2016 BUDGET PUBLIC INPUT
Wednesday September 16th, 2015
Written Submissions

NO.	NAME and/or ORGANIZATION
1	Alexander, Matt
2	Banks, Pam (Friends of Sudbury Transit)
3	Barrette, Daniel (Rainbow Routes Organization)
4	Beaulieu, Nicole (Sudbury Worker's Education and Advocacy Centre)
5	Besserer, Valerie (Onaping Falls Recreation Committee)
6	Bigras, Ron
7	Bonczak, Adam
8	Burns, Catherine
9	Camirand-Peterson, Arthemise
10	Daigle, Bob
11	Danard, Rebecca (reThink Green)
12	Desforges, Cheryl
13	Fournier, Janet
14	Gascon, Marc (Clean Air Sudbury)
15	Grant, Naomi (Coalition for a Liveable Sudbury)
16	Greene, D
17	Kruzel, Hugh (Canadian Association of Retired Persons)
18	Maisonneuve, Richard
19	Murray, Glenn
20	Niemela, Rachelle (Sudbury Cyclists Union)
21	Noble, Lilly (Ramsey Lake Stewardship Committee)
22	Orlando, Cathy (Citizens' Climate Lobby)
23	Prudhomme, Laurie (Greater Sudbury Santa Claus Parade)
24	Quigley, Marion (Canadian Mental Health Association – Sudbury/Manitoulin)
25	Roles, Gwenne
26	Tessaro, Brenda (The Sam Bruno P.E.T. Steering Committee
27	Tossell, Charles
28	Zubick, Samantha

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/13/2015 4:04 PM
Subject: 2016 Budget Public Input

This form was sent at: 13-Sep-2015 4:04 PM
NAME: Matt Alexander
ORGANIZATION:
PHONE:
EMAIL: [redacted]
COMMENTS1: * Redirect all dollars earmarked for road widenings towards transit improvements that will result in increased ridership such as higher frequency service on routes with high potential for ridership growth. Transit improvements have a greater return on investment than road improvements. Other cities with double the population or more still manage to accommodate everyone with roads no more than 4 lanes wide, so there's no reason Barrydowne, for example, needs to be widened if we just got more people to use the bus;
* Sell the municipal parking lots to private companies or developers with the condition that they remain open as parking lots until new development is approved. This way the city saves by not having to maintain them any more, the spaces remain available as long as it is lucrative for the owners, and there's an incentive to redevelop the sites into something that contributes property taxes and supports downtown businesses;
* Increase the rate for monthly parking passes in municipal lots. Increase the rate to above the price of a monthly bus pass.
DESCRIPTION: * Combine transit, bike lanes and roads into a single budget category and divide funding according to the modal split you'd like to achieve in the city. For example, currently only 0.7% of people bike to work, but if you'd like that number to increase to 5%, then earmark 5% of the new "transportation" budget for bike infrastructure. If you want to see 20% of people use transit to get to work, then earmark 20% of the transportation budget for transit;
* Budget for the creation of an integrity commissioner and lobbyist registrar. Partner with other northern Ontario municipalities to share the costs of establishing and operating these offices for the benefit of increased transparency and accountability (also adopt a Code of Conduct under the Municipal Act).
ONETIME: * Sell the municipal parking lots;
* Cancel the Maley Drive extension, or make the mining companies and developers who will benefit from it pay for it.
ONGOING: * Charge more for parking;
* Increase the tax rate for residential areas in the outlying areas of Greater Sudbury to match or exceed the rate in the old city of Sudbury. These lower density areas cost more to service and the higher rates of driving in these areas have a greater impact on roads within the old city.

Friends of Sudbury Transit

September 14, 2015

Friends of Sudbury Transit
2016 City of Greater Sudbury Municipal Budget

Friends of Sudbury Transit recommends the following changes and that staff determine the cost to:
1. Improve ridership on Sundays by replacing Sunday routes with Saturday routes (with time adjustments). Ask Staff for what the funding requirement would be for this change.
2. Be creative with service for families, young and old, by creating family passes, student fares, free transit for children under 12 years of age and free service for seniors over 65 during non-peak times.
3. Improve ridership Mon-Fri by offering more frequent service during peak times to get people to work faster and cheaper than by driving while reducing congestion.

Since transit is an essential part of the transportation network, transit, along with sidewalks, cycling infrastructure and roads should be funded under one umbrella. By providing more transportation options, saving can be realized on road construction expansion.

There is still no resolution about allowing people with cognitive disabilities to access Handi-transit after changes were made over a year ago. Is extra funding needed?

Sincerely,

Pam Banks
Lilly Noble
Co-Chairs,
Friends of Sudbury Transit

Budget 2016 Community Consultation Form

Greater | Grand Sudbury
www.greatersudbury.ca

Deadline for submissions: Friday, September 18, 2015

As part of Council's commitment to balancing the need to provide excellent, efficient services with the desire to maintain low property taxes, the Finance and Administration Committee of Greater Sudbury is looking for your input into the 2016 municipal budget.

If you have suggestions for fiscal opportunities for our City, the community consultation is your chance to talk about them.

The community consultation is also an opportunity to make funding requests. Such requests should be in line with the City's vision, mission, and values, which speak to quality of life, excellence of service, innovation, and the social, environmental, and economic development of our community.

RECEIVED
SEP 18 2015
CLERK'S

Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Daniel Barrette — Name

Rainbow Routes Organization — Organization (if applicable)

[redacted] — Daytime telephone

[redacted] — Email

☐ Check here if you would like to make a presentation to the Finance and Administration Committee by attending the Public Consultation on Wednesday, September 16, 2015, starting at 4 p.m. in the Council Chamber of Tom Davies Square. Presenters are asked to limit their remarks to five minutes.

Comments/Suggestions/Opportunities for Savings:

~~Please see attached~~ (03)

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

Please see attached letter

Estimated one-time cost or saving:

Estimated on-going costs or savings: $45,000/yr.

Consent & Notice of Collection

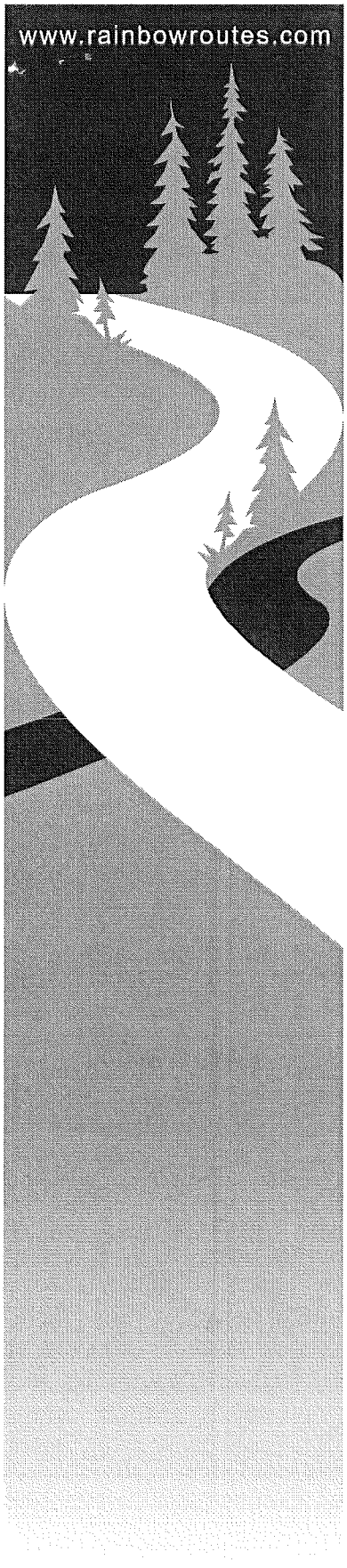
I hereby acknowledge that the City of Greater Sudbury collects this information for the purpose of collecting information for the 2016 municipal budget process in accordance with the Municipal Act, 2001. I consent to the information in this form, its attachments and any further information provided being disclosed in its entirety to Council, City staff and/or members of the public and the information may be discussed in public meetings and posted on the Internet. Any questions relating to the collection, use and/or disclosure of the information provided in this form may be addressed to the Deputy City Clerk at Tom Davies Square, 200 Brady Street, 2nd Floor, P3A 5P3 or by telephoning 705-674-4455 ext. 4206.

Signature

Complete and mail/deliver to:

City Clerk, Tom Davies Square,
200 Brady Street, 2nd Floor,
P.O. Box 5000, Stn A,
Sudbury, ON P3A 5P3
Fax: 705-671-8118

Note: Failure to sign may result in the information or portions thereof not being considered for the 2016 Budget Process.



September 18, 2015

Re: City of Greater Sudbury
2016 Public Budget Input

Rainbow Routes Association is a registered charity that is dedicated to sustainable mobility through the development and promotion of active transportation routes in the City of Greater Sudbury (CGS). We work closely with City staff in building essential infrastructure for a prosperous and livable city, but we are not a City department. As a direct consequence of our work, Rainbow Routes has leveraged $1.3 million in municipal funding into $3.7 million in trail development and promotion - a return of almost 3 to 1. This investment in turn provides numerous indirect benefits from increased active living by residents, reduced pressure on our existing road network, increased property values, a revitalized environment and many other benefits to the local economy and tourism.

Rainbow Routes is the local representative for the Trans Canada Trail. Without us, Greater Sudbury would not have been part of this historic project to safely link non-motorized users from Coast to Coast. In addition, we have printed and distributed over 40,000 of our trail maps over four years, of which 16 000 were distributed by Sudbury Tourism alone! We offer activity promotion programs which help keep Greater Sudbury healthy and moving with our Trails4Life program, monthly hike club, and by completing community paths accessible to all.

The CGS Parks, Open Space and Leisure Master Plan (June 2014) showed that walking and hiking are the most popular leisure activities in the city, and cycling and mountain biking are the third most popular activities. In the same survey, 91% of Greater Sudburians surveyed stated that trails and pathways were very important to them. While many municipalities absorb the cost of providing this service through dedicated staff/departments, the CGS heavily depends on the work of our organization to provide this service. However, it is increasingly difficult for Rainbow Routes to achieve fiscal stability with the City's current yearly funding of $30,000., which has been fixed for many years. In fact, our 2015 budget of $110,000 is primarily composed of fixed costs which are: wages (60%); tangible work (30% - trails/signage/maps); and administrative/operational (10%). This budget excludes new trail development and special projects generally funded by outside partnerships. Consequently, we are respectfully asking for additional CGS support by increasing our annual funding to $45,000.

We believe that the City's investment in Rainbow Routes has provided, and will continue to provide, an excellent and cost-effective return on investment. With the City's continued support, we commit to making Sudbury healthy and in being a trusted source for all your active transportation matters. Our staff and volunteers look forward to our continued partnership.

Sincerely,

D. Barrette

Daniel Barrette
Executive Director

Rainbow Routes Association
200 Brady Street, P.O Box 5000,
Stn A, Sudbury, Ontario, P3A 5P3
Phone (705) 674-4455, ext. 4603
Fax (705) 670-9250
rainbowroutes@greatersudbury.ca
Registered Charitable Number:
87320 8136 RR0001

Budget 2016 Community Consultation Form

Greater | Grand Sudbury
www.greatersudbury.ca

RECEIVED
SEP 1 , 2015
CLERK'S

Deadline for submissions: Friday, September 18, 2015

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Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Nicole Beaulieu — Name
Sudbury Workers Education + Advocacy Centre — Organization (if applicable)
[redacted] — Daytime telephone
[redacted] — Email

☑ Check here if you would like to make a presentation to the Finance and Administration Committee by attending the Public Consultation on Wednesday, September 16, 2015, starting at 4 p.m. in the Council Chamber of Tom Davies Square. Presenters are asked to limit their remarks to five minutes.

Comments/Suggestions/Opportunities for Savings:

The Workers Centre encourages local economy growth and a shared prosperity that would build a healthy and wealthy community through education, new business models and a living wage.

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

The program offers adult and youth education for free to the most vulnerable in our community, on their rights in the workplace. It benefits the community by providing a much-needed service, keeping workers employed and ensuring respect in all workplaces.

Estimated one-time cost or saving: $25,000.00

Estimated on-going costs or savings: $50,000.00

Consent & Notice of Collection

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Nicole Beaulieu
Signature

Complete and mail/deliver to:

City Clerk, Tom Davies Square,
200 Brady Street, 2nd Floor,
P.O. Box 5000, Stn A,
Sudbury, ON P3A 5P3
Fax: 705-671-8118

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SUDBURY WORKERS EDUCATION AND ADVOCACY CENTRE

CENTRE D'ÉDUCATION ET D'APPUI DES TRAVAILLEURS DE SUDBURY

COMMUNITY CONSULTATION, GREATER CITY OF SUDBURY BUDGET 2016: PROPOSAL

Service Overview

The Sudbury Workers' Education and Advocacy Centre (S.W.E.A.C) is an organization of workers, students and community volunteers with a mission committed to improving the lives and working conditions of people in low-wage and unstable employment. Our mandate is to deliver support and education on worker's rights, provide community spaces for workers to share and learn together, and ensure that all workers have a voice at work and are treated with dignity, fairness and respect. As a not-for-profit organization, all of our services are free and offered in both French and English.

Type of communities we serve in the Greater Sudbury area:

- Aboriginal/First Nations
- Adults
- Youth
- Francophone persons
- Women
- LGBTQ2S
- People with cognitive or physical disabilities
- Newcomers/immigrants
- Racialized persons
- Other (non-unionized, low-income, precarious)

Organizational structure:

- Board of Directors, with Executive and voting members.
- 2 full-time staff personnel
- Students (1-2 per year)
- Volunteers

Program overview:

The program in need of funding works to provide information, education, support and referral on workplace issues to low wage workers and those in unstable employment, in particular women, first nation's people, immigrant workers, and young workers who face barriers in getting information about rights at work and strategies to realize those rights. Activities include phone information, drop in sessions, public legal education workshops, leadership training, train the trainer workshops for front line community staff, development of educational materials, tracking new and emerging issues, and outreach and translation.

We work using interactive activities that encourage workers to exercise their rights, and supports their active participation in all work and the community. This popular education approach to adult education

combines elements of progressive philosophies, anti-oppressive frameworks and looks to the workers for knowledge and lived experiences.

Community Partners

- Sudbury Community Legal Clinics and legal partners
- Occupational Health Clinics for Ontario Workers Inc.
- Laurentian University – Labour Studies Program
- The Sudbury & District Labour Council
- Employment agencies (YMCA, Employment Options etc.)
- Better Beginnings Better Futures – The SPOT program
- The Social Planning Council of Sudbury
- Certain high schools in the area

Additional information:

Since the Centre has opened in August 2013, we have seen an increase in service users and an overall need for S.W.EA.C's services within the community, as well as outside the city limits as we are the only Workers Centre in Northern Ontario. Our Centre is filling a gap by offering unique services to the most vulnerable workers in our community. For instance, many workers do not know their workplace rights and are unsure who to speak to about any workplace issues due to bureaucratic processes, intimidation tactics, language barriers, finances or other stressful factors in their lives that add to the situation – housing, health, childcare, access to services etc. Therefore we endeavor to connect workers with other community supports and services that can help with these important issues. We also use proactive measures by reaching out to youth and offering our workshops within high schools. Our workshops have received a favourable response from teachers who believe that there is an increasing need for this education.

One of the Centre's main focus is to help improve the lives of low-income workers and those in unstable employment as this is contributing to high levels of poverty and other social issues. Currently in Ontario, precarious work is on the rise and the Sudbury area is not an exception. As a result, many working people are living in poverty or feel as though they cannot exercise their rights at work. Therefore, we want this to change and we want Sudbury to be a pioneer, and lead by example by taking an active role in education as well as in advocating for better working conditions that will in turn keep workers here, foster growth in our local economy, ensure responsible employers and respect for all workers, support a living wage and lift people out of poverty.

By supporting S.W.E.A.C, not only will you be helping the most vulnerable in our community, but you're investment will indirectly help the City save on costs, as our Centre helps foster positive economic development, business growth and competitiveness. We do this by providing resources and supports that assist individuals to stay employed, reduce staff-turnover and provide employers and front line staff with valuable human resources which contributes to a stable productive workforce, key to business growth and competitiveness. By providing resources to a wider sector of the community on worker rights and employer responsibilities, this improves communication and fosters a better workplace. Similarly, this program will

help those in the labour market make effective and informed decisions on training and employment needs for a stable economic environment. This will foster strong communication between workers and employers and educate small business owners on labour laws as well. Never forget that workers who are happy in their workplaces are more likely to be active contributing members of their workplace and also in our community.

Currently, S.W.E.A.C needs $25,000.00 to continue serving the Greater Sudbury community until this time next year (September 2016). We believe that with this funding from the City our program will continue to make a difference in many lives here in Sudbury and will help us gain sustainability and expand in the future. We hope that you can support us in our endeavor and help the workers in our community.

Thank you for your time and consideration. We look forward to your favourable response.

Sincerely, on behalf of the entire S.W.E.A.C team,

Nicole Beaulieu
Executive Director
Sudbury Workers' Education & Advocacy Centre

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/17/2015 8:35 PM
Subject: 2016 Budget Public Input

This form was sent at: 17-Sep-2015 8:34 PM
NAME: Valerie Besserer
ORGANIZATION: Onaping Falls Recreation Committee
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: I attended the meeting on Wednesday at 4pm and made a presentation. I am simply submitting the same request in writing, as I am unsure if you need both. If not, kindly disregard.
DESCRIPTION: The Onaping Falls Recreation Committee has been working for over a year to raise money towards a Splash Pad to be placed at the Onaping Community Centre. We have raised just over $10,000 in that time. We do, however have many other commitments that we are currently supporting including a Youth Choir, weekly Kids' Klub, ongoing financial support to the IJ Coady arena and OFMHA, carnivals, dances, school programs, etc. We are realizing that even with (hopefully) a grant from the Trillium Foundation, and other grants that we may require more support. We are requesting that council consider a donation towards the Splash Pad in the 2016 budget, as well as welcome any advice or experience that you may be able to share with us. Onaping Falls has a proximately 400 kids of age to utilize a splash pad, and no means such as reliable transit to reach the nearest pad. We believe that this splash pad would be a wonderful step in the right direction to keeping our kids engaged, active and social in our community.
ONETIME: Anything up to $200,000
ONGOING: Cost of maintenance, water and portable washrooms yearly.

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/18/2015 12:46 PM
Subject: 2016 Budget Public Input

This form was sent at: 18-Sep-2015 12:45 PM
NAME: ron bigras
ORGANIZATION:
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: 1..downsize at least half of the police vehicles...why do all police vehicles have to be big V8 cylinder cars, SUVs, trucks, etc. when the police buy more vehicles make them smaller, 6 cylinder or even 4 cylinder, there are very few times that the police utilize the power of a 8 cylinder vehicle...the savings on gasoline would be enormous and the savings on emissions for the earth would be huge, with all the idling the police cruisers do, especially in the winter months. So let's not just talk the talk let's walk the walk when it comes to climate control and emissions, and idling.
2..cut all departments by at least 15 percent...get with the times...most companies looking to streamline are cutting staff, the city should be no different...we have to get more done with less.. cut positions through attrition in order that no person loses their job...simply do not fill any vacant positions until after the 15 percent reduction has been met...for those who say that this cannot be done without losing vital services...they would be surprised about what can be done with less people...different size businesses and companies do it all the time and they continue to operate successfully...you never know, some departments may be able to function with even more reduction in staff than 15 percent
3.. after the 15 percent reduction in staff has been met and if, and only if hiring has to be done then all newly hired employees start work at a 25 percent reduction in pay as the previous rate of pay of that position...this would have to be negotiated with the union...but there are many companies that are using this means as a way of reducing operating costs...and it makes sense
4..all employees form the mayor on down take an immediate 10 percent pay cut..
5..contract out more work...work that can be done by contractors should be contracted out...this would save the city in the short term by not having to hire more employees and put them on the payroll and in the long term by having less employees on the pension plan
6..we have got to sell Pioneer Manor...I cannot believe that we still own that...why is the city involved in a senior residence, old age home... that is not the city's, or the taxpayer's responsibility to operate...it is more of a provincial or federal responsibility...this is an enormous cost to all of us and must be sold off
7..sell all property or assets that we have no use for that is costing us money...why hang on to it if it is costing us money and we have no use for it.
8..get rid of all city run day care...sell it off, privatize it, just get rid of it...again that is not the city's or the taxpayer's
responsibility to run...it is an enormous cost to run and should be in the hands of the province or federally or privately but certainly not by the city .
9..look at every department to see where savings can be made...don't have the heads of the departments look because they are self serving and hate to cut from their own department...these departments have to be looked at from an outside source, a committee must be established to study all aspects of every department with the goal of savings, cost cutting, streamlining...the city has got to realize that they cannot just continue on this path of not looking at cost effectiveness and just increasing taxes every year either directly or indirectly.

3..after the 15 percent reduction has been met and if and only if hiring has to
DESCRIPTION:
ONETIME: I am not sure of the total savings of the suggestions that I have made , but I am sure they are substantial...I do know that the elected representatives have a moral, economic and environmental responsibility to look at all submissions and all other means to cut operating costs...they have to realize that the ways of the past, of spending and raising taxes to spend more cannot continue...this is the path

of destruction for many people of this city who can no longer afford to keep their home, either young people just basically starting their journey in life or older folks on a fixed pension income...a lot of them are forced to sell their home, not that they want to but it's more that they have to because they simply cannot afford to pay the taxes, utilities, water, sewer taxes, etc...that is not right... that must stop... nobody should be forced to sell their home because they can no longer afford to keep it...selling their home should be a choice they make for other reasons.
studies have shown that more and more families are living from paycheck to paycheck and barely keeping their heads above water...if we want to keep this city growing we have to make it economically attractive for individuals and families to want to live here
ONGOING:

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>
Date: 9/2/2015 8:03 AM
Subject: 2016 Budget Public Input

This form was sent at: 2-Sep-2015 8:03 AM
NAME: Adam Bonczak
ORGANIZATION:
PHONE: [redacted]
EMAIL:
COMMENTS1: Because I've been with the corporation for over 25 years I've been involved with many money saving ideas including programs that involved public information signage that would be paid for by various businesses who wanted to be recognized as participants in the various public promotions such as the "SPARKY" program and learn not to burn as well as our ongoing "ADOPT-A-SPOT and "ADPOT-A-ROAD" programs. These and other signage ideas are avenues for financial growth for our corporation.I have other ideas that I've developed if anyone is interested and can be reached at the number provided.
DESCRIPTION:
ONETIME:
ONGOING: unknown at this time until researched.

Budget 2016 Community Consultation Form

Greater | Grand Sudbury
www.greatersudbury.ca

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Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Catherine Burns
Name

Organization (if applicable)

[redacted]
Daytime telephone

Email

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Comments/Suggestions/Opportunities for Savings:

DOES IT REALLY TAKE 4 POLICE CRUISERS (INCLUDES FORENSICS VAN) 4-5 HOURS TO DETERMINE OLD AGE/ TERMINAL ILL DEATHS ??? HAPPENS @ UKRANIAN OLD AGE RESIDENCE AND LATELY SEPT 13 @ 166 LOUIS STR. WASTE OF RESOURCES. LET THE CORONER GO IN FIRST, AND STOP THE POLICE DRAMA

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

Estimated one-time cost or saving:

Estimated on-going costs or savings: $10,000 PER DEATH

Consent & Notice of Collection

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Catherine Burns
Signature

Complete and mail/deliver to:

City Clerk, Tom Davies Square,
200 Brady Street, 2nd Floor,
P.O. Box 5000, Stn A,
Sudbury, ON P3A 5P3
Fax: 705-671-8118

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Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Catherine Burns
Name

Organization (if applicable)

[redacted]

Daytime telephone

Email

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Comments/Suggestions/Opportunities for Savings:

WELFARE RATES INDEXED TO FOOD BASKET WELFARE RECEPIENTS ARE BEING STARVED IN THIS SO-CALLED "RICH" COUNTRY. WILL SAVE IN HEALTH CARE COSTS. ASK OUR CHIEF MED. OFFICER

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

GET RID OF 6TH FLOOR FRAUD SQUAD AND FEED THE POOR. REMEMBER KIMBERLY ROGERS!!!

Estimated one-time cost or saving: _____

Estimated on-going costs or savings: _____

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Catherine Burns
Signature

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To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/17/2015 7:46 AM
Subject: 2016 Budget Public Input

This form was sent at: 17-Sep-2015 7:46 AM
NAME: Arthemise Camirand-Peterson
ORGANIZATION: New Sudbury CAN Ward 12
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: New Sudbury Main Arteries need for beautification:
Opportunity for sharing flower beautification with New Sudbury.
Everyone coming into New Sudbury can notice this part of the City of Greater Sudbury along Lasalle Boulevard, Barry Downe Road, Notre Dame Avenue and Falconbridge Road is not very attractive.
DESCRIPTION: City provide stored containers for a purposeful use, converting them into flower pots. These pots can be installed in the spring on the medians along the major corridors and cared for as in the city core.
The pots could be removed in the fall in readiness for the winter plowing program
ONETIME: No cost - share the city allotment with New Sudbury.
ONGOING:

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/16/2015 4:25 PM
Subject: 2016 Budget Public Input

This form was sent at: 16-Sep-2015 4:24 PM
NAME: Arthemise Camirand-Peterson
ORGANIZATION: Neighbourhood Park Association
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: LEISURE SERVICES: STAFF EMPLOYMENT FOR THE WINTER RINK PROGRAM:
The budget for this program should be revamped to hire retired men as well as students. Ridgecrest Playground's student became ill at the begin of his employment last winter and Bob Rivard took on the position at a student rate.
The difference in the satisfaction of the service provided was extraordinary. Immediate respect for the older employee was noticeable from usually disruptive teens to one of service (helping with shoveling and clearing the rink with Bob). Bob had the ability to make everyone feel inclusive.
He made sure everything outside and inside the Fieldhouse were clean and he always kept a visual watch on everything that was happening. He was also very handy when something had to be fixed.
All the volunteers were very happy with the last winter program.
We have had issues with students who were not vigilant - eyes always on their phones, late to open, doing their homework, not cleaning the bathrooms properly (shit on the floor), simply shoving snow on the side of the boards.
The volunteers who flooded always had to clean the rink properly (this discouraged them from volunteering until Bob was on the scene). I could go on and I'm sure if you check with the other parks they will have similar complaints.
Bob said he would come back if the wages were at least 15.00$ he would not come back for 11.00$ should the city decide on retirees. He also knows at least one other friend who would do it at another park if the rate increased.
DESCRIPTION: Increase the wage to $15.00 - $16.00 for retirees. The employees are hired from mid December to mid March. They are allowed 25 hrs @ week. Calculation 13 weeks x 25 hrs. = 325 hours (could be 11-12 weeks depending on the weather)
Student Rate (Baseball figure) 325 x $11.00 = 3,575.00
Male Retirees 325 x $15.00 = 4,875.00
4875 - 3575 = 1300$ difference per year
ONETIME: Savings for the city.
Less time needed by city staff to come and do what the students cannot do or fail to do.
ONGOING: One going additional cost per year would be $1300.00 per male retiree hired.

budget - water rate contradictions

From: bobby [redacted]
To: <budget@greatersudbury.ca>
Date: 9/13/2015 8:58 PM
Subject: water rate contradictions
Cc: The Mayor <Mayor@greatersudbury.ca>, Joscelyne Landry-Altmann <Joscelyne...

Ok, so I have an IDEA about how to make water charges real.
(note - these numbers are real close but not exact
- didn't include all the taxes in calculations)

First, my bill broken down...
(I sure wish they would get back to monthly billing. Its' so inconvenient to track usage)

Last month, my 2 month bill was $169.45 and I used 37 cubic meters
which means I paid **$4.58/cubic meter**.

Point:

If I had used 10 cubic meters in that time, I would have paid

$12.44 (usage) + $30.90 (Fixed charge) + $51.79 (poop tax) = $95.13
or **$9.51/cubic meter**

If I had used 100 cubic meters in that time I would have paid

$124.40 (usage) + 30.90 (fixed charge) + $185.58 (poop tax) = $340.88
or **$3.40/cubic meter**.

In essence, the more you use, the less you pay.

Here's the IDEA

Have staff calculate an "All In" price per cubic meter that will give them all the revenues required.
This /cm price would include all charges. (fixed, usage, poop tax and taxes)
So, let's say it's $5.00 (for arguments sake...)

A person using 10 cubic meters pays for ten @$5.00 or gets a bill for $50.00
(a difference of -$45.15)

The person using 100 pays $500.00
(A difference of +$149.22)

In essence, the more you use, the more you pay.

This would, at least, level the billing rates for users.

This also opens the door for two groups in this town low end users and Snow Birds.

The first group, low end users (usually old/poor/student/etc.) You know, poor people!

With this singular rate for water, it gives the City an opportunity to
lower the rate for the first (5/10) cubic meters. (Kinda like hydro)

This should be no problem with implementation - just a massage of the billing software.
This would give low users a break on the little they use...

The second group, Snowbirds come back after a 4 months and face a water bill of $135.34 (fixed + PTax)
and they haven't used a drop of water! For those four months, they would get a bill of ZERO dollars.
It's only fair. There are other groups and people away from their home for extended periods
like hospital and vacations. Same O, same O.

Again, these factors would be included in the primary price/cm calculated.

All the money needed would come in but in a more balanced fashion and
would adhere to councils initial premise that "the more you use, the more you pay!
(I was at the meeting in July when the "poop tax" was takes off property tax charges and made into a separate bill - we would get a water bill and our p taxes would come down.
That last part didn't happen!)

A comparison I can use is a gas station. You do not pay the attendant up front
to use the pumps and then pay for the gas (and taxes). The total price
is calculated at the pumps and every litre you get includes all the costs.

That's the long and the short of it and the math is not hard to calculate.

Looking forward to hearing from you. It's been a while since I shook your hand. b.

Bob Daigle

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/18/2015 4:16 PM
Subject: 2016 Budget Public Input

This form was sent at: 18-Sep-2015 4:15 PM
NAME: Rebecca Danard
ORGANIZATION: reThink Green
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: Climate change is a global problem that needs local solutions. Northern Ontario communities are particularly susceptible to its adverse effects: extreme weather, flooding and forest fires present particular challenges faced by our communities.

ReThink Green will develop a network of businesses and organizations in Greater Sudbury who will make public commitments to improve their environmental performance, reduce greenhouse gas emissions, and adopt more sustainable business practices. Each member organization will develop an action plan, report sustainability metrics and set targets for improvement. We will equip businesses and organizations with tools and incentives to take action to become more sustainable. The program will help to grow the local low-carbon economy by increasing the demand for green products, environmental services and renewable energy. Businesses and communities participating in similar programs across Ontario have experienced savings on energy costs, positive brand recognition, and increased employee engagement. Initial discussions about this program in Sudbury were well attended (40 people, 36 organizations) and enthusiastically received.
DESCRIPTION: ABOUT RETHINK GREEN
ReThink Green's vision for a Greater Sudbury is that it be a community continuously striving towards true sustainability – in which the well-being of the global and local environment, the health and happiness of the residents and a prosperous economy are properly balanced and in harmony. ReThink Green's mission is to develop community networks which empower member organizations to meet their environmental and sustainability goals. Its mandate is to empower members through capacity building events, resources and knowledge sharing, collaboration, and public education opportunities.

PROJECT DESCRIPTION
In 2016, reThink Green is initiating a program in Greater Sudbury that builds on the success of a proven model. We are seeking $60,000 in start-up funding to launch of a target-based sustainability program for businesses and organizations in Greater Sudbury.

The program, Green Economy North (GEN), will operate as a social enterprise in which businesses pay a membership fee and make a tangible commitment to become more sustainable by setting and achieving targets to reduce their greenhouse gas emissions, water consumption and/or waste production. ReThink Green will provide support, coaching, networking and events to help them achieve their goals.

GEN will be the hub of the green economy in Greater Sudbury, providing all the support an organization will need to achieve a greenhouse gas, water or waste reduction target. GEN will provide organizations: Reporting Tools (carbon accounting software and surveys), Support Services (sustainability coach, member support coordinator, online resources such as a green team guide, case studies, energy auditing toolkit, primers and guides), Events (technical workshops and educational forums) and Recognition (annual report and evening of recognition).

RESULTS
In the Region of Waterloo, which launched a similar program in 2008, 65 local organizations representing 14% on the workforce are currently engaged in the program. Together they have collectively set and are work towards reducing 52,000 tonnes of greenhouse gas emissions. By launching Green Economy North in Greater Sudbury, we expect that:
(1) Businesses and organizations will be encouraged and supported to adopt sustainable business practices.

(2) Local greenhouse gas production will be reduced.
(3) The local low-carbon economy will be stimulated.
(4) Businesses will increase their profitability, through decreased operational costs, increased employee engagement and improved public image. This will motivate them to stay in the program and incentivize others to join.
(5) GEN will become financially self-sustaining in 5 years.

PROJECT SUPPORT

ReThink Green is an emerging member Sustainability CoLab (http://sustainabilitycolab.org/), a non-profit that is developing a network of organizations who are launching target-based sustainability programs for business across Ontario (in Durham, Kingston, Niagara, Ottawa, Waterloo, York and Greater Sudbury). As a member we have access to: one-on one coaching; resources such as primers, samples and templates; a program launch roadmap; connections to key organizations in our community; pre-negotiated partnerships for discounted services; peer learning opportunities with other network members; increased profile; and funding opportunities. We have a wealth of models across Ontario to help us design our program. We have the choice to replicate, adapt or innovate each aspect of our program to suit Greater Sudbury's unique circumstances and needs.

COMMUNITY BENEFITS
As the only program of its kind in Northern Ontario, Green Economy North has the potential to position Greater Sudbury as a regional leader on climate change and sustainability. The city will benefit from an improved public perception and attract green talent, businesses and investors to the region. Citizens will be able to choose and access more sustainable goods and services.

Participating member organizations will experience bottom line cost savings, greater employee engagement, lower business risk from regulation and improved community profile. It will also increase demand for local environmental services such as energy audits and solar power stimulating the local low-carbon economy.

ALIGNMENT WITH CITY VISION, MISSION and VALUES

Green Economy North will help drive the local economy, specifically the low-carbon economy. As identified by the City's Official Plan, "the development of an environmental services sector is another identified opportunity." (section 1.3.4)

The Official Plan also "recognizes the importance of energy conservation by facilitating alternative modes of transportation, encouraging energy efficient urban design, and anticipating renewable energy projects." (section 1.3.3). Green Economy North will be directly educating local businesses about the financial, risk mitigation and employee attraction and retention benefits of adopting sustainable business practices and empowering them to adopt these practices.
Therefore, Green Economy North is clearly very much aligned with the Official Plan's vision for bolstering and diversifying Greater Sudbury's local economy and preserving the local environment.

Earth Care Sudbury's Local Action Plan presented to council in 2010 contains some significant goals including:

- An 80% reduction in energy consumption by 2050
- A 15% reduction in community energy consumption from 1990 by 2019.
- By 2015, achieve 70% energy reductions in all major new buildings
- No future need for additional landfill space in Greater Sudbury
- By 2019, achieve a reduction in transportation related CO2 emissions by 1 tonne per capita.

The combined efforts of the local business community to improve their collective sustainability

performance will help Greater Sudbury achieve these goals.
ONETIME: $60,000

This funding will be used to launch and grow this program. Additional one-time funding has been sought from the Ontario Trillium Foundation and the North American Partnership for Environmental Community Action. Funding from the City of Greater Sudbury, approximately 15% of the total budget, would help to leverage support from these and other organizations as well as corporate sponsors.

Additional material available upon request.
1) Complete program plan and budget.
2) Evidence to support the program model.
3) Letters of support (addressed to the Ontario Trillium Foundation) from Vale, Laurentian University, Greater Sudbury Hydro, the Chamber of Commerce and A2S Associates and Sustainability CoLab.
ONGOING: Green Economy North will become a self-sustaining social enterprise through membership fees and corporate sponsorship by 2021. If our current applications are successful, we will not be requesting further start-up funding from the City of Greater Sudbury. The program in Waterloo (launched in 2008) covered 98% of its expenses through program revenue in 2014. Since Green Economy North will not depend on the renewal of grants, member organizations who are setting goals and making long-term plans have assurance that the program will continue to operate. Green Economy North will continue to promote sustainable business practices and normalization of the low carbon economy well beyond 2016.

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/11/2015 2:49 PM
Subject: 2016 Budget Public Input

This form was sent at: 11-Sep-2015 2:48 PM
NAME: Cheryl Desforges
ORGANIZATION:
PHONE [redacted]
EMAIL: [redacted]
COMMENTS1: SOLAR is a huge part of the future.
DESCRIPTION: Solar is going to have to be utilizes more and more. Especially since in the winter months we do not have as much sunshine available in the north. It MUST become a integral part of the city and each community. Research is rampant on the different ways to incorporate this. The city itself has a huge hydro bill and will save 100's of thousand of dollars by using more solar in the long run.
ONETIME:
ONGOING:

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/9/2015 8:32 PM
Subject: 2016 Budget Public Input

This form was sent at: 9-Sep-2015 8:32 PM
NAME: Janet Fournier
ORGANIZATION:
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: Charge home owners who purposefully block the sidewalk with snow by plowing/ snow blowing their driveway.
DESCRIPTION: Blocked sidewalks makes walking hazardous. This program may be a new revenue stream and ensure we have less lawsuits against the city.
ONETIME:
ONGOING:

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/18/2015 4:27 PM
Subject: 2016 Budget Public Input

This form was sent at: 18-Sep-2015 4:26 PM
NAME: Marc Gascon
ORGANIZATION: Clean Air Sudbury
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: Air quality education is an important aspect of environmental education. It is relevant particularly in Greater Sudbury because the region has a history of environmental remediation successes. Public perception of local air quality is not representative of actual air quality data. In fact, the data shows that Greater Sudbury is among the top three cities in Ontario with the best air quality. This should be a source of pride for Greater Sudbury, but currently is a little known fact. Clean Air Sudbury aims to change that.
DESCRIPTION: Description of Organization:

Clean Air Sudbury is a non-profit community group focused on air quality issues in Greater Sudbury. Our mission is to:

- Compile, summarize and disseminate local air quality information,
- Promote education and awareness of community air quality issues, and
- Provide opportunities for the public to get involved in air quality improvements.

Our committee's goal is to have a trends report completed roughly every 5 years as the data is available annually. The most recent report was published in 2009 and we feel it is important to provide an update. Below is the list of Clean Air Sudbury members and the organizations that they represent.

Jane Bulloch	Sudbury & District Health Unit
Burgess Hawkins	Sudbury & District Health Unit
Barb McDougall-Murdoch	City of Greater Sudbury
Jennifer Babin-Fenske	City of Greater Sudbury
Marc Gascon	BESTECH
Ray Potvin	Potvin Air Management Consulting
Ron Paolin	Ministry of the Environment
Ana Grec	Vale
Jane Hurban	Vale
Mike Bruneau	Sudbury Integrated Nickel Operations – a Glencore Company
Chris Ransom	Sudbury Integrated Nickel Operations – a Glencore Company
Maria Korkiakoski	Sudbury Integrated Nickel Operations – a Glencore Company
Peter Beckett	Laurentian University
Pamela Koski	Cambrian College
Marc Nellis	College Boreal
Rebecca Danard	reThink Green
Jennifer Harvey	reThink Green

Description of Project:

Clean Air Sudbury is requesting that the City of Greater Sudbury contribute $5,000 to help pay for an Air Quality Trends Report to be developed. The most recent Trends Report was published in 2009 and there is a significant amount of recent data that needs to be reported to the public. The estimated total cost for the project is $17,625.

It is important that residents of Greater Sudbury understand how their air quality compares to other cities in Ontario and Canada. This report celebrates the improvements made by various community organizations and industry to improve air quality while also drawing attention to the areas that could be

improved upon. The report will be an accessible and easy to understand document that will make scientific data relatable to the average person.

The City of Greater Sudbury has financially contributed in the past to Clean Air Sudbury's projects and initiatives. Industry has also been very supportive of Clean Air Sudbury. Vale has already committed funding for this project, and a proposal for support is currently under consideration with Sudbury Integrated Nickel Operations – a Glencore Company. As was done with past two reports, the $5,000 that is being requested from the City of Greater Sudbury is approximately 1/3 of the cost shared by these partners.

Benefits to the Community:

Greater Sudbury's air quality is actually better than the air quality in every single city in Southern Ontario except for Ottawa (according to the Ministry of the Environment and Climate Change's Air Quality in Ontario 2013 Report). Public perception of local air quality doesnt reflect actuality and this is why it is worthwhile to continue to disseminate the facts in an understandable way.

The major achievements made by industry to improve their environmental performance has made Greater Sudbury an environmental success story and air quality is part of that story. Greater Sudbury's reclamation research and projects are used as examples for other countries around the world to follow suit. Greater Sudbury has also won National and International awards for its land reclamation and restoration efforts.

This report is an opportunity to help improve the public perception of air quality in our community which can affect tourism, investment, and retention of young people. Clean Air Sudbury is the only independent group reporting the state of local air quality.

Past Projects:

Clean Air Sudbury has been an active community group for over a decade. In 2005-2006, it established the Sudbury Trip Reduction Network to encourage sustainable transportation behaviours. Between 2006 and 2008, Clean Air Sudbury delivered a schoolyard air quality monitoring project in four local high schools. Students collected the information and used statistical analysis to derive meaning from the data about the air that they were breathing. This type of experiential learning enhances the curriculum for students.

In 2009, Clean Air Sudbury played a role in making recommendations to the City of Greater Sudbury related to street sweeping best practices to maintain good air quality. These recommendations were incorporated by the City and resulted in changes being made to the contract for street sweeping.

In 2009-2010, a Fuel Efficient Driving program which was delivered to organizations and the public to educate them on greening corporate fleets and fuel efficient driving.

In 2012, a street-level air quality monitoring study was conducted to complement the data received from the Ministry of the Environment and Climate Changes air quality monitoring stations. A report was produced explaining how air quality is impacted by transportation.

Every five years, Clean Air Sudbury produces a Clearing the Air Report discussing air quality trends in Sudbury which is used as a resource to better understand air quality issues in Greater Sudbury and how improvements to local air quality can be made.

Clean Air Sudbury integrates itself in the local community by sponsoring an award at the Regional Science Fair to be presented to the student(s) with the best project related to air quality. Clean Air Sudbury is also often present at the Earth Day Festival where it has a booth with displays, equipment and educational material available for the public to learn from.

Comparing Communities:

The City of Hamilton is similar to Greater Sudbury in that its industry is heavily dominated by a single sector that has traditionally performed poorly when it comes to air quality. While both the metals and mining sectors have made tremendous strides towards improving their environmental performance, the support from their respective municipal governments is quite different.

The City of Hamilton is very supportive of providing Clean Air Hamilton with the financial support it needs to operate. In fact, a full time Air Quality and Climate Change Co-ordinator position is maintained within the City of Hamilton and the City contributes $56,000 annually to Clean Air Hamilton's budget. Clean Air Hamilton also receives well over $200,000 in in-kind support annually from its partners. It is Clean Air Sudbury's sincere hope that the City of Greater Sudbury become more supportive of air quality education.

We make this comparison between Hamilton and Greater Sudbury because we feel that it is the most similar Canadian community to Greater Sudbury, from an economic perspective. Hamilton is often looked to as an example of how government, industry and the community can collaborate and achieve significant environmental improvements.
ONETIME: $5,000
ONGOING: Not applicable.

budget - Fwd: Ppt for public budget session, and written submission from Coalition for a Liveable Sudbury

From: clerks
To: budget
Date: 9/14/2015 12:41 PM
Subject: Fwd: Ppt for public budget session, and written submission from Coalition for a Liveable Sudbury
Attachments: CLSsubmission_CGSbudget2016.pdf; CoalitionLiveableSudbury_budgetsubmission_2016.pptx; CoalitionLiveableSudbury_budgetsubmission_2016.pdf

>>> "Coalition for a Liveable Sudbury ." <clsudbury@live.com> 9/14/2015 7:56 AM >>>
Good morning,
Please find attached both the written submission and ppt presentation for the public session for the 2016 CGS budget from Coalition for a Liveable Sudbury.
Please send a quick reply to let me know you have received it.
Thank you,
Naomi Grant

Coalition for a Liveable Sudbury

Making connections. Working toward sustainability.

September 14, 2015

Coalition for a Liveable Sudbury
Written submission – Greater Sudbury 2016 budget

More than anything else, the municipal budget is about setting priorities guided by the vision of what community we want to be.

We respectfully make the following recommendations for a budget that supports liveable communities with a high quality of life, meets the needs of residents, and aims to position Greater Sudbury as a leader in the north.

1. Implement an Active Transportation Coordinator and/or Transportation Demand Manager

As recommended by the draft Transportation Study, Greater Sudbury needs a senior staff person who can move Greater Sudbury ahead when it comes to sustainable transportation.
Thunder Bay has a Mobility Coordinator (formerly Active Transportation Coordinator) which has made an important difference in progress made. For example, Thunder Bay has over 30 km of bike lanes and shared lanes, added 4.5 km in 2015, and offers many courses and group rides.

2. Fund and set timelines for the higher level work needed to become a City where walking, biking and transit are true transportation options.

From the Sustainable Mobility Advisory Panel's input to the draft Transportation Study:

Key elements	
Complete Streets Policy and Guidelines	- Full **Complete Streets Policy** in 2016 - **Complete Streets Guidelines** by 2017
Sidewalk Priority Index	- **Sidewalk Priority Index** by 2016
Cycling Infrastructure Priority Index	- **Cycling Infrastructure Priority Index** by 2016
Transit Master Plan	- **Transit Master Plan** by 2017
Transportation Demand Management Plan	- **Transportation Demand Management Plan** by 2016 - TDM manager position in place by 2016 - redo traffic modelling with TDM, and transit ridership goals (building on current levels of 4-5%); using metrics for all modes to evaluate alternative scenarios – by 2017 - **Levels of Service** for all modes by 2016.

3. Budget lines for specific high impact cycling infrastructure projects for the 2016 season.

It is a great step forward that we now have annual funding for priority cycling infrastructure. Now we need to put it to work and begin completing priority projects. We look forward to seeing budget lines for specific high impact cycling projects, vetted by the Sustainable Advisory Mobility Panel.
We need to start building a minimum grid of cycling routes in Greater Sudbury, starting with our highest use transportation corridors, which are also among the most dangerous routes for cyclists without proper separated cycling infrastructure.

4. Provide Saturday transit service on Sundays

Residents have similar travel needs to reach work, shopping and other destinations on Sundays as they do on Saturdays. We consistently hear that Saturday service on Sundays is needed, which was also clearly shown in survey results by Friends of Sudbury Transit (with over 800 respondents). Improved service leads to more people on the bus.
Direct staff to provide the costs of providing full Saturday service on Sundays, and fund it from the Transportation budget.

We also recommend:
- Increased funding for Handi Transit so that it can meet the needs in our community in an inclusive way (as required by the Human Rights Commission)
- Offer fare options that encourage and facilitate ridership such as: family passes; day and weekend passes; student fares; free transit for children under 12; 'U-passes' for elementary and high school students; and free transit during off peak hours for seniors and youth.

5. Dedicate staff time to watershed studies, and set meaningful deadlines

It is a great step forward that we now have annual funding for watershed studies. However, progress is still not being made. **Set a deadline for the Ramsey Lake watershed study, and a timeline for other needed watershed studies, and direct staff to choose a project lead to ensure it gets done well and on time.** As there is no expertise in-house to complete a full watershed study, this project lead would be responsible for hiring an appropriate consultant. NDCA could also be subcontracted to hire a consultant and direct the project. The study should be done in partnership with expertise from Living with Lakes and input from the Greater Sudbury Watershed Alliance, and the Lakes (Watershed) Advisory Panel.

6. Complete flagship projects that lead by example and establish Greater Sudbury as a leader in the north

- A separated cycling route on a major roadway

Thunder Bay recently opened its first protected bike lane and multi use trail

- Green infrastructure in impactful and prominent locations

Thunder Bay has recently installed a series of rain gardens in prominent locations that filter and reduce stormwater run-off

+++

Roads and drainage is the single largest portion of the budget, accounting for ~40% of the capital budget. All of these recommended items fall under transportation and 'drainage'.* Again, budgeting

is all about priorities: Council can choose to direct funding to sustainable transportation and water quality within the Roads and Drainage budget.

We recommend that the above items be funded from the Roads and Drainage budget. Please note this is a recommendation for a shift in funding priorities, not budget 'options'.

**Transit is technically not included in the 'Roads and drainage' budget. However, it is unquestionably transportation. Therefore, we respectfully suggest that it is appropriate to re-direct budget monies from "Traffic and Transportation" to transit (currently underfunded with ~1% of the capital budget).*

Finally, we submit that creative solutions enable more to get done. When meeting the priorities of our community, the attitude should be "how can we make it happen," not "it can't be done."
For example, we are often told there is 'no room' for cycling infrastructure on main roads without costly acquisitions. However, by using creative solutions such as road diets, narrower lanes, retrofits of boulevards, or seasonal bollards, we can create safe cycling infrastructure with the space available, at a reasonable cost.

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>
Date: 9/1/2015 10:12 PM
Subject: 2016 Budget Public Input

This form was sent at: 1-Sep-2015 10:12 PM
NAME: D. Greene
ORGANIZATION:
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: It is a well known FACT that there are a lot of credit cards to be had for employees to purchase supplies for the offices at Tom Davies Square and other facilities. Note I said for the offices NOT FOR THE PERSONAL USE OF THESE EMPLOYEES. These credit cards are being used to buy supplies for their own kids. When my kids went to school and/or college I paid for their supplies; why can't they. I'm not sure how many cards are out there in the hands of these employees but considering how many are working for the City of Sudbury, that must mean a LOT of credit cards. These cards should be removed immediately and given to only 2 or 3 at the most. Staff members would go through these 2 or 3 trustworthy individuals with a P/O and the supplies would be ordered for them. When the order comes in, the department who requested it would pick up the order at a designated spot. This saving me and other taxpayers HUNDREDS of THOUSANDS OF DOLLARS each and every year.
DESCRIPTION:
ONETIME: This would be a yearly saving in the hundreds of thousands if not more.
ONGOING: Same comment as above.

The Sudbury Chapter of the Canadian Association of Retired Persons (CARP) representing over 400 members is the largest Older Adult organization in the community advocating on behalf of older adults and is pleased to make this presentation to the city budget exercise. Those over 65 are the fastest growing segment of our population and we have the greatest percentage of any city in Ontario if not Canada. If we include those 60 years plus there are over 30,000 of us in Greater Sudbury, and we are responsible concerned citizens who vote more than any other population group.

At our recent CARP chapter annual meeting a survey was conducted of the over 100 older adults who attended and revealed that 94.3 percent felt the city "should repair existing roads and infrastructure before new projects" and 87.7 percent felt the city "should carefully examine the need for Maley Drive".

These findings indicate concerns with respect to how money should be spent and on what is needed and not just on what may be wanted, but is not essential. Older adults by nature are conservative financially and like to see the best value for dollars expended, and expect their elected representatives to respect the city's own value statement to "manage the resources in our trust, efficiently, responsibly and effectively". Seniors are also adverse to debt financing any but the most necessary projects and preferably those that can show a return on the investment for the public good and the greatest number such as improved public transit, recreational and cultural facilities. For these and other significant projects impacting seniors we would like to be involved in the planning and development process.

Due to the demonstrated need for additional Bell Park parking at several festivals this summer CARP has suggested that the former St. Joseph's hospital parking lot be retained for this purpose. Almost one million dollars would be required to remove the present paved parking area which now can accommodate over 300 vehicles. It is felt that this parking area, still in relatively good condition, which has a replacement value of likely over three million dollars, should be preserved to compliment the present parking spaces for the many residents and visitors visiting Bell park during the summer months. This lot has several advantages being on the park side of Paris Street and has a controlled access intersection at the parking lots entrance, two very important considerations particularly for seniors if not all ages. This parking area also has tourism economic value, for the many out of town visitors attending festival events in the park needing convenient parking access. To reduce storm water polluting runoff the parking area would not be used during the winter. A portion of the money currently being considered for demolition of the facility could be used to construct pedestrian friendly access to the park area and for beautification on the Paris St. perimeter of the parking area.

CARP Sudbury has serious concerns with respect to the lack of affordable housing for many citizens of limited means. Even those with current properties looking to downsize cannot find accommodations suitable for their needs. On November 17th CARP will sponsor a forum together with local contractors and CHMC to which city officials and councillors are invited. We would like to see our council committed to development of a housing strategy to satisfy present and future needs and allocate resources for this purpose.

Sincerely and respectfully submitted: Hugh Kruzel, Chair, CARP – Sudbury – carpsudburychapter@gmail.com

Budget 2016 Community Consultation Form

Greater | Grand Sudbury
www.greatersudbury.ca

Deadline for submissions: Friday, September 18, 2015

As part of Council's commitment to balancing the need to provide excellent, efficient services with the desire to maintain low property taxes, the Finance and Administration Committee of Greater Sudbury is looking for your input into the 2016 municipal budget.

If you have suggestions for fiscal opportunities for our City, the community consultation is your chance to talk about them.

The community consultation is also an opportunity to make funding requests. Such requests should be in line with the City's vision, mission, and values, which speak to quality of life, excellence of service, innovation, and the social, environmental, and economic development of our community.

RECEIVED
SEP 14 2015
CLERK'S

Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Richard (Rick) Maisonneuve
Name

Organization (if applicable)

[redacted]
Daytime telephone

[redacted]
Email

☐ Check here if you would like to make a presentation to the Finance and Administration Committee by attending the Public Consultation on Wednesday, September 16, 2015, starting at 4 p.m. in the Council Chamber of Tom Davies Square. Presenters are asked to limit their remarks to five minutes.

(1) **Comments/Suggestions/Opportunities for Savings:**

Checks + Records on Policy
- People on fixed income cannot afford for 2 or more bills for the same service (Above)

(2) **Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):**

Proper support center with city Hall supervision and cooperation

Estimated one-time cost or saving: (1) Should already be in place (2) audit

Estimated on-going costs or savings: Labour + Material savings over a time with incremental but substantial savings with little cost

Consent & Notice of Collection

I hereby acknowledge that the City of Greater Sudbury collects this information for the purpose of collecting information for the 2016 municipal budget process in accordance with the Municipal Act, 2001. I consent to the information in this form, its attachments and any further information provided being disclosed in its entirety to Council, City staff and/or members of the public and the information may be discussed in public meetings and posted on the Internet. Any questions relating to the collection, use and/or disclosure of the information provided in this form may be addressed to the Deputy City Clerk at Tom Davies Square, 200 Brady Street, 2nd Floor, P3A 5P3 or by telephoning 705-674-4455 ext. 4206.

R. Maisonneuve
Signature

Complete and mail/deliver to:

City Clerk, Tom Davies Square,
200 Brady Street, 2nd Floor,
P.O. Box 5000, Stn A,
Sudbury, ON P3A 5P3
Fax: 705-671-8118

Note: Failure to sign may result in the information or portions thereof not being considered for the 2016 Budget Process.

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/15/2015 6:11 AM
Subject: 2016 Budget Public Input

This form was sent at: 15-Sep-2015 6:11 AM
NAME: Glenn Murray
ORGANIZATION: NIL
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: One of the most important items that needs to be dealt with, sooner than later, is the Watershed Study. In spite of the agreement of the previous budget to fund this study, it's stretched out funding scheme needs to be tightened up. We are still seeing controversy over new developments that have already been approved. We are probably going to find in the future that they should not have been approved in the first place. Water safety and protection is far too important to be placed behind the needs and wants of the developer or even a single small project.
DESCRIPTION:
ONETIME:
ONGOING:

Sudbury Cyclists Union

Written Submission – Greater Sudbury 2016 Budget

The Sudbury Cyclists Union (SCU) is a grassroots organization formed in 2010. Our mission is to connect cyclists and improve Greater Sudbury's cycling culture.

The SCU is a voice for cyclists of all ages and abilities. We are recreational and commuter cyclists. For some, cycling is a primary mode of transportation. For others, it's an occasional use. For many, it's something they would like to do more of. We work to promote safe and convenient cycling for everyone in Greater Sudbury.

Our priorities for 2016:

- **Implement an Active Transportation Coordinator position**
- **Start building a minimum grid of key cycling infrastructure**
- **Implement required strategies to make our city more liveable and sustainable: Complete Streets, Transportation Demand Management**
- **Approve an Active Transportation Plan, with priorities that address key cycling infrastructure deficiencies, timelines, and budgets**

Thank you for your support of safer cycling in Greater Sudbury. With your help, we are building a more liveable community for all residents, and are providing safer and convenient transportation options for everyone.

Our suggested priorities for the 2016 budget reiterate what we proposed for the 2015 budget and echoes the comments we submitted for the draft Transportation Master Plan (TMP). Let's not delay any further. Let's start implementing right now the suggestions of the Sustainable Mobility Plan and the key priorities identified in the draft Master Transportation Plan.

In 2014, we proposed shifting dollars from exiting capital and operational budgets in order to accomplish our vision. You approved $800,000 in annual capital funding as proposed in the Sustainable Mobility Plan for major cycling infrastructure projects ($300,000 for the Barrydowne project and an unallocated $500,000 in 2015). That demonstrates that our shared vision can be accomplished. If we shift our priorities from car-centric to more sustainable options, we can implement safe and convenient cycling infrastructure as well as other transportation options including pedestrian and transit enhancements. We can incorporate strategies and programs that encourage and promote cycling into our departmental business plans. We can accomplish the goals that we set.

In 2016, let's begin implementing our vision and our new priorities.

1. Implement a Transportation Coordinator position

To become more people-centric, we need to provide the leadership that is required to implement our vision. The draft TMP identifies the need for an Active Transportation Coordinator. This coordinator would ensure that recommendations in the TMP and in the Sustainable Mobility Plan are implemented, not sometime in the future, but starting now in 2016.

An Active Transportation Coordinator would work not only on ensuring that we begin building our required key cycling infrastructure projects, but would also help coordinate active transportation programs, events and education campaigns.

2. Begin completing our minimum grid of safe cycling infrastructure – build key cycling infrastructure projects in 2016

Council has a vision of a more liveable city that will attract investment, business, and economic growth, and a vision of a multi-modal transportation network in Greater Sudbury. You supported this vision by identifying capital dollars for cycling infrastructure in the 2015 budget, monies that were not spent. Let's use the dollars that were identified last year and that will be provided this year to start implementing our vision – let's start building a safe, minimum grid of cycling infrastructure in 2016.

Staff will being working on plans for 2016 construction priorities as soon as the 2016 capital budget is approved. Please direct staff to plan and implement some dedicated key cycling infrastructure capital projects that will retrofit some of the roads most dangerous to cyclists. We know what we need to retrofit – core roads like Lasalle, Paris, Notre Dame, Barry Downe , and others that provide access to key destinations like schools, workplaces, and shopping; and key connector roads like MR 80, MR 55, and MR 35 that provide access to outlying neighbourhoods.

Our final Active Transportation Plan will not be ready in time for the 2016 budget decisions. So, in the interim, please ask staff to work with the Sustainable Mobility Advisory Panel to identify creative and innovative solutions that are fiscally responsible and that we can implement now.

3. Implement the policies, plans and strategies that will make our city more liveable

We've already identified key strategies that are critical to making our city more bike friendly. A **Complete Streets Policy** and accompanying **Guidelines**. **Transportation Demand Management strategies** that are critical to solving congestion, gridlock and ballooning road expenses. A **cycling infrastructure priority index** that identifies required road cycling retrofits. And other operational policies suggested in the draft TMP, including **new levels of service**, **new road classifications**, and **new road design standards**.

Our hope when the draft Transportation Master Plan was finally released was that some or most of these policies and strategies would be in place for the 2016 budget decisions. Since this will probably not happen, please direct staff to work on implementing these strategies in time for the 2017 budget and to use their principles when planning the 2016 capital and operational budgets.

4. Approve an Active Transportation Plan

The draft Transportation Master Plan also proposes an Active Transportation Plan. However, there are some weaknesses in this plan. The SCU recommends that the Sustainable Mobility Advisory Panel and an Active Transportation Coordinator work with Roads and Transportation, Leisure Services and Parks to develop a more comprehensive Active Transportation Plan that will meet the needs of recreational cyclists as well as people who use bikes to get to work, to school, and to other destinations.

This plan should include revised priorities, timelines, and budget that address the key cycling infrastructure deficiencies that exist on the roads most dangerous to cyclists.

Greater Sudbury – Northern Ontario's second Bike Friendly City!

One of Council's priorities is to grow our beautiful city and to draw new businesses and new residents here. We need to capitalize on strategies and amenities that will give our city an edge on other cities - our parks, our lakes, our festivals and enhanced transportation options.

Being bike friendly is a priority for other cities. This year, Thunder Bay joined the ranks of many Ontario cities who are designated as "Bike Friendly" and was the first Northern Ontario city to do so. One of our goals for 2016 or 2017 should be that Greater Sudbury becomes the second Bike Friendly City in Northern Ontario.

This is something that we can easily do by moving now on cycling priorities, starting in 2016.

In closing, we'd like to include the rationale and key strategic directions that we identified in our 2015 budget submission. These continue to be valid for 2016 and beyond, and with your support, we can become Northern Ontario leaders in sustainable transportation!

Rationale: Transportation is moving people, not just cars

- **A shift to funding cycling infrastructure will bring: increased personal and environmental health and economic advantages to the City through cycling tourism, jobs that support cycling, and increased local spending.**
- **Cycling is transportation, and our lack of cycling infrastructure is part of our transportation deficit.**
- **Integrated solutions make our transportation systems better for everyone – car drivers, transit users, cyclists, pedestrians, and residents alike.**
- **We have a fiscal responsibility as well as a social responsibility towards all residents (1/3 of our population does not drive).**
- **Building more road lanes doesn't solve congestion. Road diets are increasingly popular across North America.**
- **Attracting additional businesses, professionals, and families to Greater Sudbury depends on our ability to offer active, healthy and liveable communities.**

Key strategic directions:

- **Implement plans, priorities, and budget to ensure all citizens are serviced equitably.**
- **Focus on fixing roads first; revisit plans and standards for new road construction, widening, and intersection improvements.**
- **Ensure all road projects conform to Complete Streets policies.**
- **Re-evaluate all roads projects with new standards of service that don't prioritize only cars.**
- **Complete a comprehensive cost/benefit analysis of all projects.**
- **Allocate yearly funds to sustainable transportation projects, including cycling, as recommended by the Sustainable Mobility Plan.**
- **Implement strategies that focus on reducing car traffic, to reduce the unsustainable practice of adding lanes, and to increase the return on investment in transit, walking, cycling and carpooling.**
- **Bring additional transparency to our capital projects by clearly identifying and monitoring cycling infrastructure projects.**
- **Improve community consultation to eliminate missed opportunities.**

Sincerely,

Rachelle Niemela

Rachelle Niemela
Chair, Sudbury Cyclists Union

Encl (3)
PowerPoint Presentation to Council
Background and Supporting Information
Sudbury Cyclists Union Profile

The Sudbury Cyclists Union

The Sudbury Cyclists Union is a grassroots organization, formed in 2010 by a group of cycling enthusiasts who have cycling at heart.

We are:
- People in Sudbury who love to bike, for transportation and recreation.
- People who want to help build a better cycling culture in Greater Sudbury.
- A voice for cyclists of all ages and abilities.

Our main focus is to provide a strong unified voice for cyclists and to facilitate a better urban cycling culture in the City of Greater Sudbury. Our aim is to make cycling safe, accessible, and fun for cyclists of all ages and ability.

Working together with those who share our same values, the SCU lobbies and advocates to make cycling improvements within the city.

Amongst others, we have worked with the City of Greater Sudbury, the Rainbow Routes Association, the Share the Road Coalition, the Sustainable Mobility Advisory Panel, the Coalition for a Livable Sudbury, the Sudbury Road Safety Committee, various City Community Action Networks, reThink Green, the Greater Sudbury Police Service, the Sudbury Women's Bike Group, the Walden Mountain Biking Club and the Sudbury & District Health Unit.

We are a member of the Coalition for a Liveable Sudbury, EarthCare Sudbury, reThink Green, and the OntarioCAN Cycling Advocacy Network.

Our mission is to:

- connect Greater Sudbury cyclists and encourage cycling for people of all ages and abilities who cycle for transportation or recreation
- build a better cycling culture in Greater Sudbury
- advocate for the rights of all cyclists

Our vision: A cleaner, healthier, safer and more liveable community

- Cycling as an important part of Greater Sudbury's transportation network
- A minimum grid of safe, accessible, and connecting cycling routes including dedicated infrastructure on key transportation corridors
- Programs that encourage cycling, including bicycle parking facilities, cycling courses, and safety campaigns for drivers and cyclists
- Respect for cyclists and motorists alike
- Municipal and budgetary decision-making processes that take into account the needs of our cycling community

OUR ACTIVITIES IN 2015

- Social events like bike maintenance BBQs
- In partnership with many of the organizations listed on the first page, we help run and participate in:
    - cycling courses for children and adults (some of our members are Can-Bike certified instructors)
    - bike safety workshops for schools
    - Kids Bike Exchanges
    - Helping to organize events like the Commuter Challenge, Bike/Vélo Fest, and the yearly Share the Road Ride
    - bike valet parking at events like Northern Lights Folk Festival Boreal, Earth Day, and UpFest
    - bike trailer services for Bike/Vélo Fest and River and Sky Camping and Music Festival
    - bike rodeos for Community Action Networks and other organizations and groups
- Participation in provincial activities:
    - Ontario Bike Summit
    - Share the Road's OntarioCAN provincial cycling advocacy initiatives

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OUR ADVOCACY IN 2015

- Submission and presentation to the City of Greater Sudbury 2015 budget public input process
- Responses to the Ontario Ministry of Transportation proposed controlled access highways in the City of Greater Sudbury (highways 17 and 69)
- Previous advocacy initiatives:
    - Participation in the City of Greater Sudbury budget public input processes in 2011, 2012, 2013, 2014
    - Provincial elections candidates survey (2014)
    - Municipal elections candidates survey (2014)
    - Responses to the Ontario Ministry of Transportation proposed controlled access highways in the City of Greater Sudbury (highways 17 and 69) (2014)
    - Submission to the #CycleON proposed education funding program (2014)
    - Submission to the #CycleON proposed municipal infrastructure funding program (2014)
    - Consultation session with Roads and Transportation re Second Avenue road construction (2014)
    - Input to Elgin Greenway Project (2013)
    - Input to draft Ontario Cycling Strategy (2013)
    - Input to draft Downtown Master Plan (2012)
    - Submission to City of Greater Sudbury Official Plan Review (2012)
    - Submissions to City of Greater Sudbury Transportation Study (2012, 2013)

Web: http://sudburycyclistsunion.ca
Email: info@sudburycyclistsunion.ca
Facebook: https://www.facebook.com/groups/111007132266027/
Twitter: @SCU3

Sudbury Cyclists Union

Greater Sudbury 2016 Budget
Background and Supporting Information

Cities world-wide are moving towards more sustainable transportation options and practices. A great example close to home is the City of Thunder Bay, who in 2015 became the first Bike Friendly City in Northern Ontario. Greater Sudbury should work towards becoming the second Bike Friendly City in Northern Ontario by 2017!

The Ontario Coroner's Report on Cycling Deaths [1], the #CycleON Strategy[2] and its accompanying Action Plans 1.0[3], the Safer Roads Ontario Act (Bill 31)[4], and other numerous reports from the medical community and local Health Units[5], all highlight that we need to do more to encourage safe cycling in Ontario.

The #CycleON strategy clearly identifies the major benefits of encouraging cycling in our community:

- Improved personal and public health
- A cleaner environment
- Economic benefits in cycling tourism dollars, local jobs for cycling-related industries, and economic benefits for local businesses

The Ontario #CycleON Strategy does an excellent job of describing these benefits, and provides source links to studies and supporting documents.

A note that funding has been provided by the province for municipal infrastructure projects and the City of Greater Sudbury has submitted a project (Kelly Lake Road). The City is also in the process of applying for cycling education dollars announced by the province. Thanks to the City for doing this.

In accordance with the #CycleON strategy, and in coordination with Mayor Bigger's #GS2025 vision, Greater Sudbury should set and act on the following goals:

- That Sudbury be recognized as the Northern Ontario centre for cycling tourism
- That Sudbury has an safe, integrated and connected cycling network that allows cyclists of all ages and all abilities to cycle to work, school, home and key destinations, making it the leader in Northern Ontario for sustainable transportation
- That Sudbury become the safest city in Ontario for vulnerable road users (pedestrians and cyclists)

Note that we have the opportunity to create a vibrant cycling tourism industry, which is growing substantially across the province[6]. As part of the #cycleON strategy, the provincial government will soon provide the direction

[1] http://www.mcscs.jus.gov.on.ca/english/DeathInvestigations/office_coroner/PublicationsandReports/CyclingDeathReview/DI_Cycling_Death_Review.html
[2] http://www.mto.gov.on.ca/english/pubs/cycling-guide/pdfs/MTO-CycleON-EN.pdf
[3] http://www.mto.gov.on.ca/english/pubs/cycling/pdfs/ontario-cycle-action-plan.pdf
[4] http://www.ontla.on.ca/web/bills/bills_detail.do?BillID=3057
[5] https://www.oma.org/Mediaroom/PressReleases/Pages/CyclingSafetyandBetterInfrastructureGoHandinHand.aspx
[6] http://www.manitoulin.ca/2014/12/10/chi-cheemaun-statistics-confirm-cycling-tourisms-island-growth

to implement provincial cycling routes across the province. The Great Lakes Cycling Route, which is being developed by the Waterfront Regeneration Trust[7], includes cycling infrastructure between Sault Ste. Marie and Sudbury, and includes a loop around Georgian Bay. Funding has already been secured for this initiative. A feasibility study on a cycling route between Sudbury and Ottawa is currently being planned. Sudbury is a key destination in all routes.

The strategic directions that Greater Sudbury should take in 2016:

Directions already identified in the Draft Transportation Master Plan:

- Implement policies and guidelines that enhance our infrastructure for cyclists (a Complete Streets Policy[8])
- Implement policies and guidelines that encourage the use of cycling, walking, transit, car pooling, and other strategies to entrench sustainable transportation as a key direction (Transportation Demand Management[9])
- When designing road infrastructure, use consultation and progressive design guidelines for all projects (including Ontario Traffic Manual, Book 18: Bicycle Facilities)[10]
- Implement a sidewalk priority index, and add a missing cycling infrastructure priority index; further define and implement the new levels of service, road classifications, and road design standards identified in the TMP
- Provide/encourage additional bike parking facilities at city-owned locations, schools, and businesses; consider implementing a bylaw that mandates retrofitting existing city property and businesses to a set city standard
- Promote awareness and behavioural shifts in Greater Sudbury
    - Additional safe cycling education courses and workshops
    - Driver/cycling public education awareness campaigns

Directions already identified in yearly budget projections:

- Allocate the yearly dollars already identified to building a minimum grid of safe cycling infrastructure

Additional directions:

- Work on become a Bicycle Friendly[11] and Walk Friendly Community[12]
- Promote Greater Sudbury as a premier cycling tourism destination

The City of Thunder Bay is Northern Ontario's first Bike Friendly City! We want Greater Sudbury to be the second Bike Friendly City!

[7] http://www.waterfronttrail.org
[8] http://completestreetsforcanada.ca
[9] http://www.fcm.ca/Documents/tools/GMF/Improving_Travel_Options_with_Transportation_Demand_Management_EN.pdf
[10] http://www.cwats.ca/en/about-CWATS/resources/Book_18_-_Bicycle_Facilities.pdf
[11] http://www.sharetheroad.ca/bicycle-friendly-communities-p138264
[12] http://walkfriendly.ca

What's to understand about cycling in Greater Sudbury?

- Cycling **is** a valid mode of transportation.
- Cycling **is** traffic.
- Cycling infrastructure is part of our **infrastructure deficit**. This infrastructure should not be an add-on or an after-thought to road projects.
- People cycle not only for recreational uses, but also as a **means of transportation**. People use bikes to commute to work, to get to school, to shop, to get to their destinations.
- Many **people want to cycle** but are afraid to do so, believing it to be too dangerous on our existing roads.
- **Not everyone drives**. According to the Sustainable Mobility Plan[13] (2010), 1/3 of the City's population does not. For many, cycling is not just an option; it's their primary mode of transportation. We have a **social responsibility** to ensure that they can cycle safely on our roads.
- We don't adequately service other modes of transportation outside of car drivers who are generally prioritised in road design and spending considerations. Cyclists, pedestrians, and transit riders receive a lower level of service and are often serviced as an afterthought or add-on. **Pedestrians and cyclists are often left feeling vulnerable to cars.** More support for vulnerable road users is necessary.

Understanding the implications of continuing to build new road infrastructure

- We are heavily subsidizing car drivers. Contrary to public opinion, the gas tax does not pay for the building and maintenance our roads. Of the $44.6M projected for 2015 on roads capital projects, only $9.9M is funded by federal and provincial subsidies, which include the federal and provincial gas taxes and the Ontario Community Infrastructure Fund. That's only 22.5% - 77.5 % of the funding comes from property tax, reserves, financing and third-party recoveries. [14] This is not economically or socially responsible.
- We will spend over $44.6M on capital road projects in 2014, which is 40.6% of the city's total capital budget. We've identified that need to spend $80M a year to close our "infrastructure deficit" gap. We need to re-evaluate this direction. For example, we project spending only $2.6M on transit capital enhancements in 2015, which translates to .36% of the capital budget.
- In 2014, 23.8% of our house taxes went to the roads budget for roads, bridges, culverts and sidewalks. That's more than any other area (police, health and social services, emergency/fire etc.). [15] Building and maintaining roads is our most expensive municipal cost.
- For every lane kilometer that we build, we increase the maintenance costs of our roads in the next year. The 2013 Ontario Municipal CAO's Benchmarking Initiative (OMBI)'s Performance Measurement Report figures identify road maintenance costs are $18,792 per lane kilometer[16]. Note that the 2014 report is not yet available.
- Section 11.0 - Transportation of the current Official Plan states that "Priority will be given to the maintenance of the existing road infrastructure over the construction of new roads." [17] Yet we continue to fund new infrastructure, while our existing infrastructure continues to crumble. In 2015, the list of new proposed road construction projects totals approx. $11M.
- We need to start asking questions about how we pay for roads. Economists in North America are starting to question who pays for roads and why. [18] We need to discuss tax base funding vs user based funding - an issue that could significantly impact road construction.

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[13] http://sudburycyclistsunion.ca/wp-content/uploads/2014/03/susplan.pdf
[14] http://www.greatersudbury.ca/sudburyen/assets/File/Capital%20Budget(4).pdf
[15] http://www.greatersudbury.ca/inside-city-hall/tax-services/what-you-received-for-1000/
[16] http://www.greatersudbury.ca/sudburyen/assets/File/2013%20Performance%20Measurement%20Report(3).pdf, p. 150
[17] http://www.greatersudbury.ca/?LinkServID=F59E4B65-E5EF-85B0-6135D11DFD2BC05F. p. 112
[18] http://bikeportland.org/2015/01/09/guest-column-portland-pay-streets-130772

We need a shift in planning, implementing, and maintaining our transportation network

- Transportation is moving people, not just cars.
- Re-evaluate previously identified road expansion projects or outdated design practices.
- Building more road lanes doesn't solve congestion. We're spending millions of dollars to deal with the symptoms and not the root cause, which is that we encourage the use of single passenger cars by continually responding to demands for quicker traffic flow and for solutions to what is perceived as congestion. We are not saying this – the rest of the world is.
- Let's start adopting other options to reduce the use of single passenger car trips by promoting walking, cycling, transit, car pooling, or a combination of these.
- Integrated and efficient systems make our transportation better for everyone – car drivers, transit users, cyclists, and pedestrians.
- Section 11.0 - Transportation of the current Official Plan has the objective "ensure that the transportation network provides safe, convenient and efficient movement for all people and goods in Greater Sudbury". That objective has not been met when it comes to road users who don't drive. Many of the other objectives that speak to our most vulnerable road users are also not being met.
- Our current way of defining the quality of roads is an engineering standard called Level of Service (LOS). LOS measures vehicle delay at intersections and on roadways, is represented as a letter grade A through F, and fails to consider social and environmental impact. Roadway widening is often the preferred option to make those lower-graded roads better. However, wider roads can result in adverse environmental, public health, and fiscal impacts and make our neighbourhoods less liveable. Wider roads are more expensive to maintain and enable driving at faster speeds and higher risks to cyclists and pedestrians. This is counter-intuitive to the City's traffic calming efforts.
- The LOS approach is not sustainable. Many jurisdictions, including the State of California, are seeking to stop using the current LOS standards for all of its roads because they've realized that no matter how many new roads you build, that approach will never solve congestion problems. Different rating standards are becoming increasingly popular and adopted[19]. The draft Transportation Master Plan alludes to establishing new standards for transit, pedestrians and cyclists, and we need to finalize and implement these standards not only on new roads, but also on existing roads.
- Increasing the use of public transit is not being considered as an alternative to building more roads. The draft Master Transportation Plan has very little changes in the priorities that list new and enhanced road construction projects. The focus should be on traffic mitigation options rather than new or widening roads.
- We need to encourage alternative modes of travel to reduce single passenger trips through Transportation Demand Management (TDM). This professional discipline has been in existence since the 1970's, and is now being used in many cities as an alternative to building more roads. The three options examined in the draft Transportation Master Plan does not include TDM options, which makes even the preferred Sustainability Option less fiscally responsible than what we can truly do.
- Many cities are implementing 'road diets' consisting of a reduced number of lanes and narrowings. They are not building new widened roads.[20]
- The City of Thunder Bay has been using creative, progressive, and sustainable transportation policies and practices. They have made tremendous strides in the last 4 years. We should be looking at what they and other Ontario cities are doing to help guide our shift to more sustainable transportation.

[19] http://www.opr.ca.gov/s_sb743.php
[20] http://www.citylab.com/design/2014/09/so-what-exactly-is-a-road-diet/379975

Questions to ask

- Are our roads really that congested? Many other cities have much higher levels of congestion than we do, yet the perception of some residents is that our current traffic volumes are unacceptable. Are we willing to further our infrastructure shortfall to build and expand new roads to meet unreasonable expectations without recognizing the current global transportation shifts? We need to be leaders and innovators, and not just respond to the naysayers in our community.
- Most of our heavy traffic is at rush-hour. Should we not evaluate other options for this short duration scenario than building more roads?
- Will our projected population growth, expected to be moderate for the next few years, really translate to the need for more roads?
- Can we better plan new subdivisions to minimize an increase in car traffic?
- How will the impact of our aging population affect the need for more lane construction and expansions?
- We should focus on improving our city's health and liveability. A more progressive and liveable community will attract more businesses, professionals, and families, which will spur economic growth. How do we move these priorities forward when we're spending so much on asphalt?

CONCLUSION: What can we do in 2016?

- A shift in focus: plan to move people not just cars. Treat all modes of transportation equitably.
- Re-think roads projects with a new high-level perspective and more progressive level of service standards. Retool the draft Transportation Master Plan, taking into account more progressive and fiscally-responsible strategies and directions.
- Re-evaluate all road projects with new standards of service – do cost/benefit analyses considering social and environmental impacts such as greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.
- Adequately fund new sustainable transportation options: walking, cycling, transit.
- Implement additional transparency. Track dedicated cycling infrastructure projects on our roads capital projects list.
- As recommended by the draft Transportation Master Plan, implement a Complete Streets Policy and Transportation Demand Management strategies, as well as new levels of service, road classifications and standards, and priority indexes. Create or adjust appropriate positions so these initiatives are coordinated by qualified staff.
- Implement better community consultation. Ensure that the Sustainable Mobility Advisory Panel has an integrated role in planning and implementing road projects, enhancements to transit and the implementation of programs and initiatives that encourage sustainable transportation. Incorporate participatory planning so citizens are given a better voice in how we move towards a more liveable community. Devise new strategies to get input, including better use of Community Action Networks, neighbourhood meetings, round table discussions, town halls, and the use of social media. More importantly, consultation should take place early in the planning process, with true dialogue and accommodation in mind.

September 14, 2015

Ramsey Lake Stewardship Committee
2016 City of Greater Sudbury Municipal Budget

1. It's been disappointing that, although funding was allocated for a Ramsey Lake Watershed Study in 2013, work has not been progressing in a timely fashion. We suggest that with projects like this, a lead project manager is assigned and given a deadline to prevent delays in obtaining crucial information.

2. We would like to see the City take the lead in a community Low Impact Development project. A flagship rain garden or other low impact developmemt project by the city would demonstrate to homeowners and developers what they could do to manage stormwater and improve water quality throughout the City of Greater Sudbury. The city could make the link between stormwater & drinking water sources. Rain gardens can be built in the Ramsey Lake watershed and near a City well in the Valley. Cost: $50,000. Slow infiltration of stormwater into rain gardens:
- prevents flooding
- cleans water
- replenishes groundwater
- adds biodiversity

Sincerely,

Lilly Noble
Co-Chair,
Ramsey Lake Stewardship Committee

Cathy Orlando, National Manager, Citizens' Climate Lobby
Submission to the Financial Committee

Municipal budget consultation presented September 16, 2015 – revised September 19

Climate change is real, human caused and if left unchecked poses a serious threat to civilization. The solution is to cut greenhouse gas (GHG) emissions. (IPCC – 5th report, 2014).

Cities consume 71–76% of global energy-related GHG emissions and there are many thing we can do. Investing in public and low emission transport, building efficiency, and waste management in cities could generate savings with a current value of US$17 trillion by 2050.
(Source: Accelerating Low-Carbon Development in the World's Cities)

This year in Paris the world will negotiate a new treaty for climate change. Unlike in 2009 in Copenhagen, there is a lot more political will for real climate action.

- In the past three months the Pope, the World Evangelical Association and a consortium of Muslim experts made very strong statements about acting climate change. These groups collectively encompass more the 3.2 billion people.
- On **May 22, 2015** the president of Suncor called for a carbon tax
- On **May 29, 2015**, numerous European Oil companies called upon the UNFCCC for a price on carbon in an open letter
- In **June 2015**: A peer-review article in the Lancet called climate change a Global Health Emergency
- In August, the Canadian Medical Association approved a motion to promote the positive health impacts of pricing carbon emissions. They cited British Columbia's carbon tax as a good example. B.C.'s fossil-fuel tax has reduced consumption of fossil fuels by 16% and their provincial GDP has grown above the national average.
- Just today, it has been reported that a Republican coalition of eleven representatives in Congress lead by Representative Chris Gibson, to call for action on climate change in the USA (updated)

We are recommending that when the City of Greater Sudbury makes budget plans for our city, they include transitioning to a low carbon economy in their planning because:

1) With the right policies our city can do our fair share to lower GHGs (see attachment - Low Carbon Cities)
2) It will save us money (see attachment - Low Carbon Cities)
3) A price on carbon pollution is inevitable (see attachment with my summary)

Furthermore, to help with public education and thus abate push back, Greater Sudbury should follows the lead of North Vancouver (watch video) , Waterloo, Oakville (update), and Guelph (update) which have all passed resolutions in support of putting climate warning labels on gasoline pumps as we do for cigarettes. These initiatives have been assisted by Our Horizon, a not-for-profit group that has been helping citizens promote the idea of warning labels on gas pumps in their communities. Our Horizon was founded by Robert Shirkey - a lawyer and concerned citizen.

Dr. Dianne Saxe, Lawyer and Ontario's next Environment Commissioner, has studied the legality of municipalities putting warning labels and gas pumps and has come out in favour:
http://envirolaw.com/warning-labels-gasoline/

THE NEW CLIMATE ECONOMY
The Global Commission on the Economy and Climate

Working Paper

Accelerating Low-Carbon Development in the World's Cities

Andy Gouldson, Sarah Colenbrander, Andrew Sudmant, Nick Godfrey, Joel Millward-Hopkins, Wanli Fang and Xiao Zhao

CONTENTS

Overview

Cities are engines of economic growth and social change. About 85% of global GDP in 2015 was generated in cities. By 2050, two-thirds of the global population will live in urban areas. Compact, connected and efficient cities can generate stronger growth and job creation, alleviate poverty and reduce investment costs, as well as improve quality of life through lower air pollution and traffic congestion. Better, more resilient models of urban development are particularly critical for rapidly urbanizing cities in the developing world.

International city networks, such as the C40 Cities Climate Leadership Group, Local Governments for Sustainability (ICLEI) and United Cities and Local Governments (UCLG), are scaling up the sharing of best practices and developing initiatives to facilitate new flows of finance, enabling more ambitious action on climate change. Altogether, low-carbon urban actions available today could generate a stream of savings in the period to 2050 with a current value of US$16.6 trillion.

Recommendation

The Global Commission on the Economy and Climate recommends that cities commit to developing and implementing low-carbon urban development strategies by 2020, using where possible the framework of the Compact of Mayors, prioritising policies and investments in public, non-motorised and low-emission transport, building efficiency, renewable energy and efficient waste management.

Donor agencies, city networks and organisations, multilateral and regional development banks and others should develop an integrated package of at least US$1 billion for technical assistance, capacity-building and finance to support commitments by the world's largest 500 cities. The package could directly mobilise at least US$5–10 billion in private investment through project preparation support, and leverage significant further large-scale capital for a low-carbon urban transition. The package should build on existing leadership and efforts by cities using their own resources, and prioritise filling critical resource gaps in smaller cities and cities in developing countries.

The actions suggested could reduce annual greenhouse gas (GHG) emissions by 3.7 Gt CO_2e by 2030.

About this working paper

This New Climate Economy Working Paper was written as a supporting document for the 2015 report of the Global Commission on the Economy and Climate, *Seizing the Global Opportunity: Partnerships for Better Growth and a Better Climate*. It reflects the research conducted for Section 2.1 of the full report and is part of a series of 10 Working Papers. It reflects the recommendations made by the Global Commission. The 2015 report was directed by Michael Jacobs and managed by Ipek Gencu.

Citation

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New Climate Economy
c/o World Resources Institute
10 G St NE
Suite 800
Washington, DC 20002, USA
+1 (202) 729-7600

New Climate Economy
c/o Overseas Development Institute
203 Blackfriars Road
London, SE1 8NJ, UK
+44 (0) 20 7922 0300

www.newclimateeconomy.report
www.newclimateeconomy.net

1. Introduction

We live in an urban era. Cities are growing at an unprecedented rate, particularly in the developing world: 1.4 million people are being added to urban areas each week, an area the size of Manhattan is being added every day, and by 2030, around 60% of the global population will live in cities.[1] Cities are also engines of economic growth and social change, with annual economic activity of about US$62 trillion, or about 85% of global GDP in 2015. By 2030, this is expected to rise to US$115 trillion, or 87% of global GDP.[2] Cities are also associated with 67–76% of global energy use and 71–76% of global energy-related greenhouse gas (GHG) emissions.[3]

The infrastructure investments made in cities over the next few decades will lock the world into either a higher- or lower-carbon path. Policy and financing environments need to shift significantly and quickly if cities are to move towards lower-carbon development paths. *Better Growth, Better Climate* showed how adopting more compact, connected and efficient forms of urban development would stimulate economic activity, attract investment, improve air quality and public health, enhance safety, help to reduce poverty and avoid the substantial costs associated with sprawl – all while making a significant contribution to global climate change mitigation. New analysis presented here shows that low-carbon urban actions represent a US$16.6 trillion economic opportunity worldwide. Nevertheless, it is clear that various barriers will have to be overcome if the significant economic benefits of climate action are to be realised.

This working paper outlines the critical role that international collaboration can play in accelerating and scaling up climate action in cities. It begins with a new global-scale analysis of the economic costs and benefits of urban action on climate change, then presents recent research on the direct economic impacts and the wider benefits of low-carbon investment in cities. Finally, it discusses the role of international cooperation in enabling cities to raise their ambition.

International cooperation can amplify and accelerate action by developing common platforms for action, knowledge-sharing and capacity-building, and by enhancing cities' access to finance for low-carbon development. Major cities are already seizing these opportunities through organisations such as the C40 Cities Climate Leadership Group and Local Governments for Sustainability (ICLEI), whose members have collectively agreed to emission reductions equivalent to 0.4 Gt CO_2 per year by 2030.[4] Many cities are also making ambitious commitments within new global frameworks such as the Compact of Mayors, building on related regional and country-based frameworks such as the European Covenant of Mayors and the US Mayors Climate Protection Agreement.

The paper ends with recommendations to further raise cities' climate ambition and mobilise national and international actors to support this ambition through enabling policy frameworks and financing mechanisms.[5]

2. Why low-carbon strategies are good for cities

2.1 THE ECONOMIC CASE FOR LOW-CARBON ACTION – NEW GLOBAL-LEVEL ANALYSIS

Better Growth, Better Climate demonstrates strong synergies between economic development and climate action in cities. Ambitious low-carbon policies can stimulate urban productivity and innovation, and address major policy challenges such as congestion or accessibility. Most of these opportunities need to be realised by local governments, but there is an important role for regional/provincial and national governments to create enabling policy frameworks that empower cities to invest and innovate.[6] Global cooperation is also crucial to disseminate best practice, ensure rapid collective learning, mobilise higher levels of investment, and increase ambition through credible monitoring, reporting and verification.

Building the necessary momentum at the local, regional/provincial, national and global scales depends, in part, on the presence of a compelling economic case for action. For this paper, a new global analysis was conducted looking at the direct costs, returns and payback periods of low-carbon investment in cities. The total urban population covered by the analysis is 3.6 billion in 2010, rising to 5.0 billion in 2030 and 6.3 billion in 2050.[7] The analysis builds on a recent assessment of urban mitigation potential commissioned by the UN Special Envoy for Cities and Climate Change, Michael R. Bloomberg, with support from C40.[8] That assessment covered 11 clusters of low-carbon measures in the buildings, transport and waste sectors (see Table 1), where cities have the greatest power to take action. It found that those 11 clusters could generate annual GHG savings of 3.7

Gt CO_2e in 2030 and 8.0 Gt CO_2e in 2050.[9] These emission reductions would be additional to those generated by any national policies adopted as a result of recent pledges. These savings are around 15–20% of the total global emission reductions needed for a 2°C pathway by 2030.[10] The largest 500 cities by population could contribute 1.65 Gt CO_2e by 2030, nearly half the identified urban mitigation potential.[11]

Table 1

Low-carbon actions analysed in the economic analysis

Buildings	
New building heating efficiency	New buildings are constructed at passive heating levels: <30 kWh/m² from 2020–2030 and 15 kWh/m² from 2031–2050.[12]
Heating retrofits	Old buildings are upgraded at a rate of 1.4–3% of the building stock per year, such that all existing buildings are upgraded by 2040. The retrofit reduces building energy intensity by 30–40% compared with the baseline scenario and includes heat pumps in mid-latitude countries.[13]
Appliances and lighting	Efficient lighting and appliances are aggressively deployed, based on the IEA's 2DS scenario.[14]
Solar PV	Building-mounted solar PV is ambitiously installed, based on the assumption that half of the solar PV in IEA's 2DS scenario[15] is distributed PV deployed in cities, in proportion to the regional urban population.
Transport	
Urban planning and reduced passenger travel demand	Land use planning reduces motorised passenger travel activity (pkm per capita) by as much as 7% in OECD countries and 25% in developing countries.
Passenger mode shift and transit efficiency	Expansion of public transport leads to 20% lower pkm mode share of light-duty vehicles (LDVs) and higher mode share for rail and bus transport.[16]
Passenger car efficiency and electrification	A combination of more efficient and electric private vehicles results in >45% improvement in private vehicle efficiency globally. The energy intensity impact of electrification is based on the 2DS scenario variant Electrifying Transport [17] and *Energy Technology Perspectives*.[18]
Freight logistics improvements	Freight transport logistics improvements lead to a 5% reduction in tkm per capita by 2030 and 12% by 2035.[19]
Freight vehicle efficiency and electrification	Global freight energy efficiency improves by 17% by 2030, and by 26% by 2050. In addition, 27% of global freight is electrified by 2050.[20]
Waste	
Recycling	Recycling rates rise to collect 80% of recoverable materials by 2050 in all regions by 2050.
Landfill gas capture	The fraction of methane captured rises by 5.5% annually in non-OECD countries and by 2.5% in OECD countries. All regions experience 2% annual growth in methane capture facilities that also generate grid electricity.

Source: Erickson and Tempest, 2014.[21]

Beyond those built into the International Energy Agency (IEA) 4DS scenario, this estimate of carbon saving potential does not take into account rebound effects, where savings from improved energy efficiency are used to access more energy services rather than to achieve energy demand reduction. Although rebound effects reduce overall carbon saving, it is important to note that they can be driven by positive social outcomes – for example, because savings from improved building efficiency are spent on additional heating, reducing rates of fuel poverty.[22] To evaluate the economic case for investing in the large-scale deployment of these measures, we assessed the incremental costs that cities would face if they implemented these low-carbon measures instead of their standard, higher-carbon equivalents. We then compared the additional investment needs with the

energy savings that these low-carbon measures would generate in the period to 2050, relative to business as usual.[23] A detailed description of the methods and assumptions underpinning the analysis is presented in the Appendix.

The analysis is very conservative. In contrast to previous estimates of global investment needs, including those in *Better Growth, Better Climate*, it does not consider the investment costs avoided, which are likely to be significant – for example, when better public transport reduces expenditures on new cars and roads. It also excludes savings beyond 2050, even though many measures will generate savings for much longer. In addition, the analysis does not consider action in other sectors, such as energy or industry, where local governments typically have less scope for action. Finally, the analysis presents only *direct* economic benefits, which are a fraction of the total benefits when we consider the wider social, economic and environmental impact of these investments. Those broader benefits are discussed further below.

The analysis is sensitive to the fact that the returns on low-carbon investments will be influenced by energy prices, interest rates and technological learning rates (i.e. rates of improvement in price and performance as technologies are more widely produced and adopted). The main findings are based on a central or "medium" scenario where real (i.e. after inflation) energy prices rise by 2.5% per year, real interest rates are 3% per year, and the technological learning rate for each measure is low.

Even with this focus on the low-carbon options that could be adopted or promoted by local government, and with conservative and time-limited estimates of costs and benefits, the analysis finds a compelling economic case for significant low-carbon investment in cities. In the "medium" scenario, the gross global costs of these investments would be US$977 billion per year in 2015–2050 (equivalent to 1.3% of global GDP in 2014), but they would reduce annual energy expenditure by US$1.58 trillion in 2030 and US$5.85 trillion in 2050 (see Table 2 for further information). While we must acknowledge potentially significant opportunity costs, this means the low-carbon investments collectively would pay for themselves within 16 years. The current value of the stream of net savings they would generate for cities in 2015–2050 (measured as a net present value or NPV) would be US$16.6 trillion.[24]

Table 2

Potential urban abatement and the associated economic case by sector in 2030

Sector	Measure	Annual abatement 2050 (Gt CO_2e)	Share of total abatement (%)	Energy savings (Mtoe)		Total incremental Investment[1] (2015–2050; trillion USD)	Energy cost savings[2] (2015; billion USD)		NPV[3] (trillion USD)	Average payback[4] (years
				2030	2050		2030	2050		
Buildings – residential	New building heating efficiency	1.2	15%	168	375	5.3	267	957	2.1	8.4
	Heating retrofits	0.5	7%	142	175	6.4	209	501	-0.3	20
	Appliances and lighting	0.9	11%	92	211	0.1	147	529	3.7	0.2
	Fuel switching / solar PV	0.2	3%	6	23	0.7	15.6	100	0.2	11
Buildings – commercial	New building heating efficiency	0.5	7%	77	196	6.6	120	479	-2.1	21
	Heating retrofits	0.2	3%	66	87	4.0	103	260	-0.7	23
	Appliances and lighting	0.7	8%	67	176	0.4	96.2	584	3.0	1.0
	Fuel switching / solar PV	0.2	3%	2	7	0.2	3.9	24.9	0.0	13

Sub-total buildings		**4.5**	**57%**	**619**	**1250**	**23.7**	**961**	**3435**	**6.0**	**17.4**
Transport – passenger	Urban planning: reduced travel demand	0.5	6%	56	122	-	101	553	2.9	-
	Mode shift and transit efficiency	1.0	12%	118	263	6.9	210	676	1.4	16
	Car efficiency and electrification	0.9	11%	92	207	2.5	198	777	3.8	4.9
Transport – freight	Logistics improvements	0.2	2%	15	44	-	14.6	66.0	0.4	-
	Vehicle efficiency and electrification	0.3	4%	47	99	1.0	94.4	348	2.2	4.5
Sub-total transport		2.8	35%	328	735	10.4	618	2420	10.6	11.9
Waste	Recycling[5]	0.3	4%	-	-	-	-	-	-	-
	Landfill gas	0.3	4%	0	1	0.03	0.7	3	0.0	20
Sub-total waste		**0.6**	**8%**	**0**	**1**	**0.0**	**0.7**	**2.6**	**0.0**	**20**
Total		**8.0**	**100%**	**947**	**1986**	**34.2**	**1579**	**5858**	**16.6**	**15.7**

[1] Undiscounted, with reference learning factors.
[2] Undiscounted, with energy prices increasing at 2.5% per year.
[3] With a 3% discount rate, with energy prices increasing at 2.5% per year, and reference learning curves.
[4] With each measure's payback weighted by total investment.
[5] It was not possible to undertake a robust economic assessment of this measure due to significant variability between different contexts. This accounts for the relatively low NPV for the waste sector in this table and in Figure 1.

Source: Analysis from the University of Leeds and Stockholm Environment Institute.

The analysis also considers the economic case under a range of different energy prices, discount rates and learning rates, as shown in Figure 1. The results suggest that the net economic returns (as expressed as a positive NPV) would be even more significant in scenarios with higher technological learning rates or energy prices. Such conditions could emerge even without enabling policies, particularly given recent energy market developments and drops in the price of key low-carbon technologies.

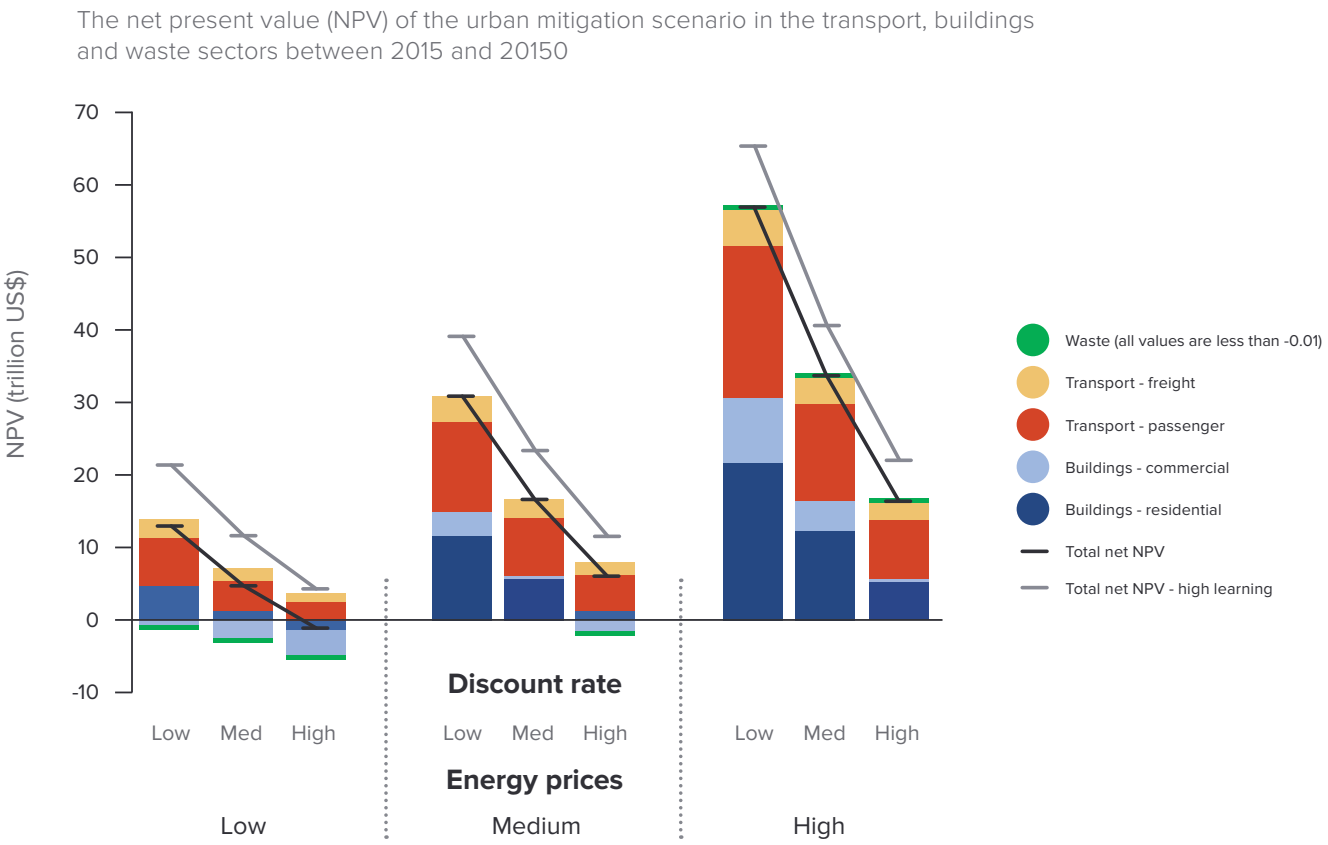
However, the economic case for action would be significantly strengthened through national policy interventions, such as support for low-carbon innovation, reduced fossil fuel subsidies (with supporting transition mechanisms) and carbon pricing. Under these conditions, the present value of the net savings generated by these investments would be US$21.86 trillion – and this is with a real discount rate of 5%, which offers substantial scope to secure private sector investment. In a scenario with lower energy prices and a lower technological learning rate, this bundle of measures would still have an NPV of US$4.85 trillion, with a real discount rate of 3%. This demonstrates that, even under unfavourable economic conditions for low-carbon investment, these measures still emerge as economically attractive using a standard public-sector discount rate.

The analysis also reveals significant variations in returns and payback periods across sectors. As shown in Figure 1, low-carbon investments in transport – vehicle efficiency and electrification, modal shift, and urban freight logistics improvements – have a positive NPV under nearly all scenarios, as do the residential buildings measures. This suggests that these low-carbon investments make economic sense even with low energy prices, low technological learning rates and medium to high discount rates.

By comparison, in the absence of enabling policies from government, ambitious urban actions to achieve the full mitigation potential of the commercial building and waste sectors are likely to need higher technological learning rates or higher energy

Figure 1

The net present value (NPV) of the urban mitigation scenario in the transport, buildings and waste sectors between 2015 and 2050



Note: Under the 'low', 'medium' and 'high' scenarios, the real discount rates used are 1.4%, 3% and 5%, and the increases in real energy prices are 1%, 2.5% and 4%. Learning rates are sector- and technology-specific.

Source: Analysis from the University of Leeds.

prices to make them attractive to private investors. The case for private investment does exist in these sectors, but it would involve less ambitious measures, such as shallower building retrofits deploying only the more cost-effective technologies. However, the case for investment in deeper retrofits could readily be strengthened through policy measures, such as mandatory energy labelling for buildings or the provision of financial support for building retrofit schemes.

Similarly, while this analysis demonstrates the aggregated economic case for pursuing city-level mitigation on a global scale, the findings are not representative of particular cities or regions. We therefore emphasise that individual cities will need to identify climate actions that are appropriate and feasible in their particular contexts.

The widespread deployment of the low-carbon measures included in this analysis is ambitious but achievable. Clearly markets will not deliver all of the change that is needed, and there will be real challenges to implementation – politically for local leaders, institutionally for municipal governments, and financially for both public and private actors, who may need to shoulder higher upfront costs. Most cities face significant indirect costs and real structural obstacles to making strategic long-term investments, given their short-term political cycles and limited legal/fiscal powers. Fast-growing cities in the developing world face additional challenges, as population growth compounds existing service and infrastructure deficits. However, these findings suggest that there is a clear, compelling economic case for cities to pursue low-carbon urban action. With creative policy instruments and innovative financing mechanisms to help facilitate these investments, cities can overcome the barriers, and realise cost savings to public budgets, residents and businesses for decades to come.

2.2 THE ECONOMIC CASE FOR LOW-CARBON ACTION

As discussed in *Better Growth, Better Climate*, the benefits of low-carbon investment in cities go far beyond the direct cost savings assessed above. Making cities more compact, connected and efficient has the potential to generate sustained urban productivity improvements and a wide range of economic, social and environmental benefits. These benefits strengthen the case for much greater climate ambition, which is crucial to ensure that emission reductions are not quickly overwhelmed by the impacts of continued economic and population growth.

The goal of this type of development is not just to contain sprawl, but to manage urban expansion in a way that encourages dense, transit-oriented and liveable urban forms. When successful, such development can unlock agglomeration effects and networking advantages, spurring innovation and productivity. It can also significantly reduce the cost of providing services and infrastructure such as public transport, energy, waste and water. And it can significantly increase the viability of public transport and other urban investments by promoting more intensive use and reducing total infrastructure requirements.[25] Analysis for *Better Growth, Better Climate* shows that compact, connected urban growth could reduce global infrastructure requirements by more than US$3 trillion between 2015 and 2030.[26] There is also emerging evidence that encouraging real estate investment into more compact, connected and vibrant urban cores can have a positive impact on long-term returns for private investors.[27]

The costs of not pursuing more compact urban development are also significant. Congestion alone imposes immense costs on many cities due to lost work hours, reduced labour mobility, increased expenditure on fuel, and health costs from air and noise pollution. As a proportion of regional GDP, the costs of congestion are estimated at 1.1% for New York,[28] 1.5% for London,[29] 4.0% for Cairo[30] 4.8% for Jakarta,[31] 7.8% for São Paulo,[32] and up to 15% for Beijing.[33] Similarly, traffic accidents kill around 1.25 million people annually, more than 90% of them in developing countries.[34]

In addition, urban sprawl imposes huge public and private costs by increasing transport expenditure on transport and grid infrastructure (e.g. electricity, waste and water), raising levels of air pollution, discouraging walking and cycling, impacting on public health, reducing the efficiency of primary services such as education and health care, and reducing the availability of land for agriculture and ecosystem services. For example, recent analysis for the Commission suggests that the costs of urban sprawl to the US economy exceed US$1 trillion per year, or around 2.6% of GDP in 2014.[35] The World Bank estimates that China could save up to US$1.4 trillion in infrastructure spending to 2030, or around 15% of GDP in 2013, if it pursued more compact, transit-oriented urban development.[36]

Countries and cities that are planning for or experiencing rapid urban development could learn from cities that have invested in strong, connected, accessible public transport systems. A new study by PwC explored the relationship between the economic performance of 30 global cities and the presence of effective public transit networks, finding that cities that are better connected by public transport are more productive, have greater purchasing power, achieve a better overall quality of life, and attract more top companies and foreign direct investment.[37] The Intergovernmental Panel on Climate Change (IPCC) has suggested that, over the medium- to long-term, making cities more public transport-oriented and compact, combined with improving infrastructure for non-motorised transport, could reduce GHG intensities by 20–50% compared with 2010 levels.[38] For example, despite similar wealth levels and population sizes, Atlanta's carbon footprint is more than five times higher than Barcelona's due to past transport infrastructure and planning decisions.[39]

2.3 THE ECONOMIC CASE FOR LOW-CARBON ACTION – LATEST CITY-LEVEL ANALYSIS

The new global analysis outlined in Section 2.1 above shows that low-carbon urban actions represent a US$16.6 trillion economic opportunity worldwide, based only on the energy savings that can emerge from low-carbon investments. This analysis of the direct economic savings of low-carbon action at a global scale is supported by evidence from city-level case studies. As reported in *Better Growth, Better Climate*, the results of bottom-up studies on the economics of low-carbon investment in six cities – Recife, Brazil; Kolkata, India; Palembang, Indonesia; Johor Bahru, Malaysia; Lima, Peru; and Leeds, UK – reinforce those of the global analysis. The studies highlight the extensive opportunities for cities to invest, at scale, in economically attractive low-carbon measures (for example, in building energy efficiency, small-scale renewables and more efficient vehicles) that could generate a positive financial return over their lifetime.[40]

Notably, the studies found that very different sets of measures are economically attractive for each city, depending on energy prices, policy frameworks, institutional capacities, infrastructure deficits and other local conditions. However, in all six cities there is a compelling case for large-scale investment in climate action at a real interest rate of 5%, which suggests potentially

significant private returns. The studies show that each city could achieve emission reductions in the range of 14–24% by 2025, relative to business as usual, just by exploiting the economically attractive options. These investments would yield significant annual financial savings equivalent to 1.7–9.5% of annual city-scale GDP in 2025. And while the incremental investment needed to unlock these returns is significant, averaging US$3.2 billion across the six cities, the payback period for this package of investments would be less than five years in all cities.

This analysis is corroborated by other work completed for *Better Growth, Better Climate* that looked at the benefits of low-carbon city districts in the US, China and the Middle East. That work suggests that many city-level low-carbon investments can break even after 3–5 years, generate internal rates of return of up to 30% and reduce energy costs by up to 36%.[41]

While the analysis of the direct economic benefits of climate action at the city level is conclusive in demonstrating the economic case for urban climate action, this is not the whole story. As also outlined in Section 2.2, the benefits of low-carbon urban investments go well beyond cost savings. They can also help cities to address other priorities, such as increasing mobility, reducing poverty or improving health outcomes. To support the evidence presented above, we present five recent case studies that illustrate the potential for city-scale climate actions to generate a wider range of economic, social and environmental benefits, if they are designed and delivered with care.

Case 1: Making new buildings more energy efficient

As outlined in Table 1, globally, measures in the buildings sector represent over half of the urban mitigation potential in the period to 2050. Cities need an estimated 70,000 km^2 of new residential floor space by 2030, equivalent to 60% of the world's current residential floor space.[42] Accelerating energy efficiency in new residential buildings is therefore of huge significance, and many cities are accordingly establishing municipal green building codes that far exceed national standards, including Pune in India, San Francisco in the US and Shanghai in China.

New analysis of green building standards in Recife, Brazil, by the University of Leeds indicates that such standards can pay for themselves quickly. If meeting "passive cooling" standards entails incremental investment needs of 3%, investors would recover their costs through energy savings in 6 years in commercial buildings, 7 years in public buildings, and 18 years in residential buildings, where a smaller share of total electricity consumption is for cooling purposes (see Table 3). After paying for themselves, such investments would generate savings throughout the 40+ years of each building's lifespan. This kind of programme has already been implemented in Singapore, which aims to have 80% of its buildings achieve the Green Mark standard by 2030.[43] This could potentially reduce building electricity use by about 22%, with net economic savings of over US$400 million.[44] These investments to "green" buildings have been estimated to pay for themselves in less than 6 years and have the potential to increase property values by 2%.[45]

However, the evidence suggests that innovative green building design can yield much broader benefits, including expanding green space, reducing heat island effects, filtering air pollution, and capturing rainwater to reduce demand for piped water. With these kinds of improvements, green buildings are thought to improve pupil learning and teacher satisfaction in schools,[46] support faster recovery rates in hospitals,[47] and improve employee productivity in offices.[48]

Table 3

The value of green building standards in Recife, Brazil, in 2030

	Energy savings (GWh / % of BAU sector electricity consumption)	Emission reductions (1000 t CO_2 / % of BAU sector emissions)	Economic savings in 2030 with a 2% real energy price increase (USD millions)	Payback period with a 5% interest rate (years)
Commercial	404.5 / 13.7%	45.5 / 16.4%	64.92	6
Public	119.7 / 4.0%	13.5 / 16.5%	16.55	7
Residential	58.0 / 2.54%	6.5 / 1.5%	10.78	18

Source: Analysis by the University of Leeds.

Case 2: Retrofitting existing buildings

Retrofitting existing buildings is as important to urban climate action as improving energy efficiency in new buildings. Several mature cities have initiated large-scale retrofit schemes to realise the multiple benefits of more efficient buildings. Again, while the direct energy savings are important, unlocking the wider benefits is equally crucial. Although the incremental costs of retrofit can pose a significant barrier to deployment, robust financing mechanisms can overcome these barriers to unlock both the direct economic savings and the wider benefits.

One promising solution is a revolving fund that invests in energy efficiency, and captures and reinvests some of the savings generated by its early investments. Such funds can be adopted in different ways, with different impacts. Recent work on the Leeds City Region in the UK considered the potential of a revolving fund to finance domestic building retrofits. Similar models include the Thai Energy Efficiency Revolving Fund and the New York State Drinking Water Revolving Fund. The analysis considered funds of three different kinds: a private, profit-led fund where only measures that generate direct net economic savings to the private sector are funded through loans offered to households at a 7% interest rate; a public–private partnership (PPP) where only measures that generate direct net economic savings to the private sector are funded, but with subsidised loans to households at a 3.5% interest rate; and a not-for-profit, government-led scheme where all available measures are funded through interest-free loans to households.[49]

Analysis shows that the profit-led fund results in cumulative mitigation by 2050 of 6.5 Mt CO_2 — only around half that of the PPP or not-for-profit scheme – but that the profit-led fund would recoup initial investments in less than 20 years, while the PPP scenario would take an estimated 37 years and the not-for-profit scheme would suffer a financial loss. However, when the wider economic benefits of a retrofit programme are considered, both the PPP and the not-for-profit schemes become more economically attractive. In the UK, for example, it is estimated that every UK£1 spent on reducing fuel poverty can save the National Health Service UK£0.42 in health costs.[50] For Leeds City Region, if investments targeted the 10% of households in fuel poverty, the PPP and non-profit schemes would lead to health care savings of UK£80–100 million. Moreover, the increased economic activity from job creation and reduced energy bills that a retrofit scheme would generate would increase tax returns for the government by UK£1.27 for every UK£1 invested.[51] In this way, a building retrofit scheme becomes a very economically attractive option for the public sector when taking into account the significant wider social and economic benefits.

Case 3: Expanding and improving mass transit

As outlined in Table 1, globally, measures in the transport sector represent over a third of the urban mitigation potential in the period to 2050. The transport sector is the fastest-growing consumer of fossil fuels and producer of GHG emissions globally.[52] However, even the most sprawling cities have opportunities to shift from individual motorised transport modes to low-carbon options. This will unlock not only direct net economic savings, but also far wider benefits. Local governments are already showing creativity and ambition in urban transport, as illustrated by the proliferation of bus rapid transit (BRT) systems. This option appeals to local governments because of the relatively low investment needs: one study found that the capital costs of BRT averaged about US$10 million per mile in 1990 dollars, less than half the cost of light rail transit or a tenth of metro rail transit.[53]

Curitiba, Brazil, and Bogotá, Colombia, are the pioneers and success stories, but BRT systems are increasingly being adopted in more challenging contexts that require innovative political engagement and financing mechanisms. Rea Vaya in Johannesburg, the first full BRT system in Africa, is a good example. In Phase 1A, Rea Vaya had an average daily ridership of 40,000. Prior to its construction, about 70% of public transit between Soweto Township and the Central Business District involved overloaded, poorly maintained 16-person minibus taxis with haphazard schedules. A participatory decision-making process during the design phase engaged key stakeholders, including the minibus operators, who went on to become bus drivers and shareholders in the BRT system. Although Rea Vaya continues to face challenges, particularly strikes from disaffected drivers, the NPV of Rea Vaya Phase 1A is US$143 million, just based on direct economic returns.[54] When the wider benefits of improved road safety and mobility are considered, particularly among poorer populations, the NPV rises to nearly US$900 million (Table 4).[55] There is a need for ongoing domestic leadership and international collaboration to improve the efficiency and equitability of the Rea Vaya BRT system, but this example demonstrates the potential wider benefits of ambitious climate action.

One way to generate funding for mass transit is through congestion pricing. First implemented in Singapore in 1975, it has been adopted in several other cities since, including London, Stockholm and Milan. In London, the congestion charge reduced vehicle traffic by 16%, traffic delays by 26%, and journey times by 14% in the first three years[56] – with minimal impacts on local business.

Table 4

The monetised benefits of the Rea Vaya BRT system in Johannesburg, South Africa

Components of benefit/cost	Net present value (USD millions 2012)
Travel time savings	331
Improved road safety	268
Increased physical activity	141
Operating cost reduction	170
Travel time lost during construction	-38
CO_2 emissions reduction	18
Total	**892**

Source: Analysis by WRI EMBARQ research team (Carrigan et al., 2014).

Particulate matter and nitrous oxide emissions have been reduced by 12%, leading to an increase in life expectancy of 1.83 years for every 1,000 people living within the congestion charge zone,[57] and raising £235 million in net revenue each year for further transport investments.[58] Major cities now considering or developing similar programmes include New York, Beijing, Guangzhou and São Paulo, suggesting that this financing mechanism could appeal to urban decision-makers in both the developed and developing world.

Case 4: Promoting cycling

Like bus rapid transit, cycling has multiple benefits for cities. It costs far less than motorised travel, both for the public and in terms of infrastructure investment needed. Cities with convenient cycling infrastructure benefit from significant health care savings from increased physical activity, reduced air pollution levels and reduced road fatalities.[59] Importantly, cycling is an equitable transport mode that can enhance mobility for the urban poor and increase interaction among nearly all groups.[60] There are therefore compelling economic, social and environmental reasons for cities to invest in safe and well-connected cycling infrastructure.

Recent analysis of the costs and benefits of cycling in Copenhagen, Denmark, found that the net social gain is US$0.21 per cycled kilometre, mostly from health care cost savings. This compares with a net social cost of US$0.12 per driven kilometre.[61] Accounting for indirect benefits in this way means that Copenhagen's planned Cycle Super Highways are estimated to have an internal rate of return on investment of 19% per year.[62]

While it can be difficult to retrofit cycling infrastructure into mature cities, there is scope for fast-growing cities in developing countries to leapfrog the hyper-motorisation of transport that has proven so costly and unsustainable in many OECD countries. Local authorities in these contexts should therefore prioritise the development of good pedestrian and cycling infrastructure, and ensure that future transport investments enhance the safety and convenience of non-motorised options.[63]

Case 5: Increasing distributed energy generation

Cities worldwide are increasingly considering the introduction of distributed energy systems based on small-scale renewables, particularly as costs have fallen dramatically in recent years due to technological learning. In 2013, the cost per MWh of rooftop solar fell below retail electricity prices in several countries, including Australia, Brazil, Denmark and Germany.[64] Moreover, such systems help to ensure city-wide energy security in the face of volatile prices, and increase community ownership over their own energy provision – financially and politically.[65] Moreover, there are many examples of schools, universities, hospitals, social housing providers, cooperatives and councils collectively funding distributed energy systems.

The transformative impact of distributed energy is illustrated by Freiburg, Germany. The city showed early leadership on renewable energy and energy efficiency, largely driven by civil society opposition to nuclear energy. This has unlocked

considerable economic benefits for the city. It has dramatically increased energy security – 50% of local electricity needs are now met by over 100 combined heat and power (CHP) plants around the city,[66] and a further 6% by wind turbines and solar panels within the city. But it has also created a significant number of jobs as a result of investment in renewable energy, and it has helped to galvanise wider climate action across the city. For example, the municipality and the citizens have extended their pioneering climate actions to the transport and building sectors: 420 km of cycle tracks allow 35% of residents to live without a car, while all new houses are built to high energy efficiency standards. As a result, the green economy in Freiburg now employs 12,000 people – almost 3% of the city's work force.[67]

2.4 SUMMARY

The new analysis presented above shows that there is a strong economic case for investing in low-carbon strategies. Low-carbon investments in the buildings, transport and waste sectors can more than pay for themselves over their lifetime and generate direct economic savings for cities currently valued at US$16.6 trillion, and with supporting policies could be as high as US$21.8 trillion. As new measures, such as smart grids, and innovations by the private sector are refined and deployed at scale, the scope for economic and carbon savings could be even higher.

The analysis also shows that investments in low-carbon cities could generate wider economic, social and environmental benefits in the form of improved levels of equality, health, education, employment, innovation, productivity, mobility and environmental quality. They could also create new revenue streams and reduce the need for government expenditure. However, cities face many barriers to realising these benefits. Local authorities therefore need the support of national governments to alleviate governance and budgetary bottlenecks, and of international actors to help to scale up and accelerate action.

3. International cooperation to support low-carbon urban strategies

Many cities are leading on climate change, and delivering significant economic and social benefits in the process. Where these cities face barriers to action, international networks such as C40, ICLEI and United Cities and Local Governments (UCLG), and international actors such as the multilateral development banks and United Nations agencies, are supporting cities to go further and faster. Yet collaboration is needed on a much greater scale to realise the huge economic and climate potential discussed above. Alongside other major processes this year, the UN Conference on Housing and Sustainable Urban Development (Habitat III) in Quito, Ecuador in 2016 will be another major moment to consolidate and accelerate international collaboration to respond to the challenges of urbanisation. The consultations for this paper found remarkable consensus among urban development practitioners and prominent international organisations and networks on the need for collaboration in five mutually reinforcing areas:

1. Facilitating knowledge-sharing among cities on policy reform and innovation to inform and inspire action;
2. Utilising common platforms and standards to enable cities to make their commitments public, credibly record their energy use and GHG emissions, develop low-carbon strategies, and measure their results;
3. Building the capacity of local governments, so that political leaders and municipal staff can effectively plan, design and execute low-carbon development plans and strategies;
4. Financing low-carbon urban infrastructure by improving cities' access to domestic and international financial markets; and
5. Supporting national governments to empower cities to invest and innovate.

3.1 KNOWLEDGE-SHARING AMONG CITIES

Delivering ambitious emission reductions or low emission development targets in cities will demand creativity and innovation. Many cities are pioneering new climate policies, low-carbon technologies and sustainable infrastructure solutions. To realise the full potential of low-carbon action, local governments will need to build upon and learn from one another's successes. This calls for knowledge-sharing among cities on a much greater scale than currently seen.

International cooperation can support decision-makers by facilitating knowledge transfer and mutual learning. City networks such as C40, ICLEI and UCLG connect people who are tackling similar challenges and opportunities and enable them to learn

from others' experiences and adapt solutions to their own unique situations. Bogotá officials, for example, visited Johannesburg and helped to convince the city that a BRT system was a much better investment than an underground train. The importance of such learning is clear. Since Curitiba, Brazil, piloted the BRT system in the 1970s, more than 190 cities have followed suit, so BRT systems now cover more than 5,000 km, with over 32 million passenger trips per day.[68] Similarly, since Paris pioneered a bicycle sharing scheme in 2010, 639 cities with an estimated 643,000 bicycles have emulated its example.[69] Peer-to-peer learning, supported by international city networks, is essential to achieve scale and build upon successes.

Peer learning could be even more powerful if it is focused on helping cities to overcome key barriers, such as financing options and business models for low-carbon growth. Cities around the world are piloting innovative systems to make financial frameworks greener and unlock investment for low-carbon options. Johannesburg, South Africa, and Gothenburg, Sweden, have issued green bonds to fund low-carbon infrastructure; Hyderabad, India, and Edinburgh, UK, are trialling tax increment financing to capture land value improvements from public infrastructure investments; five cities in China and two cities in Japan have established municipal emission trading schemes. Many other cities are eager to learn from the experiences of these front-runners. While platforms such as C40's Sustainable Infrastructure Finance network and ICLEI's Green Urban Economy programme help to meet this need, opportunities for knowledge-sharing among cities should be increased, particularly between cities with similar power structures, density profiles and/or climatological opportunities and constraints.[70]

3.2 COMMON PLATFORMS FOR ACTION AND MEASURING RESULTS

International cooperation can encourage cities to raise their ambitions and enable them to credibly track their progress towards low-carbon goals. There is significant scope for more cities to make firm emission reduction commitments. In addition, a much greater emphasis needs to be placed on setting targets past 2020 or 2025 – indeed a trend is starting to emerge among cities for a long-term goal of 80% GHG reductions by 2050, sometimes known as 80x50.

Long-term decarbonisation targets are important, as they will help shape the land use and infrastructure investment decisions taken in the next 5–15 years, which will largely lock in the ability of cities to sustain emission reductions over time. There is much scope for improvement with city-scale emissions inventories as well. A recent survey of more than 100 major cities worldwide found that 60 had published data on their carbon emissions.[71] While this is encouraging, only 29 of these cities had an emissions breakdown by scope and sector, and most breakdowns were not comparable. As a result, many cities are unable to set out evidence-based plans for low-carbon action or to be formally included in their countries' "intended nationally determined contributions" (INDCs).

Even in cities with public commitments, the levels of ambition are often not well known or understood. Through international cooperation, standardised methodologies and frameworks have been developed to support urban action. Notable among these is the Compact of Mayors, a major new global collaboration of mayors and city officials focusing on climate change. It encourages cities to take ambitious local climate action, following a logical but flexible progression over a three-year period. This involves (i) committing to addressing GHG emissions; (ii) producing an emissions inventory using a consistent and robust standard (the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories); (iii) setting targets for carbon reduction, which can act as a "floor" on ambition and which can be raised over time with technological progress; and (iv) developing an action plan to deliver these targets.

As of June 2015, 80 cities had formalised their commitment by joining the Compact of Mayors. The initiative is led by C40, ICLEI and UCLG, and supported by UN-HABITAT, the World Resources Institute, CDP and the UN Special Envoy for Cities and Climate Change, Michael R. Bloomberg.

One of the Compact's primary objectives is to enable recognition of new and existing city-level commitments made through other important initiatives. This will make it possible for the first time to consolidate commitments that cities have already made in a single place, while encouraging greater ambition and allowing for consistent measurement and tracking of progress and impact. These include the US Mayors Climate Protection Agreement (2005), the EU Covenant of Mayors (2008), Making Cities Resilient Campaign (2010), the Global Cities Covenant on Climate: The Mexico City Pact (2010), the Durban Adaptation Charter (2011), the US Mayors National Climate Action Agenda (2014) led by Mayors Annise Parker (Houston), Eric Garcetti (Los Angeles) and Michael Nutter (Philadelphia), among others. The Covenant of Mayors in Europe, for example, already has more than 6,000 signatories who have set emission reduction targets and adopted sustainable energy plans to help meet them, with a well-established set of guidance and financial mechanisms to support action. Under the US Mayors Climate Protection Agreement, 1,000 mayors have committed to climate action.

The use of standard frameworks, methodologies and reporting platforms increases the credibility of cities' climate commitments. This, in turn, can unlock technical and financial assistance from supporting institutions, including multilateral development banks and agencies. As with other global city-related performance metrics and indexes, this type of international initiative also helps to promote a "race to the top", with cities not only collaborating but also competing in the global race for capital, by using low-carbon strategies as the platform to boost their attractiveness as places to live and do business. The use of standard frameworks is also supporting leadership by governments at the regional and provincial levels, which is helping to complement action at the municipal level, including through a new international Compact of States and Regions formed in 2014 (as outlined briefly in Box 1).

Common platforms at the regional level can complement city level climate action

Regional and provincial governments and actors can also play an important role in driving low-carbon development. California (9th), Jiangsu (17th), and Sao Paulo (25th) are among the largest economies in the world, and regions such as Uttar Pradesh, Maharashtra and Guangdong each govern more than 100 million people.[72] In critical policy areas, such as energy regulation and finance, states and regions often have important responsibilities for both implementing national policy and enabling city policy.

Last year, alongside the Compact of Mayors, leading state and regional networks including The Climate Group States and Regions Alliance, Regions of Climate Action (R20), and Network of Regional Governments for Sustainable Development (nrg4SD), in partnership with the CDP, launched the Compact of States and Regions. This is the first global platform for state and regional governments worldwide to report their climate targets and progress in a standardised way. Nineteen regional governments across 11 countries joined in just the first few months. A complementary initiative, the Global Climate Leadership Memorandum of Understanding (Under 2 MOU), encourages subnational jurisdictions to come together to make ambitious emission reduction commitments. Eighteen states and provinces have already joined, committing to reducing their emissions by 80–95% by 2050; they represent 130 million people and US$5.3 trillion in GDP.[73] A number of states and regions are also cooperating together on emissions trading, with over 20 sub-national jurisdictions having implemented or scheduled to place a price on carbon. They include the nine states of the US and Canada which since 2009 have combined under the Regional Greenhouse Gas Initiative to implement a regional carbon budget for power sector emissions.[74]

Many states and regions are using their economic development powers to support new clean technology markets and to leverage private climate finance. For example, Upper Austria's Sustainable Energy Cluster, which focuses on supporting clean energy and energy efficiency companies, has grown from 74 to around 200 companies and partners since 2000, and from US$250 million to $2.5 billion in annual turnover – about 4% of the region's total GDP.[75] In 2013, Connecticut's Green Bank used US$40 million in public funds to attract US$180 million in private capital for new clean energy projects; it has a 9:1 private to public investment ratio, and is creating more than 1,200 new jobs.[76] Many similar examples are now being developed in states and regions around the world.

3.3 BUILDING CAPACITY TO ACT

Technical capacity to understand and address climate risks is a challenge for governments at all levels, and it is particularly acute at the local level. As illustrated by the examples in Section 2, there is great potential for low-carbon actions at the local level, but national governments may not recognise it. They also may not realise the significant demands that local authorities face, often with limited resources. As a result, there is a strong tendency to give too low a priority to training and support for local government staff. This needs to change so that local authorities have the tools and knowledge they need to devise and implement low-carbon development strategies.

International cooperation can make a major difference in this regard – in particular, in supporting local authorities to understand the science, the economics, the policy options and the business models most relevant to unlocking low-carbon growth. According to the World Bank, only about 20% of the 150 largest cities in the world have even the most basic analytics needed for low-carbon planning.[77] International actors can provide training for municipal staff and political leaders responsible for designing policies and making key infrastructure investments. This is particularly important in emerging and developing economies, where there is also a need to professionalise capacity-building initiatives in these countries.

The Leaders in Urban Transport Planning (LUTP) programme illustrates best practice. This initiative helps senior and mid-level transport professionals develop a structured approach to decision-making through a series of group exercises, case studies and site visits. The focus during the self-learning phase (five weeks) and workshop (seven days) is on understanding the complexities of urban transport problems and on building the skills for integrated mobility planning. This hands-on approach is supplemented by twinning and mentoring schemes, so that participants benefit from ongoing support and guidance.[78] So far, the LUTP programme has been delivered in 12 cities in developing and emerging economies.

International actors can also help cities to create institutional and organisational environments that support effective urban management – for example, by helping to establish integrated municipal authorities to address cross-cutting challenges such as effective land use and transport planning.[79] Finally, both national and international actors can support local decision-makers by collecting climate-relevant data at the city level. This information can help cities to design effective strategies for managing and reducing their GHG emissions.

The City Planning Lab (CPL) initiative in Indonesia illustrates how international collaboration can support both institutional development and data collection. Each CPL is a dedicated facility for spatial analysis and urban planning. The CPLs provide "just in time", demand-driven data to feed into the decision-making of their city, as well as coordinating urban management functions, such as the issue of building permits. As local technical capacity strengthens, external involvement will diminish.[80] The first CPLs have been implemented in Surabaya and Denpasar, and the next stage will launch in Palembang and Balikpapan.

3.4 FINANCING THE LOW-CARBON TRANSITION

While low-carbon urban strategies have direct and wider economic and social benefits, unlocking these benefits does require investment. Although additional costs are often small in relation to aggregate investment needs, and payback periods are short, the extra finance needed can be significant from the perspective of resource-constrained municipal authorities. Cities too often rely on narrow revenue bases that do not have sufficient fiscal space for investment in large-scale urban infrastructure. Total revenues of Indian local governments, for example, amounted to less than 1% of GDP in 2007–2008.[81]

Given the budgetary deficits and significant debt levels of many national and local governments, most cities will need to engage the private sector – and in the case of developing and emerging economies, also secure climate finance – in order to cover the higher upfront costs of climate-smart urban infrastructure.[82] International cooperation can help local governments to mobilise private finance in two key ways.

First, international actors can provide technical assistance to help cities to identify, develop and implement "investment-ready" programmes or projects that have appropriate levels of risk and return. Cities worldwide currently face significant skills gaps relating to project finance, commercial advice and procurement support.[83] Technical assistance that helps cities to develop "investment-ready" programmes and projects can then leverage much larger levels of finance from global banks, investment funds and development finance institutions. This technical assistance could be hugely valuable, as every US$1 million invested in project preparation could yield US$20–50 million in capital support for successful projects.[84]

The technical assistance and support can take various forms, from supporting the development of enabling policy frameworks, to technology transfer or project feasibility analyses. To illustrate, a group of C40 cities recently came together to commit to procure 40,000 new clean buses by 2020 to drive down costs and help create economies of scale for a new, relatively novel technology.[85] Drawing on lessons from initiatives such as the Cities Development Initiative for Asia (CDIA) could also be instructive.

Second, international actors can help cities to improve their creditworthiness and thereby mobilise resources in both domestic and international financial markets. According to the World Bank, only 4% of the 500 largest cities in developing countries are deemed creditworthy in international financial markets, rising to 20% in local markets. However, investing US$1 in improving the creditworthiness of cities can leverage more than US$100 in private finance for low-carbon urban infrastructure.[86] Kampala, Uganda, for example, managed to increase locally generated revenue by 86% within a year, almost doubling what the city can borrow for large-scale urban infrastructure, and has recently secured a credit rating.[87] Similarly, Lima, Peru, secured a credit rating that allowed it to co-finance its BRT system with a loan from a domestic commercial bank. The BRT was also supported by the World Bank and the Inter-American Development Bank.[88] To allow more cities to mobilise private finance, emerging international collaborative initiatives, such as the World Bank-led Creditworthiness Initiative and the Cities Climate Finance Leadership Alliance (launched at the 2014 Climate Summit to catalyse and accelerate additional capital flows to cities[89]), should be scaled up and strengthened.[90]

3.5 EMPOWERING CITIES

Cities can make much more ambitious climate commitments if national governments give them the legal power and institutional support they need to invest and innovate. Cities in different countries – sometimes even within the same country – can be in very different positions. Some have significant budgets that they fully control, while others are more dependent on regional or national level authorities. International institutions can support countries to increase critical powers at the municipal level, and help cities understand how to make better use of the powers they already have, based on global best practice.

As highlighted in *Better Growth, Better Climate*, coordination between city departments ("horizontal integration") and between city, regional and national policy frameworks ("vertical integration") is also critical. The experiences of cities such as London and Curitiba demonstrate the particular advantages of integrated authorities to coordinate land use planning and integrated urban mobility systems.[91]

Some countries, such as China and India, are already recognising the critical role of cities in driving economic development, and are prioritising urban planning and investment in their national development strategies. In many other countries, much more needs to be done. National governments need to recognise the importance of managing urban growth well, and the potential for improving economic, social and environmental performance and alleviating poverty. This is particularly important in countries with relatively low levels of urbanisation, which have an opportunity to leapfrog high-carbon pathways and jump straight to a low-carbon urban future.

For example, by 2050, urban areas in sub-Saharan Africa will be home to 800 million more people than in 2014. Recent research for the Global Commission shows that continuing with the current model of urban development will mean that Africa's cities become increasingly polluted, socially polarised and carbon-intensive.[92] There is thus a need for effective national planning to realise the potential benefits associated with well-managed urban growth.

International organisations can help capacity-constrained countries to manage rapid urbanisation by, for example, taking a "systems of cities" approach that develops secondary cities based on major economic, environmental and social considerations. That is one of the options explored by the Global Commission's Ethiopia Partnership, led by the Ethiopian Development Research Institute (EDRI) and the Global Green Growth Institute (GGGI) in close collaboration with the Government of Ethiopia.[93]

4. Conclusions and recommendations

The economic case for low-carbon urban development is compelling. Even with very conservative assumptions, the current global value of that opportunity could be US$16.6 trillion by 2050. And that value could increase significantly, and the payback periods on the investments could shorten substantially, with effective national and international support and continued leadership by cities. In addition, there is a compelling wider economic case for transformation towards a more compact, connected and efficient urban development model. As *Better Growth, Better Climate* shows, this model can also make cities more productive, socially inclusive, resilient, cleaner, quieter and safer.

The decisions that cities take within the next 15 years will be critical to capturing these benefits. International cooperation led by nations and cities and supported by international organisations is needed to amplify and accelerate action.

The Global Commission on the Economy and Climate therefore recommends that all cities commit to developing and implementing low-carbon urban development strategies by 2020, using where possible the framework of the Compact of Mayors, prioritising policies and investments in public, non-motorised and low-emission transport, building efficiency, renewable energy and efficient waste management.

City and local governments should demonstrate leadership by committing to ambitious emission reduction targets and/or low-emission development strategies, aiming to be compliant with the framework of the Compact of Mayors by 2020.[94] This should include building the skills of political leaders and municipal staff to plan, design, finance and deliver low-carbon development plans, and improving coordination of transport and land use decisions by integrating the authorities.

National governments should empower cities to innovate and invest in low-carbon action, by:

- Introducing national legislation to support and incentivise the adoption of emission reduction targets and/or low-emission development strategies; this should include creating channels for cities with low-carbon strategies and accountable governance systems to engage directly with national development banks;

- Developing national urbanisation strategies in conjunction with city governments, overseen by a high-level executive authority and/or the Ministry of Finance, with cross-departmental representation to enable integrated planning and assigned budgets to ensure adequate resourcing; such strategies should include establishing financial and legal infrastructure that favours low-carbon investment;

- Where local authorities do not have critical powers to act, consider adopting reforms to expand their powers, particularly with regard to land use management, local energy and transport systems and public finance; such reforms should be complemented by appropriate fiduciary safeguards, so that cities can invest in economically attractive low-carbon urban infrastructure.

The **international community** – including development agencies and other sources of city finance, city networks and organisations, and multilateral and regional development banks – should help to accelerate and scale up low-carbon urban strategies by developing an integrated package of US$1 billion or more over five years to:

- Support at least the world's largest 500 cities by population – which represent half of global urban mitigation potential up to 2030 and over half of global GDP[95] – to comply with the Compact of Mayors by 2020, by providing technical assistance and resources of at least US$500 million to the relevant bodies.[96] This should include a mixture of development finance, philanthropic capital and other sources of funds, and should be targeted at building on existing efforts by cities, using their own resources, and at filling critical resource gaps in smaller and developing cities.

- Provide cities with increased technical assistance and capacity-building for project preparation to enable them to identify, develop and implement "bankable" programmes and projects for low-carbon, climate-resilient urban infrastructure. One option for delivering this would be through the creation of a project preparation support fund of at least US$250 million to support – at a minimum – the world's largest 500 cities by 2020. This package could directly mobilise at least US$5–10 billion in private investment through project preparation support, and leverage further large-scale capital to support a low-carbon urban transition.[97]

- Enable cities to mobilise private finance for urban infrastructure investment, including by scaling up the World Bank-led City Creditworthiness Initiative to reach at least the world's largest 500 cities by 2020 by ensuring resourcing of at least US$375 million,[98] strengthening the Cities Climate Finance Leadership Alliance, and scaling up opportunities for cities to receive credit enhancement from the multilateral development banks.

- Enable cities in developing countries to catalyse low-carbon investment by directly accessing climate finance – for example, through dedicated windows in the Green Climate Fund and Global Environmental Facility and direct access to finance through the multilateral development banks. This would help cities to cover incremental upfront costs of low-carbon options and to leverage private capital, where cities have demonstrated sufficient fiduciary safeguards and where this is agreed in partnership with nation states. Access to such funding opportunities should be quick, efficient and transparent, avoiding unnecessary administrative burdens for city authorities.

- Provide enhanced platforms for knowledge-sharing and technology transfer among cities – for example, through supporting global city networks such as C40, ICLEI and UCLG.

Implementing these recommendations – through a combination of policy measures and investments by cities in key sectors, acting with support from nation states and enhanced by international collaboration – could deliver at least 3.7 Gt CO_2e in emission reductions, or 15–20% of what is needed in 2030 to bridge the gap to a 2°C pathway. This is a chance to make a real difference for the climate – and at the same time, seize at least a US$16.6 trillion economic opportunity.

ENDNOTES

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5 This paper focuses on the intersection between better urban growth and reducing carbon emissions. However, with the rising incidence of climate-related hazards impacting urban areas, it is crucial that cities also invest in enhancing their resilience to ensure they can withstand the shocks of future extreme events, minimise the damages, and recover quickly. For a summary of the literature on urban climate resilience (including the interface with climate mitigation) see: Urban Climate Change Research Network, 2011. Climate Change and Cities: First Assessment Report. Available at: http://uccrn.org/resources/publications/arc3/

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9 For the emissions potential estimates, see Erickson and Tempest, 2014. *Advancing Climate Ambition: How City-Scale Actions Can Contribute to Global Climate Goals*.

If under "business as usual" trends, less ambitious action takes place than planned by nation states – such as under the IEA's 6DS scenario – mitigation potential in cities could be even higher than this. See: *Technical Note: Quantification of the Emissions Impact of the NCE Recommendations*, 2015 (forthcoming). To be available at: http://newclimateeconomy.report.

10 UNEP, 2014. *The Emissions Gap Report 2014*. United Nations Environment Programme, Nairobi. Available at: http://www.unep.org/publications/ebooks/emissionsgapreport2014. The report assumes a median emissions gap verses existing policies and pledges of 14–17 Gt. In contrast, if the baseline is assumed to be the IEA's 6DS scenario, which is an extension of current emission trends, rather than the 4DS scenario, which includes recent national pledges and policies to limit GHG emissions, the emissions gap would be around 22 Gt.

For a summary of the IPCC's median 2°C scenario of 42 Gt in 2030 and the assumed baseline of 64 Gt, which suggests an emissions gap of 22 Gt in 2030, without including national pledges and policies to limit GHG emissions, see also: *Technical Note: Quantification of the Emissions Impact of the NCE Recommendations*, 2015.

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96 Based on an average cost of technical assistance of US$0.5–2 million per city. NCE estimates based on consultation with a range of city-focused institutions. It is important to note that many cities - particularly large cities in the OECD - are already investing voluntarily in developing city inventories, targets and plans. These plans are often more credible than those developed by a third party or consultant. It is therefore important that external assistance (i) builds on and enhances existing efforts by cities; and (ii) is focused on smaller cities and cities in the developing world which may have less recourse to domestic resources and have more pronounced skill gaps.

97 Based on the assumption that technical assistance for project preparation would represent 2.5–5% of total project costs after leveraged investments. NCE estimates based on consultation with a range of city-focused institutions.

98 Based on an average cost of technical assistance of US$750,000 per city, based on discussions with the World Bank. This is the estimate of the assistance required per city to improve creditworthiness, not necessarily to reach creditworthiness. It takes on average around 9 months to design and resource multi-year action-plans to lay the foundation for effective delivery of technical assistance.

APPENDIX: METHODS AND ASSUMPTIONS IN THE GLOBAL-LEVEL ANALYSIS

1. Introduction

This appendix presents the methodology used to estimate the additional costs and benefits of the urban action scenario developed by Erickson and Tempest (2014). This scenario assumes ambitious levels and rates of deployment for 11 mitigation measures within the building, transport and waste sectors in 99% of the world's urban areas by population. This covers an urban population of 3.9 billion in 2015, rising to 6.3 billion in 2050.

The baseline or "business as usual" scenario used by Erickson and Tempest (2014) draws heavily on the 4DS scenario presented in the International Energy Agency's *Energy Technology Perspectives 2014: Harnessing Electricity's Potential* (IEA, 2014a). The 4DS scenario, in turn follows the New Policies Scenario of the World Energy Outlook 2014 (IEA, 2014b). This scenario includes changes in energy use and emissions that may be expected to occur due to market forces and national policies that are currently proposed but have yet to be formally implemented, and it incorporates IEA forecasts for GDP and population growth. [1]

By comparison, the urban action scenario assumes a programme of ambitious climate mitigation at the city scale. The scenario predicts the potential economic and carbon savings that could be realised if measures in three sectors – buildings, transport, and waste – were deployed at an ambitious rate across the world's urban areas between 2016 and 2050. Estimates for the scope for and rate of deployment of the different measures included in this scenario are drawn from a variety of sources, particularly the IEA's 2DS scenario (IEA, 2014a). The 2DS scenario models the potential to reduce greenhouse gas (GHG) emissions to levels consistent with atmospheric CO_2 concentrations of 450ppm in 2100. In other words, this urban action scenario evaluates the potential for cities to achieve mitigation at a level compatible with the international goal to limit the average global long-term temperature rise to 2°C.

The analysis presented in this working paper expands upon the work of Erickson and Tempest (2014) by assessing the economic case for pursuing such a programme of mitigation in cities. In the following sections we describe our methodology, data sources, assumptions and the limitations of our approach.

2. Methodology

2.1 CALCULATION APPROACH

Estimating the economic case for the urban action scenario in Erickson and Tempest (2014) requires drawing data from a large number of sources and making various sector-specific assumptions. However, the general cost-benefit procedure is consistent across measures. First, the additional investment costs of the urban action scenario are calculated using data on the marginal or incremental cost of adopting a more energy-efficient or lower-carbon option instead of a conventional or "business as usual" option. The marginal cost of each unit is then multiplied by the number of units deployed in the urban action scenario relative to the baseline scenario. Second, the value of the energy savings associated with the deployment of all units is calculated by multiplying the energy savings generated in the urban action scenario relative to the baseline by forecast energy prices in the period from 2016 to 2050. Third, the additional investment costs and the cost-savings generated in the period to 2050 are compared to assess the overall economic case for each measure, each sector, and for the full implementation of the urban action scenario.

Three assumptions, which apply to all of the measures considered, have a particularly significant impact on the results: projections of future energy prices, choices of discount rates (which reflect the **opportunity costs faced by, and time preferences of, a prospective investor**) and estimates of technological learning (which dictate how quickly the costs of low-carbon technologies are expected to fall). This analysis tests the sensitivity of the results to these assumptions by considering a range of values:

- For energy prices, we generate results based on real annual energy price increases of 1%, 2.5% and 4%;[2]
- For discount rates, we generate results based on rates of 1.4%, 3%, and 5%;[3] and
- For technological learning rates, we calculate results based on both a standard and a high learning rate, with specific rates selected for each measure, as specified in Sections 2.2 and 2.3.

Costs and energy savings are estimated at a regional level (where data allows) using the regions considered by Erickson and Tempest (2014),[4] before they are aggregated in global estimates. Where available, current energy prices are obtained for each of these regions from the IEA's Energy Prices and Taxes Statistics (http://www.iea.org/statistics/topics/pricesandtaxes/).[5] Where regional energy price data are not available, country proxies are used to represent the wider region. 2015 US dollars are used throughout the analysis.

2.2 BUILDINGS: COMMERCIAL AND RESIDENTIAL

New Buildings and Retrofits

A consistent methodology is used to estimate the economic case for investing in more energy efficient buildings – both those to be retrofitted and those to be constructed – in the residential and commercial sectors. The calculation relies upon four datasets:

1. The additional installation costs per unit of floor area (US$/m^2) for retrofits and new buildings in the urban action scenario relative to the baseline;
2. Floor area installation rates (m^2/yr) for retrofits and new buildings;
3. Annual energy savings (kWh/yr) in the urban action scenario relative to the baseline; and
4. The specific composition of fuel use avoided (%).

The first of these datasets was obtained from an analysis completed for the Global Building Performance Network (GBPN) by Ürge-Vorsatz et al. (2015). Costs supplied by GBPN correspond to the regions used in this analysis and are disaggregated into 17 climate zones within each of these regions. Therefore, using the share of buildings in each climate zone in each region, these costs are aggregated into *regional costs per unit floor area* for both residential and commercial sectors, and in each case for both retrofits and new builds. The second and third datasets (for floor area installation rates and annual energy savings) are drawn directly from Erickson and Tempest (2014). As the floor installation rates are identical in the baseline and action scenarios, the additional costs of the urban action scenario can be attributed fully to the higher costs of efficient buildings rather than lower construction rates. The fourth dataset (on the specific composition of fuel savings) is drawn from the IEA's online statistics, and is based on the assumption that, within each region and sector, the composition of fuel savings is the same as the composition of total fuels consumed.[6]

Using these datasets, total additional costs are obtained by combining the installation costs with the installation rates. Energy cost savings are obtained by combining total annual energy savings with the energy price forecasts, taking into account the specific fuel composition.

Appliances and lighting

Estimating the economic case for investing in more energy efficient appliances and lighting relies upon three datasets:[7]

1. Cost to save a unit of electricity (US$/kWh) via the installation of high efficiency lighting or appliances;
2. Annual electricity savings (kWh/yr) from more efficient lighting and appliances; and
3. The split of these electricity savings between appliances and lighting (%).

The first of these datasets was obtained from the IEA (2014c). The cost estimates are based on the assumption that the energy savings in the urban action scenario are achieved via the installation of LED lighting and BAT (best available technology) appliances, relative to a baseline scenario with incandescent lighting in the residential sector, linear florescent lighting in the commercial sector,[8] and low efficiency appliances across both sectors. The second dataset was obtained directly from Erickson and Tempest (2014). The third dataset was obtained from the 2DS scenario of *Energy Technology Perspectives 2014* (IEA, 2014a),

which forecasts these splits out to 2050 at the level of the Organisation for Economic Co-operation and Development (OECD) and at the non-OECD level.

Using these datasets, annual electricity savings were split into savings from lighting, and savings from appliances.[9] These were multiplied by the cost to save a unit of electricity to determine the additional investment needs in the urban action scenario. Energy cost savings are obtained by combining total annual electricity savings with the electricity price forecasts.

Solar PV[10]

Estimating the costs and benefits of the additional solar capacity installed in the urban action scenario involved three datasets, each disaggregated by region:

1. Capacity factors (%);
2. Installation costs (US$/kW installed capacity) and annual running costs (US$/year/kW installed capacity); and
3. Annual electricity savings (kWh/yr) due to additional PV installations in the urban action scenario relative to the baseline.

The first and second of these datasets are sourced from the 450 Scenario of the *World Energy Outlook 2014* (IEA, 2014b). These are disaggregated by region and include price forecasts to 2030. The third dataset is obtained directly from Erickson and Tempest (2014).

Using capacity factors and average panel lifetimes, the installed capacity for each region is reverse-engineered from the annual electricity savings in the urban action scenario. The installed capacity is then used with the first dataset to estimate additional investment costs and running costs. Again, energy cost savings are determined by combining total annual electricity savings with the energy price forecasts.

2.3 TRANSPORT: PASSENGER TRANSPORT AND FREIGHT TRANSPORT

Urban planning and reduced travel demand

The incremental investment needs are not estimated for this measure. However, previous work for the New Climate Economy suggests that urban planning for compact and connected cities could reduce investment costs by US$3 trillion between 2015 and 2030 (Floater et al., 2014). The scale of potential savings is further supported by work from the World Bank, which finds that China could save up to US$1.4 trillion in infrastructure spending to 2030 if more compact urban forms were pursued (Zhang et al., 2013).

Energy savings are calculated using modal share data from Erickson and Tempest (2014) and regional energy intensity of transport data from the 2DS and 4DS scenarios in *Energy Technology Perspectives 2012: Pathways to a Clean Energy System* (IEA, 2012). These data are converted to fuel types using the regional specific data on energy use by fuel type from IEA statistics (https://www.iea.org/statistics/) on the assumption that fuel use by energy type is consistent in the urban action and baseline scenarios. Cost savings are then estimated using regional fuel price forecasts outlined above.

Mode shift and transit efficiency (passenger transport)

This cluster of measures is composed of three elements: mode shift, energy efficiency improvements for public transport vehicles, and electrification of the public transport fleet.

To calculate the investment requirements for the mode shift element, the following datasets are used:

1. The urban population by region;
2. Annual regional per capita travel distance (km);
3. Regional travel mode share (%);
4. Vehicle occupancy figures;
5. Vehicle-km per km infrastructure; and
6. Cost per km of infrastructure (millions 2015 US$).

Data on the person-km by transport mode and region in the baseline and urban action scenarios are obtained from Erickson and Tempest (2014). Total passenger-km for each transport mode are converted to vehicle-km using regional estimates of average vehicle occupancy. Vehicle-km by transport mode are converted to km of infrastructure using regional estimates of annual vehicle-km per km of infrastructure and estimates of the cost per km of infrastructure are used to calculate investment costs. These data are collected from Dulac (2014) and Replogle and Fulton (2014), and from consultation with experts (see Sections 2.2 and 2.3 for full details of data sources). In most cases, these data are only available at the OECD/non-OECD level.

To calculate the cost of energy efficiency improvements, three datasets are used:

1. Annual average travel distance by vehicle type (km);
2. Energy expenditure per km by transport mode; and
3. The cost per vehicle of energy efficiency improvements (US$/% improvement in efficiency).

Using the previously calculated total passenger-km by transport mode, the size of the transport fleet is estimated using regional estimates of annual average travel distance by vehicle type and vehicle occupancy. The change in the efficiency of the fleet is calculated by comparing the energy use per km in the baseline and urban action scenarios. It is assumed that the increase in efficiency of the fleet (over and above the baseline increase in efficiency) is the same as the increase in efficiency for each vehicle in the fleet. Data on the cost of transit efficiency improvements is drawn from the heavy-duty vehicle efficiency cost database in the *World Energy Investment Outlook 2014* (IEA, 2014c), and applied on a per vehicle basis. Only the portion of the fleet that is not part of the electrification scenario (below) is considered.

To calculate the cost of electrification, the size of the electrified fleet by region and transit mode type is calculated using the total size of the fleet (see above) and the IEA electrification scenario (IEA, 2014a). Estimates of the additional cost of these electrified vehicles, obtained from expert consultation, are then applied to obtain total investment costs.

Total energy savings are calculated using modal share data from Erickson and Tempest (2014) and regional energy intensity of transport data from the IEA 2DS and 4DS scenarios (IEA, 2012). These data are converted to fuel types using the regional specific data on energy use by fuel type from the IEA (2014a), again with the assumption that fuel use by energy type is consistent between the two scenarios. Cost savings are then estimated using the regional fuel price forecasts specified above.

Car efficiency and electrification

This cluster of measures comprises two elements: vehicle efficiency improvements and electrification of the transport fleet.

To calculate the cost of vehicle efficiency improvements, the following datasets are used:

1. The urban population by region;
2. Annual regional per capita travel distance (km);
3. Regional travel mode share (%);
4. Vehicle occupancy figures;
5. Average vehicle travel distance;
6. Energy expenditure per km; and
7. The cost per vehicle of energy efficiency improvements ($/% improvement in efficiency).

In order to calculate the size of the private vehicle fleet in each region, the person-km by region in Erickson and Tempest (2014) is multiplied by vehicle occupancy figures and average annual travel distance figures. The increase in the efficiency of the fleet is then calculated by comparing the energy use per km (by region) in the baseline and urban action scenarios. In line with the transit scenario, it is assumed the increase in fleet efficiency is the same as the per vehicle improvement in efficiency. The annual year-on-year improvement in efficiency (relative to the background improvements in the baseline scenario) is then used to calculate investment costs using the light duty vehicle efficiency cost database in the *World Energy Investment Outlook* (IEA, 2014c). Only the portion of the fleet that is not part of the electrification scenario (below) is considered.

To calculate the cost of electrification one additional data set is required, on the additional cost of electric vehicles.

The size of the electrified fleet is calculated using the total size of the fleet (see above) and the IEA electrification scenario (IEA, 2014a). The total cost is then calculated using data on the additional cost of electric vehicles compared with conventional light-duty vehicles, obtained from Mock and Yang (2014), the IEA (2014c) and expert consultation.

Total energy savings are calculated using modal share data from Erickson and Tempest (2014) and regional energy intensity of transport data from the IEA 2DS and 4DS scenarios (IEA, 2012). These data are then converted to fuel types using the regional specific data on energy use by fuel type from IEA statistics (https://www.iea.org/statistics/), with the assumption that fuel use by energy type is consistent in the baseline and urban action scenarios. Cost savings are then estimated using regional fuel price forecasts, as specified above.

Logistics improvements

No costs are estimated for this measure due to the large variability both of approaches and associated costs.

Total energy savings are calculated using modal share data from Erickson and Tempest (2014) and regional energy intensity of transport data from the IEA 2DS and 4DS scenarios (IEA, 2012). These data are then converted to fuel types using the regional specific data on energy use by fuel type from IEA statistics (https://www.iea.org/statistics/), with the assumption that fuel use by energy type is consistent between the baseline and urban action scenarios. Cost savings are then estimated using the regional fuel price forecasts specified above.

Vehicle efficiency and electrification (transport freight)

This cluster of measures is comprised of two elements: vehicle efficiency improvements and electrification of the transport fleet. To calculate the cost of vehicle efficiency improvements, the following data sets were required:

1. The regional urban population;
2. Tonne-km per capita by region;
3. Tonne per vehicle estimates;
4. Average annual freight travel distance by region;
5. Energy use per tonne-km under the baseline and mitigation scenarios; and
6. The cost per vehicle of energy efficiency improvements ($/% improvement in efficiency).

To calculate the size of the freight fleet in each region, the difference in tonne-km by region in the baseline and urban action scenarios developed by Erickson and Tempest (2014) is calculated. Vehicle tonnage estimates and average annual travel distance figures are then applied to produce an estimate of the freight fleet under the mitigation scenario. The increase in the efficiency of the fleet is then calculated by comparing the energy use by freight per km by region in the baseline and urban action scenarios. In line with the transit scenario, it is assumed that the increase in fleet efficiency is the same as the per vehicle improvement in efficiency. The annual year-on-year improvement in efficiency (relative to background improvements in the baseline scenario) is then used to calculate investment costs using the IEA (2014c) *World Energy Investment Outlook* heavy-duty vehicle efficiency cost database. Only the portion of the fleet that is not part of the electrification scenario (below) is considered.

To calculate the cost of electrification, the size of the electrified fleet is calculated using the total size of the fleet (see above) and the IEA electrification scenario (IEA, 2014a). The incremental cost of electrified freight (obtained from IEA, 2009; NRC, 2010; Taefi et al., 2013; Davis and Figliozzi, 2013; NRC, 2013; Taefi et al., 2014) is then applied to these figures to provide an estimate of investment needs.

Total energy savings are calculated using modal share data from Erickson and Tempest (2014) and regional energy intensity of transport data from the IEA 2DS and 4DS scenarios (IEA, 2012). These data are then converted to fuel types using the regional specific data on energy use by fuel type from IEA statistics (https://www.iea.org/statistics/), with the assumption that fuel use by energy type is consistent between the baseline and urban action scenarios. Cost savings are then estimated using the regional fuel price forecasts specified above.

2.4 WASTE

Recycling

No investment costs or energy savings were developed for this measure. However, research suggests that recycling in certain circumstances can generate net economic returns (Graedel 2011; Goe and Gaustad, 2014; Papargyropoulou et al., 2015).

Landfill gas

To calculate investment requirements in the waste sector, the following datasets are used:

1. Energy generation (kWh) from landfill gas by region;
2. Regional landfill gas capacity factors; and
3. Capital costs per MW of capacity and operating and maintenance costs per MW of capacity.

Estimates of energy generation from landfill gas are provided by Erickson and Tempest (2014). To convert this into facilities, electricity output is converted to generating capacity using regional data on capacity factors from World Energy Council and Bloomberg New Energy Finance (WEC and BNEF, 2013). Regional operating costs and capital costs from WEC and BNEF (2013) are then used to calculate total investment costs.

Data on energy savings from electricity generated are drawn from Erickson and Tempest (2014). These figures are converted into economic savings using regional electricity price forecasts.

3. Data sources and assumptions for each scenario

3.1 BASELINE SCENARIO

Table 1
Buildings

Activity Levels[11]	Residential urban floor space (m^2) per capita are the same as national averages and will grow slowly (<0.5% per year) in OECD countries and faster (>1% per year) in developing countries. Commercial floor space is predominantly (>90%) in urban areas (Ürge-Vorsatz et al., 2012). Commercial floor space (m2) per capita will grow more quickly in developing countries. Per capita floor space and the associated growth rates are identical in the baseline and urban action scenarios.
Energy intensities	Both residential and commercial urban energy intensities (GJ or kWh per m^2 of floor space) will follow national averages within the OECD and in some developing countries. In other developing countries, these variables are adjusted by considering rural/urban splits of electricity access and traditional biomass use using data from IEA (2010). Globally, urban energy intensity will decline slowly for residential buildings (<1% per year), and remain nearly constant in commercial buildings as efficiency gains are offset by increasing demand.
Fuel types and GHG intensity of energy	Emission intensities for urban heating fuels and electricity (kg CO2-e per GJ or MWh) will follow national averages within the OECD and some developing countries. In the other developing countries, they are adjusted by considering rural/urban splits of electricity access and traditional biomass use using data from IEA (2010). Emission intensities of urban fuel use will decline gradually due to shifts away from coal and oil, while emission intensities of electricity will decline more rapidly due to recent national policies as in the IEA's New Policy Scenario projections up to 2035 (IEA, 2013) and later projections to 2050 from IEA (2012). The compositions of energy types (electricity, coal, natural gas, etc.) used in the commercial and residential sectors are obtained from http://www.iea.org/statistics.

Table 2
Transport

Activity levels[12]	Urban travel intensity (pkm per person) declines in cities in OECD countries, but grows by 1.5% or more per year until 2030 in developing countries. Mode share holds near constant in OECD countries but shifts to private vehicles in developing countries. Urban freight intensity (tkm per person) grows by 1–2% per year in OECD countries and by 2–6% per year in non-OECD countries.
Energy intensities	Urban passenger vehicle energy intensities (MJ/pkm) for private, bus, and train transport modes are the same as national averages. The energy intensity declines by 0.5–1% annually to 2050 for all modes except private cars in developing Asia, where it increases by 0.5–1.5% annually. Freight energy intensity (MJ/tkm) is the same as national average road freight intensities. These decline by 0.5–1% annually in OECD countries and many developing countries, but not in Russia, China or India.
Fuel types and GHG intensity of travel	Higher private electric vehicle ownership leads to a 3–4% decline in emission intensity by 2050 for passenger transport (depending on the intensity of the relevant grid). Urban fuels are predominantly gasoline, diesel or GHG-equivalent biofuels.

Table 3
Waste

Activity levels[13]	Waste generation in tonnes per capita holds constant in OECD countries through 2025, but grows by 1.5% per year in most developing countries. 2015 values for waste generation are drawn from Hoornweg and Bhada-Tata (2012). After 2025, waste generation in each region converges to a fixed global relationship with GDP in 2050 and waste collection converges to 2010 best practice (90%; IPCC, 2006). Waste composition remains constant (IPCC, 2006).
Energy intensities	Energy and GHG emissions as a function of waste stay constant, because waste composition remains constant (IPCC, 2006). Recycling and composting rates converge to current best practice in all regions by 2050 (Hoornweg and Bhada-Tata 2012).
GHG intensity	The share of methane captured from landfills grows by 3.1% per year in non-OECD countries and 1.0% per year in OECD countries. One-quarter of these facilities produce energy for the grid in all cases and all years. Carbon stored in landfills increases with rising waste generation and decreases with increased food composting. Avoided emissions exceed decreased sequestration. Collection rates, degradable organic content (DOC) and fraction of DOC that decomposes are constant (IPCC, 2006). Emissions avoided through recycling are modelled to represent a share of the emissions intensities of production for paper, steel, aluminium and plastics (t CO2e/t product; IEA, 2014). The percentage reduction in production emissions varies by product with a range from 50% (paper products) to 80% (steel and aluminium). As new product efficiencies improve over time, avoided emissions from new production decrease, based on IEA (2014).

3.2 URBAN ACTION SCENARIO

Table 4
Buildings

	Mitigation – assumptions and data[14]	Costs assumptions and data
New building heating efficiency	New buildings are constructed at passive levels, with heating requirements no less than 30 kWh/m^2 from 2020 to 2030 and 15 kWh/m^2 through to 2050 (Ürge-Vorsatz et al., 2012).	Additional construction costs per m^2 floor space – above those of the standard new buildings assumed in the baseline scenario – are obtained from Ürge-Vorsatz et al. (2015). These are disaggregated regionally and by building type (single-family, multi-family and commercial). Technological learning reduces real costs of passive, high-efficiency builds by 50% by 2050 (Ürge-Vorsatz et al. 2015); this is modelled by implementing a constant decrease in prices of 1.71% per year. Higher learning increases this rate such that the costs decrease by 60% by 2050, in line with the upper limit used by GBPN.
Heating retrofits	An aggressive building retrofit program begins in 2015, which upgrades 1.4%–3% of building stock per year such that all existing buildings are upgraded by 2040. This reduces their energy intensity by 30–40% compared with the baseline scenario and includes heat pumps in mid-latitude countries. This action scenario is guided by GBPN's analysis (Ürge-Vorsatz et al., 2012).	Costs per m^2 of floor space in the baseline and urban action scenarios are obtained from Ürge-Vorsatz et al. (2015). The additional costs of deep retrofits are used, rather than those of shallow, minimal retrofits. These costs are disaggregated regionally and by building type (single- family, multi-family and commercial). Technological learning for retrofits – and the consequent rate of price decreases – occurs at the same rate as for new builds.
Appliances and lighting	Aggressive deployment of efficient lighting and appliances takes place based on the IEA's 2DS scenario (IEA, 2014a).	Additional costs of high-efficiency appliances and lighting per unit of useful energy output ($/toe) – relative to the technologies adopted in the baseline scenario – are obtained from the *World Energy Investment Outlook* (IEA, 2014c). Regional variations in construction costs for efficient buildings from Ürge-Vorsatz et al. (2015) are taken as an index to estimate regional variations of costs for appliances and lighting. Splits of energy use between appliances and lighting are obtained from the IEA's 2DS scenario (IEA, 2014a) for both commercial and residential sectors and at both the OECD and non-OECD levels. Technological learning decreases real costs of high-efficiency appliances at a rate of 2.5% each year, which lies within the range of values reported in the literature (Desroches et al., 2013). This rises to 3.5% in the high learning scenario.
Solar PV	An increasing deployment of building-mounted solar PV is projected, based on the assumption that half of the solar PV in IEA's 2DS scenario (IEA, 2014a) is distributed PV, and that this is deployed in urban areas in proportion to the share of urban population in each region.	Investment costs and operation and maintenance costs per kW of installed capacity¬¬ – and average capacity factors – are obtained from the 450 Scenario of the *World Energy Outlook* (IEA, 2014b), which closely follows the 2DS scenario. Costs and capacity factors are disaggregated regionally and projected for 2012–2035 based upon the IEA forecasts, which account for technological learning and economies of scale. Beyond 2035, costs continue to change linearly at the same rates. Panel lifetimes are 20 years.

Table 5
Transport

	Mitigation – assumptions and data[15]	Costs – assumptions and data
Passenger transport: Urban planning and reduced travel demand	Land use planning for compact urban form reduces passenger travel activity (pkm per capita) up to 7% in OECD countries and 25% in developing countries. Reductions in road transport demand are based on the 2DS scenario in IEA (2014a) and are allocated by population to urban areas.	No costs are assumed for this measure. However, previous New Climate Economy work suggests that urban planning for compact and connected cities could reduce investment needs by US$3 trillion between 2015 and 2030 (Floater et al., 2014).
Passenger transport: Mode shift and transit efficiency	Expansion of public transport leads to 20% lower pkm mode share of light-duty vehicles (LDVs) and higher mode share for rail and bus transport.	Cost per km of infrastructure, operation and maintenance, occupancy estimates and annual vehicle travel distances, and annual vehicle travel distance per km of infrastructure were drawn from Dulac (2014), Replogle and Fulton (2014), and Schlömer (2014), and from consultation with experts. Most data are disaggregated only to the OECD and non-OECD level. The cost of transit efficiency improvements was drawn from the heavy-duty vehicle efficiency cost database in the *World Energy Investment Outlook 2014* (IEA, 2014c). The cost of electrified buses and trains for urban transport is collected from expert consultation and interviews with electric transport firms.
Passenger transport: Car efficiency and electrification	More efficient passenger transport, including more widespread deployment of electric vehicles, result in greater than 45% improvement in private vehicle efficiency globally. The energy intensity impact of electrification is based on the 2DS scenario variant Electrifying Transport (IEA, 2014a) for cars (light road), buses (heavy road), and rail beyond the share of energy from grid electricity reported in *Energy Technology Perspectives* (IEA 2012).	The cost of vehicle efficiency improvements was drawn from the light-duty vehicle efficiency cost database in the *World Energy Investment Outlook 2014* (IEA, 2014c). Annual vehicle travel distance is drawn from Schlömer et al. (2014). The incremental cost of electric vehicles was drawn from a review of academic literature (Mock and Yang, 2014; IEA, 2014c) and expert consultation. Based on a survey of literature, a conservative learning factor of 5% was applied to the incremental cost (Nemry et al., 2009, NRC, 2013; Kalhammer et al., 2007). This is increased to 7% in the high learning scenario.
Freight transport: Logistics improvements	Freight transport logistics improvements lead to a 5% reduction in tkm per capita by 2030 and 12% by 2035 (Façanha et al., 2012).	No costs are assumed for this measure. However, previous work for the New Climate Economy suggests that urban planning for compact and connected cities could reduce total public investment costs by $3 trillion between 2015 and 2030 (Floater et al., 2014).
Freight transport: Vehicle efficiency and electrification	Global freight energy efficiency improves 17% by 2030 and 26% by 2030. In addition, 27% of global freight is electrified by 2050, following the IEA's Electrifying Transport variant (IEA, 2014a).	The cost of vehicle efficiency improvements and vehicle tonnage estimates were drawn from the medium freight cost database in the *World Energy Investment Outlook 2014* (IEA, 2014c). Annual vehicle travel distance is drawn from the Eurostat database (http://ec.europa.eu/eurostat/data/database). The incremental cost of electrified freight is drawn from a survey of academic literature (IEA, 2009; NRC, 2010; Taefi et al., 2013; Davis and Figliozzi, 2013; NRC, 2013; Taefi et al., 2014). A learning factor of 5% is applied to the incremental cost of electrified freight for the period to 2050 in line with the value for electric vehicles. This value is increased to 7% under the high learning scenario.

Table 6
Waste

	Mitigation – assumptions and data[16]	Costs – assumptions and data
Recycling	Recycling rates rise to 80% of recoverable materials by 2050 in all regions by 2050.	No costs are assumed for this measure. However, previous New Climate Economy work suggests that urban planning for compact and connected cities could reduce investment needs by US$3 trillion between 2015 and 2030 (Floater et al., 2014).
Landfill gas capture	The fraction of methane captured rises 5.5% annually in non-OECD countries and 2.5% in OECD. This is a result of increased number and efficiency of capture facilities. OECD countries increase the share of facilities capturing methane to 80% by 2050, from 30% in the reference scenario. In non-OECD countries, the respective increase is 50% by 2050, from a reference case of 65%. The efficiency of capture increases 1.3% per year to 84% relative to a reference case of 0.3% growth in all countries. All regions experience 2% annual growth in methane capture capable facilities that also generate grid electricity.	The capital cost of capture facilities, operating costs and capacity factors were drawn from WEC and BNEF (2013). Based on the *Energy Investment Outlook* 2014 (IEA, 2014c) a learning factor of 5% is applied; the high learning factor is 7%.

4. Limitations

Long-term estimates of investment needs and economic costs carry a high level of uncertainty. This is due to, among other factors, the compound effect of assumptions and uncertainty surrounding emerging technologies, energy prices and economic growth over time. This work should therefore be seen as a high-level estimate of the investment needs and economic potential of an ambitious set of urban climate mitigation actions – but not as a business case for, or macroeconomic analysis of, large-scale low-carbon investment.

Due to limitations in the availability of data, the analysis in this paper frequently relies on low-resolution data disaggregated only to the OECD and non-OECD levels. These data are then applied to urban areas using variables such as urban population as a proportion of national population. This means that findings are applicable at a macro scale but not at the disaggregated city, national or regional levels. Caution should therefore be exercised in applying the specific results at less than a global scale.

It is also important to note that a number of factors were not considered in this analysis. Energy savings post-2050 are not included due to the high levels of uncertainty surrounding energy prices in the long term. Many avoided costs are not included in the economic analysis, particularly in the transport sector (i.e. cars not purchased and roads not constructed). Similarly, many potential benefits are not included in the assessment (for example, the health savings from improved urban mobility and reduced vehicle travel, or increased labour productivity in green buildings). Critically, feedback and rebound effects – changes in the consumption of energy due to changes in prices or due to increased income from energy savings – have not been accounted for in these models, although they may have significant effects on energy use and emissions over the period 2015–2050.

ENDNOTES - ANNEX

1 In IEA (2013), world GDP growth averages 3.4% per year over 2012–2040, while the population expands from 7 billion in 2012 to 9 billion in 2040, averaging 0.9% per year during the projection period.

2 Rates of energy price increases are highly uncertain. We consider three different rates (1%, 2.5% and 4%), which were guided by the range of projections in the *World Energy Outlook* (IEA, 2014b).

3 1.4% is consistent with the Stern Review (2007), 3%, is a standard real public discount rate in the developed world, and 5% would be an indicative real private discount rate.

4 United States, Other OECD Americas, OECD Europe, Japan, Other OECD Asia Oceania, Russia, Eastern Europe and Eurasia, Developing Asia, China, India, Middle East, Africa, Other Latin America, Brazil and Other.

5 Costs of various types of energy are required for the cost-savings calculations, including electricity, natural gas, coal, fuel oil, diesel and gasoline.

6 Data on compositions of fuel use in both the residential and commercial sectors – coal, oil products, natural gas, biomass, etc. – were obtained from the IEA's online statistics (http://www.iea.org/statistics/) for each region analysed.

7 Note that this economic analysis only considers the electricity-based appliances and lighting within the urban action scenario, due to lack of data describing investment costs of fuel-based technologies. Fuel-based technologies are significant but not dominant within this measure, accounting for around one third of energy savings.

8 These baseline lighting technologies are based upon *World Energy Outlook* surveys that estimate the most common lighting technologies current used in each sector, globally (IEA, 2014b).

9 Note that Erickson and Tempest (2014) include cooling technologies within the lighting and appliances measure, while the new build and retrofit costs from GBPN include costs of efficient cooling technologies. There is therefore a slight misalignment of their measures and our costs. However, cooling represents a relatively small portion of building energy use, and, furthermore, this misalignment cancels out when considering the aggregate costs of the building sector.

10 Note that Erickson and Tempest (2014) bundle fuel switching and solar PV into a single measure. This assessment only estimates the costs for solar PV due to a lack of availability of robust cost data for fuel switching.

11 Assumptions relating to activity levels, energy intensities and GHG intensities of energy are based upon Erickson and Tempest (2014).

12 Activity level, energy intensity and fuel type, GHG intensity assumptions are adapted from Erickson and Tempest (2014).

13 Activity level, energy intensity and fuel type, GHG intensity assumptions are adapted from Erickson and Tempest (2014).

14 Mitigation assumptions are adapted from Erickson and Tempest (2014).

15 Mitigation assumptions are adapted from Erickson and Tempest (2014).

16 Mitigation assumptions are adapted from Erickson and Tempest (2014).

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ABOUT THE NEW CLIMATE ECONOMY

The Global Commission on the Economy and Climate, and its flagship project The New Climate Economy, were set up to help governments, businesses and society make better-informed decisions on how to achieve economic prosperity and development while also addressing climate change.

In September 2014, the Commission published Better Growth, Better Climate: The New Climate Economy Report. Since then, the project has released a series of country reports on the United States, China, India and Ethiopia, and sector reports on cities, land use, energy and finance. In July 2015, the Commission published Seizing the Global Opportunity: Partnerships for Better Growth and a Better Climate. It has disseminated its messages by engaging with heads of governments, finance ministers, business leaders and other key economic decision-makers in over 30 countries around the world.

The authors

Andy Gouldson, Professor of Environmental Policy, University of Leeds, UK

Sarah Colenbrander, Research Fellow, University of Leeds, UK

Andrew Sudmant, Research Fellow, University of Leeds, UK

Nick Godfrey, Head of Policy and Urban Development, New Climate Economy

Joel Millward—Hopkins, Research Fellow, University of Leeds, UK

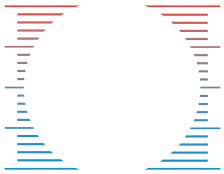
Wanli Fang, Economist, World Resources Institute, U.S

Xiao Zhao, Research Associate, New Climate Economy

This paper was directed by Andy Gouldon and Nick Godfrey, and managed by Sarah Colenbrander.

Acknowledgements

This paper drew on the expertise, advice and active engagement of many people. We would particularly like to thank Thomas Bailey, Ani Dasgupta, Amanda Eichel, Pete Erickson, Seth Schultz and Conor Riffle who provided invaluable advice, guidance, and inputs. We also drew on the advice and insights of a group of experts, all of whom were extremely generous with their time, reviewing various drafts of the report and providing inputs. These include James Alexander, Mark Watts, William Cobbett, Maryke van Staden, Graham Floater, Philipp Rode, William Tompson, Alexis Robert, Jan Corfee-Morlot, Daniel Dowling, Derik Broekhoff, Kevin Tempest, Heather Allen, Kerry Constabile, Nicholas Harrison, Marco Sakai, Manish Bapna, Benoit Lefevre, Benoit Colin, Holger Dalkmann, Vijay Jagannathan, Joshua Gallo, Stephen Hammer, Laura Spanjian, Rodrigo Rosa, Andrew Tann, Andrew Goodwin and Marco Sakai. Finally, we would like to thank Pete Erikson and Kevin Tempest for access to their global cities database. Many other organisations provided comments on the draft paper through the consultation process for the 2015 New Climate Economy report who are too many to thank here. The findings of this paper do not necessarily reflect their views, or those of the organisations they represent.



Centre for Climate Change Economics and Policy

UNIVERSITY OF LEEDS

The ESRC Centre for Climate Change Economics and Policy (CCCEP) brings together some of the world's leading researchers on climate change economics and policy, from many different disciplines. The Centre's mission is to advance public and private action on climate change through rigorous, innovative research. The Centre hosted jointly by the University of Leeds and the London School of Economics and Political Science (LSE) and is chaired by Professor Lord Stern of Brentford. It is funded by the UK Economic and Social Research Council (ESRC).

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>, <webmaster@greatersudbury.ca>
Date: 9/18/2015 2:10 PM
Subject: 2016 Budget Public Input

This form was sent at: 18-Sep-2015 2:09 PM
NAME: Laurie Prudhomme, Chair
ORGANIZATION: Greater Sudbury Santa Claus Parade
PHONE: [redacted]
EMAIL[redacted]
COMMENTS1:
DESCRIPTION: The parade is an annual event which has taken place over the last 40+ years. Our committee is all made up of volunteers who work together all year round to make the parade a success. Without sponsorship and funding from the City, this event could not take place. We look forward your commitment this year as always. Thank you!
ONETIME:
ONGOING: $10,000 Fireworks donated by Downtown Sudbury.
Volunteer police services.
Irish Regiment (Army) tent and military presence.
$25,000 + just for the parade
Further info if required, please forward request to our Secretary Helene Chartrand at [redacted]

Canadian Mental Health Association Sudbury/Manitoulin

Association canadienne pour la santé mentale Sudbury/Manitoulin

2016 Municipal Budget Funding Request

Submitted to the Finance and Administration Committee

SEPTEMBER 16, 2015

Submitted by:
Marion Quigley, CEO
Canadian Mental Health Association-Sudbury/Manitoulin
[redacted]

Canadian Mental Health Association Sudbury/Manitoulin
Association canadienne pour la santé mentale Sudbury/Manitoulin

succursale de Sudbury/Manitoulin Branch
111, rue Elm Street
Suite/local 100
Sudbury, ON P3C 1T3
705-675-7252
705-675-7247
Toll Free/sans frais: 1-866-285-2642
Warm Line: 705-671-9276/1-866-856-9276

bureau Manitoulin Office
C.P./P.O. Box 666
11, rue Meredith Street
Little Current, ON P0P 1K0
705-368-0756
705-368-0771
E-mail/courriel: info@cmha.sudbury.on.ca
Website/site Web: www.cmha.sudbury.on.ca

OUR REQUEST TO THE CITY FOR FUNDING:

Funding Amount & Type	Funding Use	Business Case/ Rationale
$800,000 – One Time	The CMHA is currently looking for a residential space in which the Managed Alcohol Program would be suitable. Once this space is found, it will likely require renovations to bring it up to code and make it compliant with AODA guidelines. As such CMHA is asking for one time funding of $800,000 to cover the initial renovation costs of the program.	The Managed Alcohol Program addresses the City's Housing First Strategy. The program is projected to save city police and EMS department significant costs on a year by year basis by re-directing these frequent users of the services to the MAP.
$47.75 per diem x 9 clients = $156,858.75 per year	In some cases the potential residents of the Managed Alcohol Program may not immediately qualify for the social assistance dollars that the program is dependent upon to support these individuals. The CMHA is seeking funding from the Community Homelessness and Prevention Initiative (CHPI) as the managed alcohol program needs the funds to support the potential clients. We are estimating that we will need to access this funding for 60% of our clients on a full year basis.	In order to facilitate quick intake and support of individuals without immediate knowledge / access to their social assistance funding to support their stay CMHA is requesting CHPI funding as it meets three of the four service categories of the CHPI funding: Housing with Related Supports Other Services and Supports Homelessness Prevention

Brief background of the Development of the Managed Alcohol Program

In July 2013, the NE LHIN analyzed the top 10 repeat users of hub hospital Emergency Department (ED) and the top 10 reasons for repeat visits to the ED. The trend continued in 2013/14 with repeat visits: 156 visits to HSN ED were related to substance abuse, 132 ED visits were by the top 10 users; this averaged 4.4 visits per month per person.

Canadian Mental Health Association Sudbury/Manitoulin
Association canadienne pour la santé mentale Sudbury/Manitoulin

succursale de Sudbury/Manitoulin Branch
111, rue Elm Street
Suite/local 100
Sudbury, ON P3C 1T3
705-675-7252
705-675-7247
Toll Free/sans frais: 1-866-285-2642
Warm Line: 705-671-9276/1-866-856-9276

bureau Manitoulin Office
C.P./P.O. Box 666
11, rue Meredith Street
Little Current, ON P0P 1K0
705-368-0756
705-368-0771
E-mail/courriel: info@cmha.sudbury.on.ca
Website/site Web: www.cmha.sudbury.on.ca

Following the Value Stream Mapping and Kaizen events with over 17 partner agencies (March and May 2014) a harm reduction initiative was developed which is comprised of three priorities:

1. Establishing an Emergency shelter – a safe place for all;
2. **Developing a managed alcohol program (MAP) identified as highest priority, including person centered case management through all phases; and**
3. Ensuring seamless transition to other destinations with collaboration from community partners, i.e. intensive case management, housing support

To summarize the above information the attached infographic (Appendix A) demonstrates the need for a Managed Alcohol Program in four specific categories:

1. Community – Allowing system resources such as police, ambulance etc. to be used appropriately and allow the broader community to access the services when they need it the most;
2. System – From a system perspective reduce the hospital admissions, police contacts and use of ambulances;
3. Health – Reduce the effects of homelessness and substance misuse;
4. Social – Provide a safe space for the target population to recover and possibly reconnect with loved ones.

Support for the Managed Alcohol Program

- Following the above Value Stream Mapping Sessions on July 14th, 2015 over a hundred staff from a variety of agencies who are responsible for working with the target population from across the north attended the Managed Alcohol Program Visioning Day to share their ideas and support the development of the home.
- The home has received letters of support from community leaders i.e. Health Sciences North, Northern Ontario School of Medicine, Greater Sudbury Police, Laurentian University, Greater Sudbury Chamber of Commerce)
- The mayor has expressed support for the Managed Alcohol Program in the 2015 State of the City Address
- The Managed Alcohol Program aligns with the city's homelessness strategy and helps the broader goals of reducing homelessness in the city.

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Brief program description

- Residence for individuals who are chronically homeless and who are also impacted by chronic alcohol use
- Managed alcohol program (MAP) where physician assesses the residents and prescribes alcohol with the intention of preventing alcohol like substance misuse.
- Residential facility for 15 people (men & women) focused on improving the health status of the residents, while keeping them safe
- Staffed with qualified professionals from both medical and social backgrounds
- Daily living, primary care needs & supervised administration of alcohol on a daily basis

Our current funding sources and how it will be spent:

Confirmed Funding Source	Funding Received	Max Total Amount
NELHIN	$500,000 operating funding for 2014/15 fiscal year	$1 million ongoing operational funding
Sudbury Community Foundation	$2,500 to be used towards communications i.e. OTN, TU	

Potential Funding Source	Funding Received	Max Total Amount
Government of Ontario - Poverty Reduction Fund	Applied and did not receive any funding for year one; will reapply.	Grant sizes will depend on the type of project and evaluation methods proposed.

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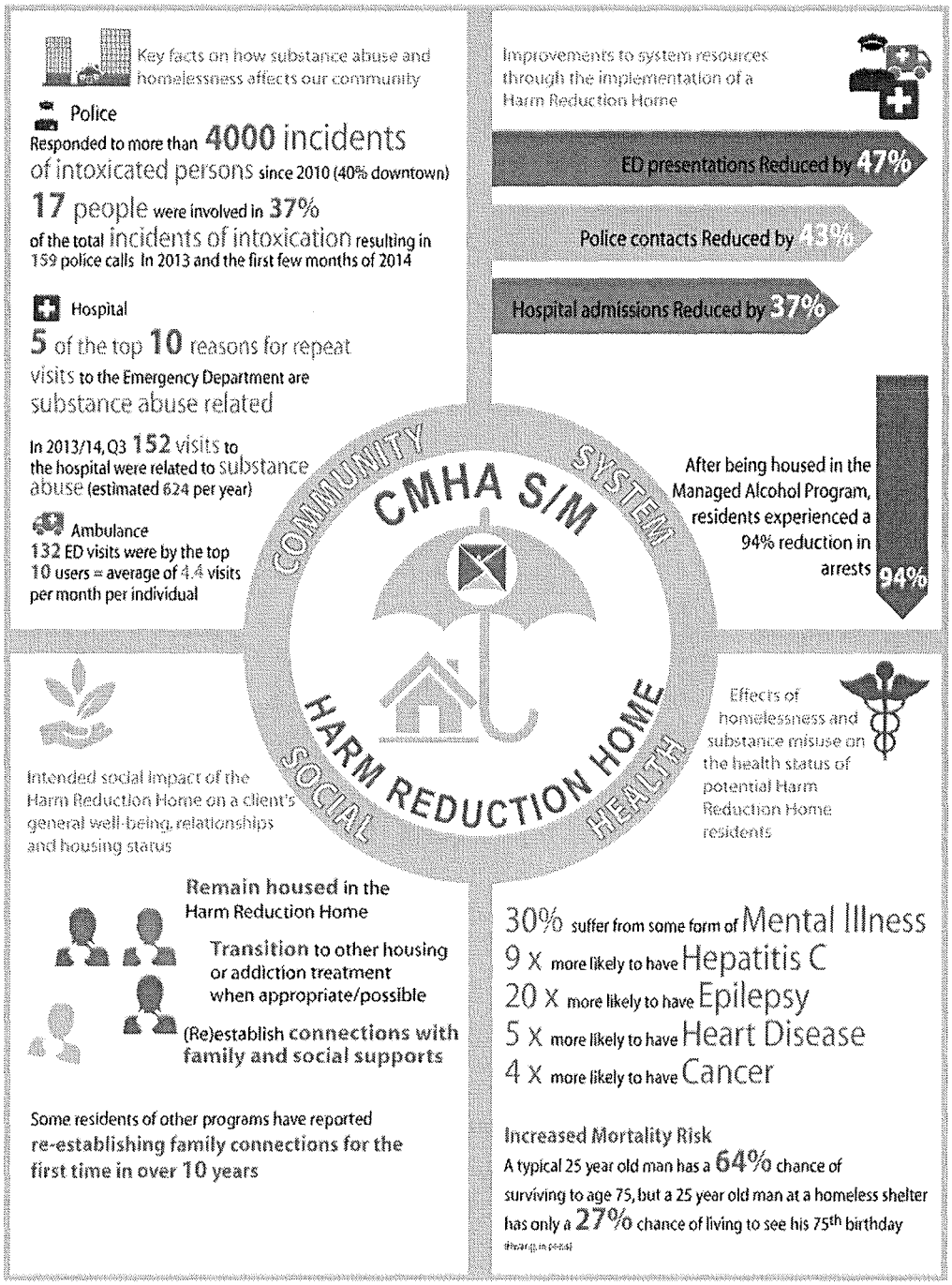
Appendix A



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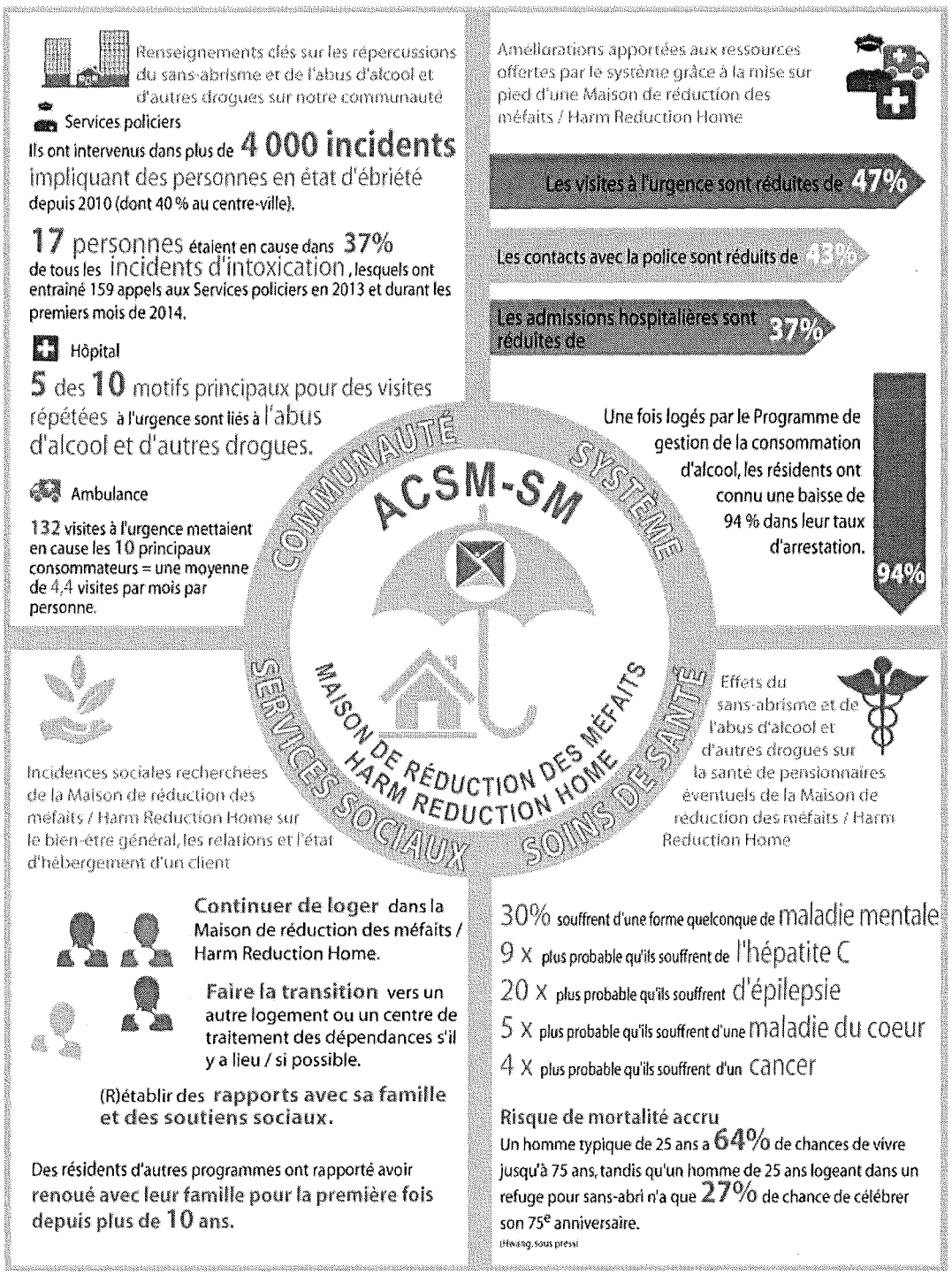

budget - Re: Fwd: Submission for Community Project -2016 Budget

From: clerks
To: budget
Date: 9/10/2015 10:28 AM
Subject: Re: Fwd: Submission for Community Project -2016 Budget

[redacted]

Mr. Roles thank you for your e-mail. I have included as part of the 2016 leisure services capital funded projects the resurfacing of the James Jerome tennis courts for council's consideration. The resurfacing will be done in 2016 pending council's approval of the recommended 2016 capital funded projects.

>>> Deb McIntosh 9/10/2015 9:58 AM >>>

Good Morning Gwenne,
Thank you for your submission.
I am forwarding it to the Department lead for Leisure Services as well as the Clerk's Department so that it will become a formal request for the 2016 budget.
Deb

Deb McIntosh
City Councillor - Ward 9
City of Greater Sudbury
[redacted]

[redacted] 9/7/2015 5:55 PM >>>

---- Original Message ----
From: Gwenne Roles[redacted]
To: [redacted]
Sent: Mon, Sep 7, 2015 5:49 pm
Subject: Submission for Community Project -2016 Budget

I am writing to request city council consider approving the following project through the 2016 budget planning process. The project would involve the resurfacing of the tennis court surfaces and repair of the court fencing at the Lily Creek Sports Complex.

To provide some background, the tennis court surfaces are badly cracked, resulting in uneven surfaces. This presents a serious hazard for players running and looking up at the ball. They have to rely on the surface being smooth and even. We were advised that the cracks resulted from winter storage of heavy equipment on the courts.

On July 13th 2015, I sustained a head injury (lacerations and concussion) and a fractured arm while playing on this surface. I required emergency care that day and am receiving ongoing care from an orthopedic surgeon for my arm. My husband notified the city staff about this unsafe situation and my unfortunate accident. Within days the cracks were filled and coated. The repaired surface is better than it was, but there are still uneven surfaces and the courts are an eyesore with blue paint streaks all over the green courts. In addition, the recently added stone walkways which run directly in front of the court area causes small stones to enter the courts on shoe soles, presenting another court hazard.

The remainder of the sports complex is beautiful and well maintained. New walkways and bleachers have recently been added. Maintenance staff blow off debris from the bleachers for spectator comfort. The tennis courts are the only area of the complex in poor repair and an eyesore. The courts are very well utilized by adults and children. Tennis Canada has reported a 35 percent increase in tennis participation and projects this will continue to rise given the attention Milos Raonic and Genie Bouchard have brought to the game. It is an amazing family activity that young and old can enjoy. I believe it is time to invest money to maintain our city's tennis infrastructure. If it is worth having it is worth maintaining.

The following is a summary of the repairs/enhancements that need to be addressed:

1. Resurfacing of the four tennis court surfaces
2. Repair fencing that is leaning and rusted.
3. Install a proper border around the bottom of the fencing to prevent balls from rolling out into the creek or playground area
4. Install wind screens on the inside of the fencing
5. Maintenance include sweeping or blowing of the courts to remove debris and stones.
6. Consider sodding the walkway area in front of the tennis courts.

Thank you for your time and consideration of this proposed project submission.

STANDING COMMITTEE ON FINANCE & ECONOMIC AFFAIRS

Budget Consideration Meeting

By

Brenda Tessaro

Spokeswoman

The Sam Bruno P.E.T. Steering Committee

SUDBURY, ONTARIO

January 23, 2015

Via Teleconference to Cornwall, Ontario

Good morning,

I am Brenda Tessaro, spokeswoman for The Sam Bruno P.E.T. Scanner Steering Committee. I would like to take this opportunity to thank the Minister of Finance, Charles Sousa & his department/committee for giving me the opportunity to present to you today. Sam Bruno, after whom our committee is named, was diagnosed with colorectal cancer at 50 years of age. He fought to have P.E.T. scans publicly funded in Ontario during his cancer journey and was successful. Sam recognized the injustice of a system where optimal healthcare was at times based on one's financial status as opposed to need. Sam died in July, 2010. Little did he know that his home region, the cancer centre for the north, would still be without a P.E.T. scanner for many years to follow.

Martin Luther King Jr. once wrote, "The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands at a time of challenge and controversy." Today, I stand before you at a time of challenge & controversy.

Our region, which encompasses **47%** of the land mass of Ontario, is comprised of **numerous** challenges. Our region is challenged **geographically**…covering over 400,000 sq. km. Our region is challenged by its **population density** of 570,000 spread over that 400,000 sq. km. Our region is challenged by **having the highest cancer death rate and one of the highest**

cardiac death rates in the province of Ontario. Our region is challenged **by a government** which chooses to ignore these challenges & puts us on the same level playing field as other regions in the province, without these challenges. Northeastern Ontario needs to be recognized as having these challenges so that the Ministry of Health & Long Term Care along with the Northeast LHINS can come together in a spirit of cooperation & resolution with our hospital, to provide the citizens of the northeast with this lifesaving diagnostic device.

In attempting a comparative analysis based on population, I was drawn to Ottawa. Ottawa is comprised of an area of 4,700 sq. km compared to 400,000 sq.km. in Northeastern Ontario. It has a population of 900,000 while the Northeastern region has 570,000. If we do the math, the city of Ottawa has 2 PET scanners which equates to 1 scanner per 450,000 people. The northeast region has 0 PET scanners per 570,000 people. These statistics beg the question, "How is it then that the city of Ottawa has created a viable, sustainable business plan to maintain 2 PET scanners with a significantly lower population to scanner ratio than the Northeast, & services an area 99% smaller???"

We all live in an era of soaring healthcare costs & will continue to do so with our aging population as various cancers & Alzheimer's disease become more prevalent. We must adopt the philosophy of "short term pain for long term gain" as we move forward in the purchase of a PET scanner. No longer can the healthcare system financially afford to subject patients to misdiagnoses, unnecessary surgeries, ineffective treatments and unnecessarily lengthy hospital stays because our doctors are not provided with the most effective diagnostic

equipment possible. Such an example comes to mind when in the summer of 2011, a sixty something year old male presented himself to HSN exhibiting cardiac symptoms. He was admitted, endured a lengthy stay of 21 days, had every diagnostic test possible related to his symptoms but to no avail. At this point, he was flown by air ambulance to the Ottawa Heart Institute for a P.E.T. scan. Within 48 hours the scan was read, his condition diagnosed, his treatment was staged and he returned to HSN to be discharged the following day. All in all, the cost to the system: 21 days @ $1000/day = $21000, return air ambulance- $15000, the cost of all the initial tests done =? Ball parking this one example, definitely over $40000. If our Sudbury hospital had a P.E.T. scanner, the cost would have been less than $4000 for a 2 day stay and a P.E.T. scan. This situation reflects a $40,000 cost to the system versus a $4000 cost, approximately 90% higher. This example is only one of the many, many cases people from the Northeast have shared with me and the committee.

Over **200,000** citizens from the Northeast access the Northern Health Travel Grant per year costing the province **$53million** per year. I recognize that not all of these patients were P.E.T. scanner patients. Needless to say, when the system spends **more** money on **transportation** to get patients to treatment than the cost of the **treatment and specialist** put together, it is not spending healthcare dollars wisely. In many cases sadly enough, the end result, in addition to staggering costs to the system, and to the families who spend weeks, sometimes months out of town, is patient death. This practice is a **lose-lose** situation for all parties concerned.

The Sam Bruno P.E.T. Steering Committee recognizes that the acquisition of a P.E.T. scanner for Health Sciences North changes this practice to a **win-win** situation for all parties. No longer do we wish to be known as the only region in the province without a P.E.T. scanner. The P.E.T. Steering Committee remains **hopeful** that the Minister of Finance and the Liberal party will move forward in supporting us in the purchase and operating costs of a P.E.T. scanner for Sudbury. Once again, thank you on behalf of our committee for affording us this opportunity to have a voice.

Brenda Tessaro

Sam Bruno P.E.T. Scanner Steering Committee

[redacted]

Budget 2016 Community Consultation Form

Greater | Grand Sudbury
www.greatersudbury.ca

RECEIVED
SEP 16 2015
CLERK'S

Deadline for submissions: Friday, September 18, 2015

As part of Council's commitment to balancing the need to provide excellent, efficient services with the desire to maintain low property taxes, the Finance and Administration Committee of Greater Sudbury is looking for your input into the 2016 municipal budget.

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Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Charles Tossell — Name

member of "Friends of Sudbury Transit" — Organization (if applicable)

[redacted] — Daytime telephone

[redacted] — Email

☐ Check here if you would like to make a presentation to the Finance and Administration Committee by attending the Public Consultation on Wednesday, September 16, 2015, starting at 4 p.m. in the Council Chamber of Tom Davies Square. Presenters are asked to limit their remarks to five minutes.

Comments/Suggestions/Opportunities for Savings:

Improve Sunday Bus schedule to a Saturday Bus schedule or at least how it operates during evenings on weekdays from 8 pm to 10 pm but all day long on Sundays.

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

A lot of people don't bother taking the bus on Sundays due to the fact that it's terrible. An increase in ridership would occur once it is improved.

Estimated one-time cost or saving: N/A

Estimated on-going costs or savings: 625,000$/year (Cost) Increased Ridership (Savings)

Consent & Notice of Collection

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Charles Tossell

Signature

Complete and mail/deliver to:

City Clerk, Tom Davies Square,
200 Brady Street, 2nd Floor,
P.O. Box 5000, Stn A,
Sudbury, ON P3A 5P3
Fax: 705-671-8118

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IF SUNDAY Bus Schedule ISN'T going TO Be
ImPROVED anyTime SOON, aT The very leaST Please PuT
a SIgN aT Bell PARK THAT WARNS our VISITORS
AND UNINFORMED TRANSIT USERS THAT The Bus STOP
@ YORK AND PARIS THAT's meANT TO go STRAIGHT
DOWNTOWN IS NOT IN SERVICE ON SUNDAY's
HOLIDAY's AND EVENINGS/LATE NIGHT AFTER 10:05 Pm.
LAST BUS OF The NIGHT monDAY TO SATURDAY
IS AT AROUND 10:05 Pm. The 182 RAmsey view
algonquin Bus Route IS AT FOUR CORNERS FOR
9:58Pm EVEN Though aT TIMES They ARE EARLY.
The SIgN should sAy "No Bus service ON SUNDAY's AND
HOLIDAY's, LAST Bus ~~OF The NIGHT~~ ON WEEKDAY's AND
SATURDAY's IS aT 10:__ Pm"

WiFi IN every Buses WOULD ResulT AN INCREASE
IN RIDERSHIP. COSTS OF IT IS MINIMAL AND The
INCREASE IN RIDERSHIP will OFF SET The oRiginAl COST.

Budget 2016 Community Consultation Form

Greater | Grand Sudbury
www.greatersudbury.ca

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SEP 16 2015
CLERK'S

Budget16
Have Your Say.

The 2016 Municipal Budget Begins with You:

Charles TOSSELL — Name

MEMBER OF "FRIENDS OF SUDBURY TRANSIT" — Organization (if applicable)

[redacted] — Daytime telephone

[redacted] — Email

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Comments/Suggestions/Opportunities for Savings:

RELOCATE THE TRANSIT TERMINAL AS PART OF THE 20 YEARS PLANNING COMMITEE TO REVAMP THE DOWNTOWN CORE. INCLUDES RELOCATING TENANTS IN LEDO TO ELSEWHERE THEN BUILD A NEW TERMINAL BLOCKING OFF VAN HORNE FROM SHAUGHNESSY TO ELGIN/MINTO.

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

A NEW TERMINAL IS NEEDED FOR MORE PARKING SPOTS FOR NEW FUTURE BUS ROUTES. OUR PRESENT TERMINAL HAS REACHED ITS LIMIT. WHEN IT WAS BUILT IN 1997 IT WAS MEANT TO REPRESENT THE OLD CITY OF SUDBURY AND NOT GREATER SUDBURY.

Estimated one-time cost or saving: 7-8 @ million DOLLARS

Estimated on-going costs or savings: SET ASIDE 750,000$/YEAR FOR THE NEXT 10 YEARS ONCE 2025 HAS BEEN REACHED WE CAN RELOCATE OUR PRESENT TERMINAL

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Charles Tossell — Member of "Friends of Sudbury Transit"
Name — Organization (if applicable)

[redacted] — [redacted]
Daytime telephone — Email

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Comments/Suggestions/Opportunities for Savings:

Have Buses offered once an hour all over in greater Sudbury.

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

People in Levack are left out and the rest of the Out skirts has it limited to every two hours. areas like Valley East are growing in size and we need to keep up with the time.

Estimated one-time cost or saving: N/A

Estimated on-going costs or savings: 1.5 million Dollars a year (costs) Increased Ridership (savings)

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The 2016 Municipal Budget Begins with You:

Charles TOSSELL — Name

"Member of National Coalition against Poverty" — Organization (if applicable)

[redacted] — Daytime telephone

[redacted] — Email

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Comments/Suggestions/Opportunities for Savings:

Homelessness is on the rise, as always it costs taxpayers more money to ignore them on the street. Quite often we've got the ones with chronic health problems landing up in hospitals or waisting police time as a result of binge drinking. It costs taxpayers about 300$/day to be either in jail or in hospital for one person.

Description of project/program requiring funding and why this project/program would benefit the community (if applicable):

Fundings required to build a commercialized-like building that has crack proof units. The building shell have 100 units or less, and it should consists to have rehabilitation program on main floor of the building.

Estimated one-time cost or saving: millions of dollars for foundation or renovation

Estimated on-going costs or savings: 300$ a day a homeless person

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MEMBER OF "FRIENDS OF SUDBURY TRANSIT" — Organization (if applicable)

[redacted] — Daytime telephone

[redacted] — Email

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Comments/Suggestions/Opportunities for Savings:

INCREASE BUS SERVICE BY ONE HOUR EARLIER IN THE DAY AND ONE HOUR LATER IN THE DAY DUE TO PEOPLE WORKING. ONE EXAMPLE IS THE CRA BUILDING FOR A 7AM SHIFT THEN IN RETAILS PEOPLE END THEIR EMPLOYMENT SHIFTS BY 10PM OR EVEN 11PM. →

Description of project/program requiring funding and why this project/ program would benefit the community (if applicable):

IT WOULD MAKE EMPLOYEES LIFE EASIER INSTEAD OF ALWAYS CARPOOLING. WHICH MEANS AN INCREASE IN RIDERSHIP.

Estimated one-time cost or saving: X

Estimated on-going costs or savings: $130/HOUR/BUS (COSTS)
INCREASED RIDERSHIP (REVENUE)

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WHAT goes ON aT 5-7Am WOuID go ON aT 4-6 Am ON all Bus RouTES. THeN goES ON BCTWEEN 9Pm 1Am WOuID go ON 10Pm-2Am. (OR SeT iT uP WHeRe THeRe'S ONLy TWo DePARTuRe OF LATE NIGHT SERVICES OF 23h30 AND 0h30 aT The VERy leaST AND EXTEND The REDUCe eVENiNg SERVICe OF 8-10Pm TO 8-11Pm)

From: 2016 Budget Public Input <webmaster@greatersudbury.ca>
To: <budget@greatersudbury.ca>
Date: 9/1/2015 4:51 PM
Subject: 2016 Budget Public Input

This form was sent at: 1-Sep-2015 4:50 PM
NAME: Samantha E Zubick
ORGANIZATION:
PHONE: [redacted]
EMAIL: [redacted]
COMMENTS1: Sudbury Police have received over 425 bear calls this summer according to CBC. The city should look into efficiently implementing something in place that does not involve killing the animals because the officers are not educated or equipped to deal with them.

This would save not only taxpayer money, but also free up time, and i quote from Staff Sgt. Craig Maki :"...the officers on the road are tired of bear complaints,"
DESCRIPTION: Implementing a unit of some sort, whether it be through animal control or conservation officers, that have people educated with bears, or enabling local bear expert Mike McIntosh of Bear With Us to do more by educating local officers, will serve the public and be a moral and ethical alternative to killing mother bears or young bears. Every time a bear is shot due to city negligence, you have enabled animal cruelty in favor of human ignorance and human convenience.
ONETIME: Less overtime pay for officers who are on-call,
Less time wasted of police resources,
Increased public safety,
Reduced risk of officer injury or death,
ONGOING: Paying for officer education, or implementing a special unit for wildlife control. Less unethical and immoral killing of animals due to city negligence.