annex building is situated. Pertinent to current "buzz" regarding the Market Square re-development it was found through our online surveys that this block's parking space inventory serves **12** other block areas in the downtown.
13. The distribution of destinations of those who are parked on the "free" Cooper lot on Block C108 located at the very bottom of the downtown serves to remind us of how parking location, level of service and price of that service interplay.

Market Square Re-development Options

Over the course of the project to formulate a parking strategy for the downtown the re-development of the Market Square has been raised. While the scope of the parking strategy is broader in terms of operations and short and long term remedies to the public parking services, this particular development concept is spatially at the heart of the downtown but as evidenced by the parking activity data collection program it is a critical parking customer service area.

Two options were presented for review.

Option 1: retains 32 spaces on the Market Square block thus displacing 36 spaces.

Option 2: retains 48 spaces and loses 20 spaces.

The parking study went on to look at scenarios to determine what share of customers other parking facilities could service should a change to the parking supply on Market Square in particular occur. The key parking characteristic is this: what type of customers are we losing as a result of changes to the current inventory, and can another parking facility still be within reasonable walking distance to service that demand.

It is clear that Albert Street and Erie Street off-street facilities are within reasonable proximity to Market Square to warrant this kind of analysis. Albert Street - althougn within comparable walking distance was quickly determined to be currently operating at full optimal potential. It was thus taken out of the set of analysis. This left an analysis of the Erie lot potential.

The info graphic Figure 39 serves to summarize among other things, comparative metrics for the 68 on-street spaces at Market Square and Erie Street's 136 off-street parking facility. The ranges of these critical metrics are provided over the course of four full day survey days (2 in July and 2 in December pre-Christmas).

Using the metrics above, the analysis of current walking distances from each site (Erie and the Market Square block), **we concluded that there is an opportunity to currently accommodate displaced customers in either of the two development options**.

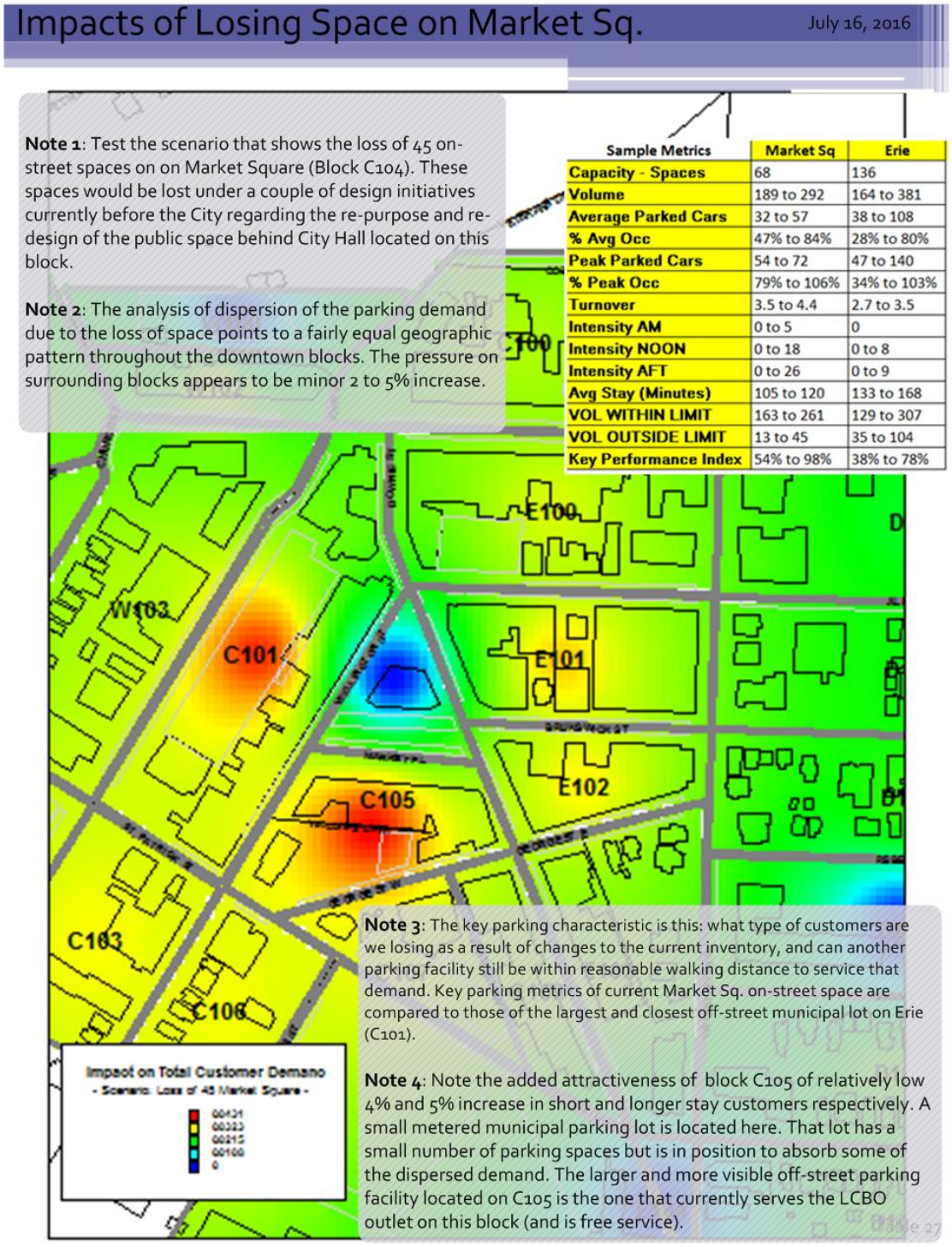


Figure 39: Info graphic Showing Impact on Customer Demand if 45 Spaces Lost on Market Square

The Erie lot can accommodate the displacement of either 20 or 36 spaces. Just to further understand the conclusion please note that this is not a numerical calculation but the analysis looked at duration of stay, turnover and peak and average occupancy of space on both exisitng Market Square on-street facilities and on the Erie lot.

To be clear, each displaced parking stall on the Market Square on average means a displacement of 3.5 to 4.4 vehicles per space over the course of the day. In the design options above this translates to asking 126 to 158 customers who drive to that block to find parking on Erie (and elsewhere) under Option 1. Under Option 2, it means asking 70 to 88 customers who drive and park there now to find alternative.

As shown in the metrics table on info graphic Figure 39, the current user profile of the Market Square on-street parking faciliites indicates a relatively high portion of users to over-stay the three hour time restriction (VOL Outside Limit statistic shown in the table). The overstay element of the profile equates to a manageable 7 percent of total daily volume to a high of 15 percent. This is important to consider because it defines the nature of those customers that we might be displacing. Displacing higher turnover visitors to the downtown is somewhat more critical to the economic health of the downtown versus displacing longer stay (possibly business owners) customers who can seek out less conveniently located parking space in the downtown.

We would likely need to consider reducing monthly contract or longer stay parking on the Erie lot to ensure that we have excess capacity to accommodate this transferred usage.

Cooper Site Potential Re-development

The parking strategy study has to deal with not only the possible redevelopment of Market Square but with the potential re-development of this site. At the time of writing this report some designs were presented but nothing firm has been recommended. The re-development of the structure on this site impacts a historical physical structure. The contemplated re-build program on this site would restore and re-purpose the historic building. In addition to it commercial/residential potential the site currently plays a vital role in the supply of over 400 surface municipal parking spaces.

Some 300 spaces on the Cooper site are offered to customers free of charge. This report has spoken to the key role that these spaces play in the delivery of parking service. This report has pointed out the impact that these free spaces have on walking distance to and from primary destinations in the downtown.

The info graphic Figure 40 speaks to a significant impact on parking service delivery system. The loss of Cooper site parking impacts not only the immediately surrounding area but impacts the C-corridor block supply. The Cooper site is clearly an integral piece to the current and future balance of parking demand and supply. The re-development designs therefore need to take into account a public parking space component. But it is important to keep in mind that the current importance that Cooper's parking supply plays in the overall balance of demand and supply may lie only with the fact that currently it offers parking service free of charge.

The Downie St municipal facility provides an important role here as well. Over the course of the past few months, there are indications that those spaces are drawing from overflow conditions on the Cooper site as well as continuing to provide vital service for buses that cater to the summer theatre attractions in the downtown.

In addition to the Cooper site's historical building re-development potential the University of Waterloo property is set for expansion as well. There may be opportunities here to consolidate the municipal parking on this site that would serve strategically the varied parking demand sources - the Cooper re-development and the University.

As noted in the info graphic, if public parking cannot be replaced on the site, then significant pressure will result throughout the parking infrastructure system specifically pressure east of Downie and certainly along the C-corridor blocks. To re-iterate the pressure on those existing facilities along the C-corridor will require partnerships with private land owners to provide replacement supply as noted in the info graphic.

Erie Site Potential Re-development

While there are currently no talk of re-development of the 138 space municipal parking facility at the time of this report, we wanted to measure the impact of its loss to the parking infrastructure system. The site is one that geometrically is suited for not only parking but likely commercial/residential uses. This site was also the subject of a proposal to build a half-module deck above the surface lot. That proposal is discussed in Technical Appendix C. It should also be noted that the Erie lot is well served by pedestrian routes formed by archway from the lot to Wellington at mid-block and by an urban landscaped route that leads the customer to the north end of the block towards Ontario St.

Suffice to say here that Erie site is crucial to the parking service and its loss or reduction in parking space would put significant pressure on the service delivery system. Info graphic Figure 41 shows blocks to the west of Erie (W-corridor) and again blocks within the C-corridor would be under severe pressure to absorb the loss of the Erie lot parking spaces.

Intensification of Residential Use

While at the time of writing, no specific proposals have been tabled (aside from the Market Square re-development), there was some project team discussion that **infill** projects were likely to come. The University of Waterloo's Stratford downtown campus is scheduled for expansion which would likely generate the need for accommodation units close to it in the downtown.

The intensification of residential development in the downtown might have the following effects on parking demand and supply:

- Should future downtown development include a resident population, it would require a wide range of services that satisfy the day to day living requirements (food and personal/medical services). These uses would generate a walk-in market not one that requires driving a vehicle.

- A resident population grows into a community. This community becomes more engaged in its surroundings by protecting it from invasive traffic and demanding a set of urban design standards that encourages a more pedestrian environment. Any future parking space development would need to be evidenced and need to reflect sensitivity to resident population in terms of its size and urban design.

- A resident population requires parking space on-site for the storage of their own vehicles and more likely to face a conflict with their visitors and people who are shopping, dining and engaging in commercial activities.

- A year-round entertainment and community focus point such as Market Square generates pedestrian traffic that needs to be woven into the existing urban transportation network.

Quantifying the singular or cumulative impact of changes in character of the downtown would be very difficult. However the impact of most of what we discussed here is that there would be a downward pressure on parking demand in the longer term planning horizon.

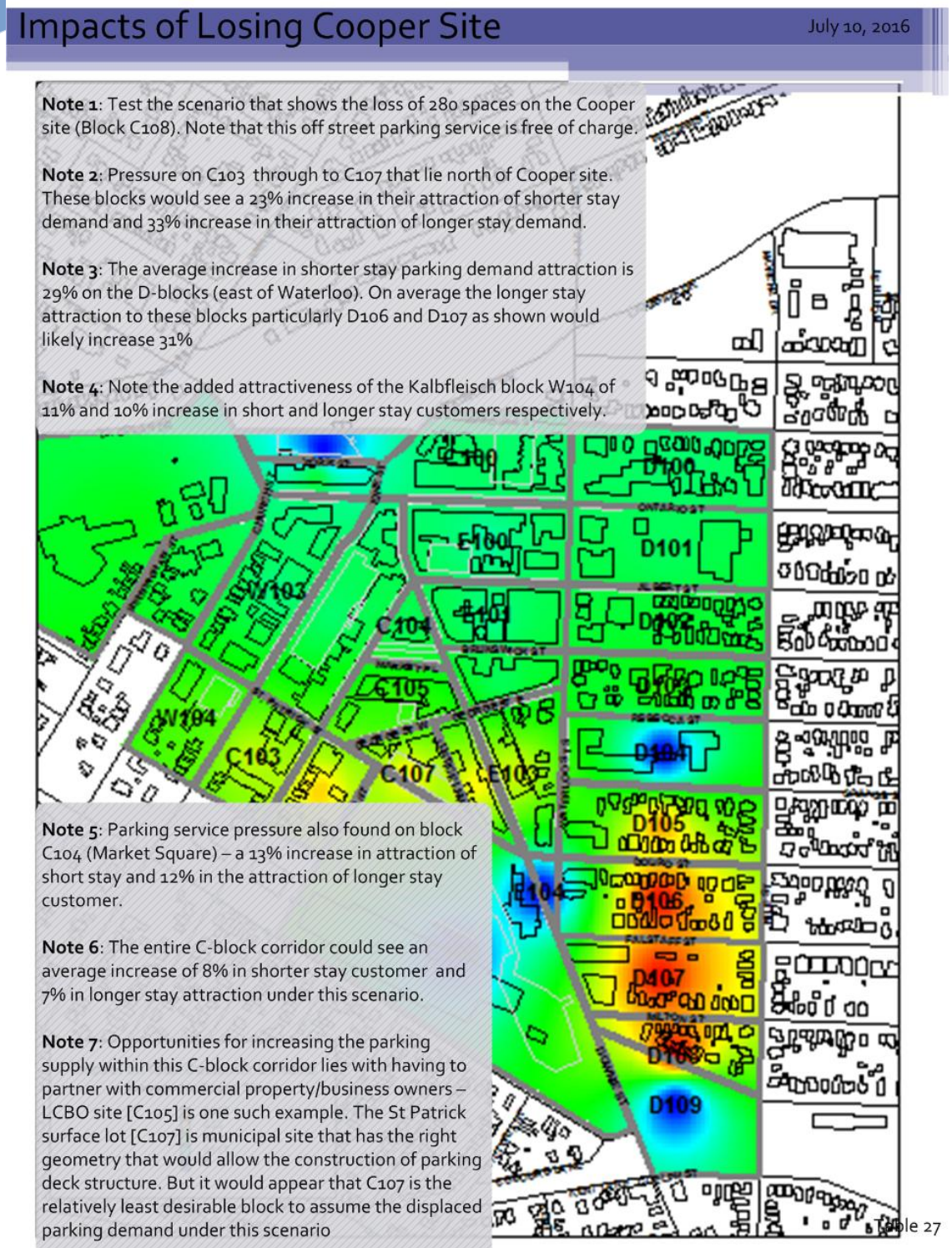


Figure 40: Info graphic Showing Impacts of Losing Cooper Site Parking

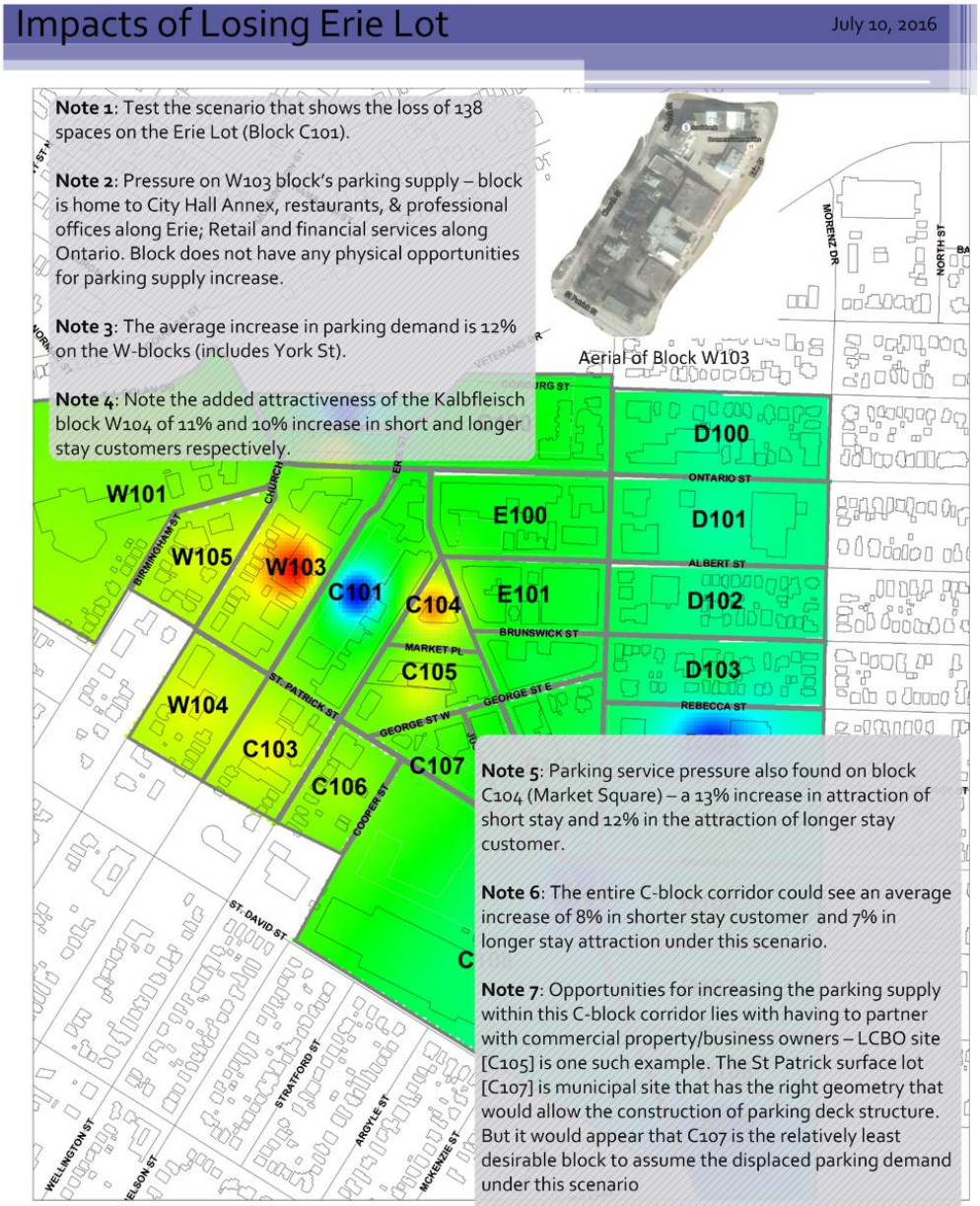


Table 27

Figure 41: Info graphic Showing Impacts of Losing Erie Lot Spaces

Impact of Changes in Technology and Character of Downtown

Technological changes have and will have an impact on mobility means, on the quantity and ultimately the need for parking. The delivery of parking service to the customer is one of the five factors that we discussed in this report. Specifically we discussed how our customers felt concerning payment options, time restrictions on the use of parking space and enforcement. This parking strategy needs to acknowledge that changes in the way we move around town will impact the urban landscape. The technologies are:

- Driverless vehicles

- Shared economy or "dial-up" service

- Continuation of internet based shopping for and purchase of services and products from the comforts of your home or office, and

- Technology that finds a vacant parking space for you if you are driving your own vehicle

The introduction of technology specific to mobility may effect parking demand and supply as follows:

- Combining the driverless vehicle with the "shared economy" technology, the on-demand service will not require a vehicle to rest in a parking space. Circulating around the block looking for a vacant parking space is not necessary as a driverless vehicle need only to pick up or drop off its passengers. Remember that a vehicle spends 96 percent of its time parked;
- Infrastructure changes are required so that assisted driving works - from clear network sensors, availability of charging stations to broadband wireless network that allows for communication between vehicles and that infrastructure;
- Most analysts believe that this technology will provide a safer and more efficient mobility service to us. It will also promise a cleaner environment as it is based on non-fossil fuel technology;
- Auto industry is well into the development of vehicles that can operate as such. Stratford is a test site for driver-assisted technology;
- Dialing up a transportation service will become more economical when compared to the outright purchase of your own vehicle; and,
- The driver technology will likely not reduce road congestion, however it will reduce traffic that circulates the downtown looking for parking spaces (estimated to be of the order of 35 to 45 percent of the total volume).

Quantifying the singular or cumulative impact of these technology changes would be very difficult. However the impact of most of what we discussed here is that there would be a downward pressure on parking demand in the longer-term planning horizon. The introduction of the parking space guidance technology (where we indicate where vacant parking space is available) would contribute to the

optimization of existing parking space use which supports a tenant of a contemporary transportation strategy.

Summary

Parking Demand Analysis

This technical report presents an analysis of the parking demand side of the public parking service. The report begins with discussion of five factors: physical environment, trip characteristics, and attraction of parking supply, parking operations and the customer experience. Each has a significant impact on parking demand.

Reflecting on the outcomes of this parking demand analysis process the following salient findings are offered:

Factor 1: Physical Environment

1. The commercial land use space is concentrated in a dense building form. The facades of the buildings along Ontario, Wellington and Downie form a solid unified commercial visual address along the horizontal, and residential, service and offices that sit on top of the grade level commercial use along the vertical. This urban form serves the following impact on the study of parking demand:

    a. People driving along Ontario, Wellington and Downie can more easily see the shops as the solid urban facade presents a “billboard” of sorts;

    b. Once the motorist finds the intended primary destination point, the focus of the motorist turns to reading the signs that direct them to parking space – be it along Ontario, Wellington or Downie in an on-street space or to an off-street parking space; and,

    c. The network of streets provides various channels that allow the motorist to safely park their vehicle or negotiate movement in and around the downtown.

2. The broad range of land uses will play into the computation of parking demand as a number of different land use types attract parking demand at varying peak hours of the day, varying days of the week, and at varying magnitudes.
3. The interplay of these factors will provide an estimate of the potential size of the parking demand. **Walking distance** to and from parking space and these land uses will help distribute that parking demand to the parking supply and assess the level of customer service

4. The study discusses the potential physical changes to the downtown environment that will affect parking demand and parking supply options in the short and longer-term planning horizon. Specific discussion centered on re-development on Market Square, the Cooper site and the expansion of the University of Waterloo campus. Some of these developments will take parking supply away, add new demand, or intensify the demand for space even more in the longer term.
5. The study went beyond the physical changes that will exert a **downward** pressure on future parking demand and supply and spoke to the impacts generated by technology:
    a. Driverless or driver-assisted vehicles
    b. Shared economy or dial-up travel service
    c. Online internet sourced shopping and purchase of goods and services
    d. Live and interactive available parking space guidance system

Factor 2. Trip Characteristics

This factor discusses the inherent differences that arise among different land uses in terms of trip characteristics, namely: **patterns** of parking demand over the course of the day, week, and season; **magnitude** of parking attracted per land use type and other trip characteristics that assist in defining the parking demand.

The discussion also spoke to the impact on peak hour parking attraction of such trip characteristics such as having multiple destinations for one trip - essentially sharing one parking space among several destinations.

Factor 3. Attraction of Parking Supply (Walking)

Emerging from the online surveys one of our most critical factors that affect parking demand specifically the decision of where people will park is the measurement of an acceptable walking distance to and from parking space and primary destination.

The analysis of walking distance serves to identify parking space that is **marketable** to various types of customers and as such it does impact **where** and what **type** of parking services are in demand**.**

Total Distance	Average	STD	Lo95	Hi95	Blocks
2526	101	4	99	103	C100 - Cobourg
6930	69	3	68	69	C101 - Erie
1055	176	28	154	198	C103
6031	58	4	57	59	C104 - Market
2088	116	10	111	121	C105
366	61	14	50	72	C106
329	66	11	56	75	C107 - St Patrick
16372	381	30	372	390	C108 - Free Parking Areas
826	165	30	139	191	C109
1673	239	21	223	255	D101
184	92	0	92	92	D102
569	190	42	142	237	D103
232	232	0	232	232	D105
17105	349	87	325	373	E100 - Albert
7070	354	96	312	396	E101
6644	391	45	369	412	E102
5004	417	44	392	442	E103
260	260	0	260	260	E104
6429	918	0	450	918	W100 - Library block
328	164	29	124	204	W101 - York
1359	272	0	272	272	W102
3506	270	76	228	311	W103
689	344	12	328	361	W104 - Kalbfleisch

Figure 42: Block Summary of Walking Distances [Total, Average, Low & High]

We offered these observations:

6. Fifty-five (55**)** percent of respondents parked their vehicles and had their primary destinations on the very same block.

7. For those who parked on a **municipal off street** parking facility, surveys indicated that **83 percent** were able to find a space within 5 minutes, while those who parked on an **on-street**

parking space **63 percent** were able to do so. This is typical as on-street space is clearly a preferred choice but is more restrictive in terms of inventory.

8. As well, **73 percent** of those survey takers who chose to park on a **private customer** only parking facility were able to find space within 5 minutes!

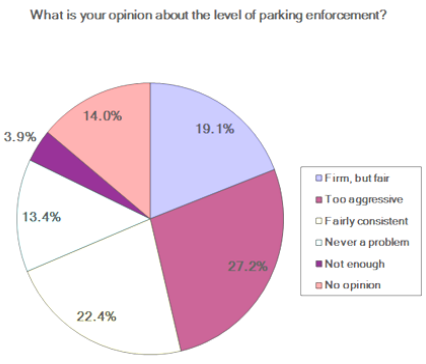
9. Market Square (C104) and Erie lot's Block C101 represent 46 percent of the total online destinations. The facilities on these prime blocks serve two-thirds of the parking demand attracted by its uses. Be mindful that the Market Square block offers 68 on-street parking spaces while the Erie block provides 227 spaces including a 136 off-street parking facility. The 66% - 67% capture rate is an indicator of a high level of customer service.

Factor 4. Parking Operations

The discussion within this factor deals with how the public parking system is reflective of current travel market. Is the parking charge a rational and marketable one? How is the parking system reflective of what is important to not just the motoring public but is it in keeping with other objectives of the transportation strategy for the city and region?

The discussion turned to incentive programs that feature **free** parking or reduction in the use of private vehicle programs. While it is difficult to determine if this feature directly contributes to the decision to drive a vehicle or not, such programs demonstrate the community's desire to begin to transform historical travel mode choices. Stratford's downtown features a significant parking supply on the Cooper site that serves a large portion of the customer market and is free of charge. Examples of promotional programs currently available to customers are:

- Free Sunday parking
- Free Saturday parking December 1st to April 30th
- Car free Fridays in June, July and August



The provision of free parking and its impact on walking distances is documented in this report. The walking threshold for both longer and shorter stay customers (250 and 100 meters respectively) is completely shattered with recorded distances of 300 to 350 meters to/from that Cooper lot. Thus the traditional relationship of duration of stay and walking distance is shattered when price of parking is taken into account. From a parking planning point of view, if cost recovery for the parking service is not a business requirement for the municipality, then all parking can be distributed to the fringe areas of the downtown, producing a very different landscape in terms of service and land use.

This section ended with a discussion of a vital **enforcement** tool that the parking operation needs in order to ensure safety, fair and shared use of parking space. Most customers indicated that

enforcement was not issue with close to 67 percent of those who had an opinion said that the level of enforcement ranged from firm but fair to not enough.

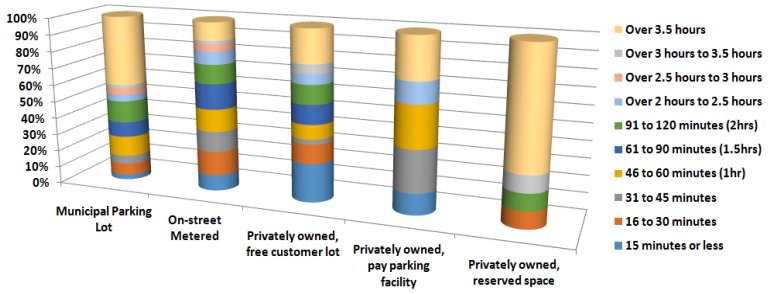
Factor 5. Customer Experience

Flowing from the online surveys, a customer profile of a typical visitor to the downtown was drawn:

10. Eight-three percent of our responses were from customers who visited the downtown on a weekday.
11. Thirty-seven percent of our responses were from customers who visited the downtown in the morning (8 am to 11 am).
12. Thirty percent of our responses were from customers who are in the downtown for work-related or business meeting purposes.
13. Seventy-seven percent came to the downtown from their place of residence.
14. Eighty-three percent came by car or truck, with a significant 12.5% who walked from their residence.
15. Sixty-five percent of those who drove to the downtown parked on-street, and 23% in a municipal off-street facility.
16. On average each visitor had 2.2 destination points in the downtown on their trip.
17. Top draws for visitor's primary destination are shown in red on the snippet table to the right.

	Frequency	Pct Distribution
Destination is outside of the boundaries shown	1	0.2%
C100 - Pazzo Taverna	27	4.8%
C101 - Rene's Bistro, The Butcher The Baker	134	23.7%
C103 - Convenience Plaza	5	0.9%
C104 - City Hall / Market Square	127	22.5%
C105 - Cora, Pizza Pizza, Carrie's K9 Cuts	16	2.8%
C106 - Parlour Inn	8	1.4%
C107 - Police Station	6	1.1%
C108 - Waterloo Stratford Campus	7	1.2%
C109 - Black Swan	8	1.4%
D100 - Tim Horton's	3	0.5%
D101 - Shoppers Drug Mart	11	1.9%
D102 - The Prune, Post Office	2	0.4%
D103 - Gentle Rain, Marley And Me	6	1.1%
D104 - Jeanne Sauve, Romeo Public School	0	0.0%
D105 - St John's United	1	0.2%
D106 - St Paul's	0	0.0%
E100 - Bentley's, Armoury	65	11.5%
E101 - TD Bank, Albert St Inn	49	8.7%
E102 - Avon & Studio Theatres	17	3.0%
E103 - Downie Street Burgers	16	2.8%
E104 - Parkette	1	0.2%
W100 - Library	14	2.5%
W101 - Park activities along river	0	0.0%
W102 - York & Ontario St shops	18	3.2%
W103 - United Way, City Hall Annex	22	3.9%
W104 - Royal Canadian Legion, Home Appliance	1	0.2%
Response Count	565	

18. Pulling out just those who drove their vehicles and had indicated that either dining, shopping or entertainment was their primary trip purpose, the average duration of stay is 1:53 hr.
19. Generally speaking the longer the duration of stay the more destinations.
20. About 32% of respondents stay for more than two hours. The duration of stay category – 1 to 1.5 hours – serves the broadest range of stores visited.
21. Parking space choice and parking space type by customer duration of stay is shown in the graphics here. Note the wide coverage of durations that the on-street service. The private customer lots (free of charge) also provide that same wide range of customer durations. The municipal off-street facilities seem to be more attractive to not only less numbers of customers but also those with longer durations of stay.



22. Looking at the parking type choice from another perspective. The on-street parking space here in the downtown has a very wide customer stay market range. The off-street space is continuing to attract customers with slightly longer durations of stay, but in most of the other durations of stay categories on-street space provides a very high level of service.

Evaluation of Current Parking Demand and Supply

Flowing out of the detailed discussion of parking demand, we presented a five step procedure to best determine current level of parking demand and its distribution over the downtown. The salient findings of this analysis are:

Step 1: Calculate Peak Hour Parking Demand

With some understanding of the physical environment and its impact on parking demand both now and in the future the next factor we discussed was the quantity of trips attracted by the physical environment. The deliverable is a set of peak hour parking ratios showing peak number of parking spaces attracted by each land use type (number of spaces for every 100 square meters of land use type).

Land Use Activity	Employee	Visitor	Total
Retail	0.72	0.62	1.34
Services	0.72	0.80	1.52
Financial Services	0.72	1.11	1.83
Commercial Office	0.72	0.13	0.85
Government Sevices	0.77	0.39	1.16
Medical Services	0.67	1.14	1.81
Restaurants	0.72	1.08	1.80
Entertainment	0.58	4.12	4.69
Residential	1.16	0.10	1.26
General (ndustry, institutional, etc)	0.41	0.51	0.92

The computed peak hour quantity took into account the following inputs:

- Individual peak attraction of parking demand by land use type
- Temporal variation of that parking demand over the course of the day; taking into account that certain land uses peak at different times of the day
- Day of the week variation of that parking demand for different land uses;
- Seasonal variation in that parking demand (theatre, summer tourism, etc)
- Multiple destinations and their impact on the number of peak spaces that may be required when one parking space serves a number of different destinations;
- Market synergy or walk-in market: where certain land uses in the downtown draw customers from those who already work in the downtown and thus do not impact the peak parking demand
- The outcome of this piece was a set of peak hour parking ratios (number of spaces for every 100 square meters of specific land use). The application of these ratios to the quantity and type of land use generated an estimate of longer stay (work trips) and shorter stay parking demand.

The resulting quantity of trips generated by these computed peak hour ratios is calibrated against the observed number of parking space occupancy (over the course of four day long field surveys). Applying the peak hour rates to the land use quantities generated an overall employee parking demand for about 750 stalls in the downtown and approximately 1000 stalls for visitor (short stay) parking demand. The peak hour of the day parking demand so calibrated generates a total parking demand range of 1640 to 1840 stalls with a mid-range target of 1740 parking spaces in the downtown.

Step 2: Compute Block Level Peak Hour Demands

Having computed the peak hour parking factors in Step 1, the spatial distribution of employee and visitor demands generated per block is presented on Figures 23 to 25. The analysis highlights of this spatial view of parking demand are:

23. Solid demand for long and short parking east of Downie north of George and well as an intense demand generated by uses just west of Wellington north of St Patrick;
24. Longer stay parking demand focus points are: west of Erie Street (annex City Hall), central corridor blocks formed by Brunswick and Ontario on the south and north and by Waterloo / Downie on the east and west;
25. Short stay parking demand distribution opens up two new blocks: E100 (Ontario /Waterloo/ Albert and Downie) and C108 where the Cooper site is located;
26. Major generators of longer stay parking demand are: public services as the courts, city hall and a pocket of personal service professional offices; and
27. Major generators of shorter stay visitor parking demand are: theatre, retail and restaurants along Ontario corridor as well as Downie and Waterloo.

Step 3: Compare Block Parking Demands to Block Parking Supply

Illustrations showing the numeric surplus or deficiency of parking space that occur when block parking demands are compared to block parking supply. This step however does not adequately reflect the fluid dynamic that exists between where people park and where their primary destination occurs. The step however brings parking supply (space that serves employee and visitor) into the process of understanding where opportunities to provide a higher level of customer service.

Step 4: Apply Walking Distance Characteristics to Parking Space Choice

Figures 29 (Long stay or work trips), 30 (Short stay or visitor trips) and 31 (total long and short stay trips) display net surplus or deficit in the downtown. The following salient findings drive the direction of our parking management strategy:

28. Based on its location - central to parking demand and within the local characteristic walking distance - **Block E101** is in position to serve significant portion of shorter stay parking demand. This block is bounded by Albert / Waterloo / Brunswick and Downie streets;
29. **Block W103** - west of the Erie lot block - also is strategic to serve both long and short stay parking demand;
30. The triangle formed by Blocks C108, Block E101 and Block W103 is in strategic position to provide parking service when walking distances are taken into account; and
31. A cautionary note is that the significant draw that Block C108 (Cooper site) shows is a result of a walking distance profile that results from a somewhat distorted market coverage; this block presents parking service at no charge; this operation characteristic lengthens the walking distance threshold for both long and short stay trip types;

Step 5: Compare Distributed Parking Demand to Parking Supply

The key outcomes of this step are:

32. It is understood that corridor E generates a significant portion of the downtown's long and short stay parking demands. Corridor E is home to one of the busiest off-street parking facility on Albert Street.
33. While the demand to supply comparison shows an extraordinary deficit in both long and short stay parking space deficit, the opportunity for expansion of parking inventory within the corridor is limited.
34. The parking supply within this corridor is currently at capacity in its response to this demand. Technical Report B will elaborate but important at this point is that the supply is optimally used by customers. There does not appear to be abuse in terms of customers parking beyond the three hour time limits that would mean other customers cannot share the limited parking space.
35. We need to look at how the parking supply in reality is responding to the demand. Our field surveys of parking space use will provide insights into how well the parking inventory is performing.
36. The most common way of expressing the balance between parking demand and supply is to quote the occupancy or peak utilization of its supply (75 percent occupancy at 14:00 hrs for example). In practical terms however, this particular metric is not very helpful because it contradicts what we have been saying throughout steps 1 to 5: the walking distance to and from primary destination and parking space provides a broader spatial perspective on the balance of supply and its demand.
37. The outcome of step five (5) serves to provide the study with a spatial focus of where opportunity theoretically emerges. It does not point to specific properties within the downtown where supply can be changed in order to more effectively respond to its market.
38. The balance of parking demand and supply is beyond the numerical differences between them. The state of balance – surplus or deficit – can and does point to potential operational opportunities. For example, note that the longer stay parking demand customer is consistently in an imbalance. Overall that customer market is in deficit position. The free parking operation at Cooper's site however demonstrates how the parking management strategy can manipulate the parking space choice decision by selling its service free of user charges. This operational characteristic serves to manipulate customers' acceptance of longer walking distance by off-setting its cost to the customer.
39. Building on the walking distance and the impact of operational characteristics, the outcome of steps 1 to 5 point to the need to measure how stable the parking space inventory is over the short and longer term planning horizon.

Market Potential Opportunities Resulting from Changes

The state of balance between parking demand and supply is sensitive to the stability of the underlying conditions that determine demand and supply. Over time there will be changes to the **physical** environment that will impact the nature and quantity of trips to the downtown, and there will likely be

changes to the physical environment in terms of properties that currently supply parking space that may not continue to do so. In addition that balance is affected by changes in **operations** that can impact the level of customer service and then in turn impact customer demand for space. And finally the balance can and will be impacted by the effects of **technology** on the demand for and delivery of parking service.

Changes to the physical environment included these known sites:

- Over the course of the project to formulate a parking strategy for the downtown the re-development of the **Market Square** has been raised. While the scope of the parking strategy is broader in terms of operations and short and long term remedies to the public parking services, this particular development concept is spatially at the heart of the downtown but as evidenced by the parking activity data collection program it is a critical parking customer service area.
- Two options were presented for review:
    - Option 1: retains 32 spaces on the Market Square block thus displacing 36 spaces.
    - Option 2: retains 48 spaces and loses 20 spaces.
- **Potential re-development of the Cooper site and the University of Waterloo campus**. At the time of writing this report some designs were presented but nothing firm has been recommended. The re-development of the structure on this site impacts a historical physical structure. The contemplated re-build program on this site would restore and re-purpose the historic building. In addition to it commercial/residential potential the site currently plays a vital role in the supply of over 400 surface municipal parking spaces. The University's expansion plans were not available but have been the subject of discussion. The potential is always there to consolidate parking space requirements for both the Cooper site and the University's expansion.
- **Effect of losing Erie St Municipal Lot or Cooper site's free parking lot.** The report tested walking distance, demand and market appeal of these key parking facilities if their supply were to be reduced or lost. The report provided the spatial distribution of current trips to either of these lots to other blocks. The magnitude of a change in the infrastructure's current capacity was determined to be significant especially given that both of these lots represent a significant portion of public parking inventory. The report provided the insight that Erie and Cooper sites are the best physical geometry to accommodate a longer-term parkade solution if and when the demand reaches that critical capacity.

Possible adoption of technological changes may result in the following effects on longer-term parking demand and supply:

Technological changes have and will have an impact on mobility means, on the quantity and ultimately the need for parking. This parking strategy needs to acknowledge that changes in the way we move around town will impact the urban landscape. The selected technologies are:

- Driverless vehicles;
- Shared economy or "dial-up" service;

- Continuation of internet based shopping for and purchase of services and products from the comforts of your home or office; and
- Technology that finds a vacant parking space.

The introduction of technology specific to mobility may effect parking demand and supply as follows:

- Combining the driverless vehicle with the "shared economy" technology, the on-demand service will not require a vehicle to rest in a parking space. Circulating around the block looking for a vacant parking space is not necessary as a driverless vehicle need only to pick up or drop off its passengers. Remember that a vehicle spends 96 percent of its time parked;

- Infrastructure changes are required so that assisted driving works - from clear network sensors, availability of charging stations to broadband wireless network that allows for communication between vehicles and that infrastructure;

- Most analysts believe that this technology will provide a safer and more efficient mobility service to us. It will also promise a cleaner environment as it is based on non-fossil fuel technology;

- Auto industry is well into the development of vehicles that can operate as such. Stratford is a test site for driver-assisted technology;

- Dialing up a transportation service will become more economical when compared to the outright purchase of your own vehicle; and,

- The driver technology will likely not reduce road congestion, however it will reduce traffic that circulates the downtown looking for parking spaces (estimated to be of the order of 35 to 45 percent of the total volume).

Quantifying the singular or cumulative impact of these technology changes would be very difficult. However the impact of most of what we discussed here is that there would be a **downward** pressure on parking demand in the longer-term planning horizon.

The introduction of the parking space guidance technology (where we indicate where vacant parking space is available) would contribute to the optimization of existing parking space use which supports a tenant of a contemporary transportation strategy.