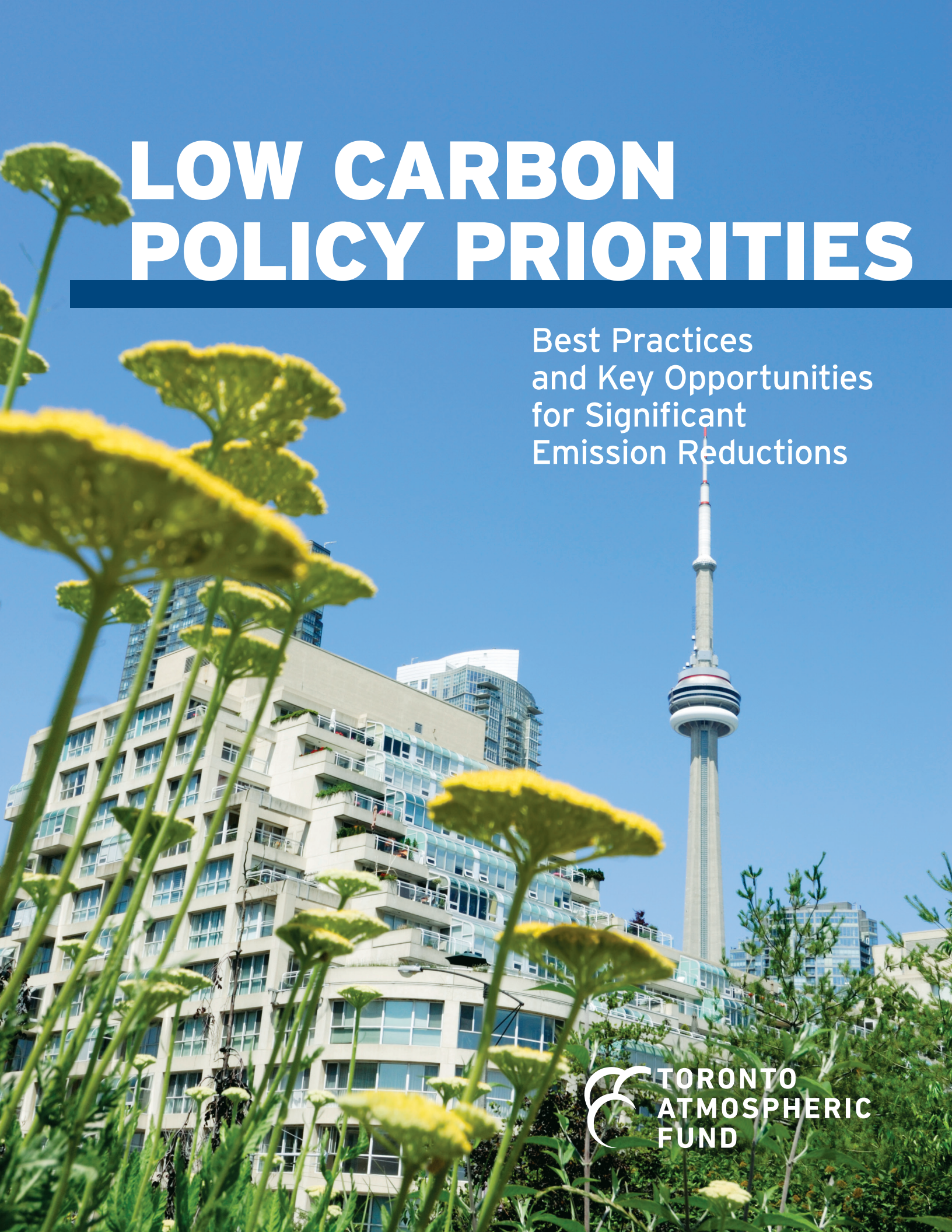
LOW CARBON POLICY PRIORITIES

Best Practices and Key Opportunities for Significant Emission Reductions



TORONTO ATMOSPHERIC FUND

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Best Practices and Key Opportunities for Significant Emission Reductions

By Rebecca Mallinson, TAF Policy Researcher

With contributions from Julia Langer, Mary Pickering, Bryan Purcell, and Jimmy Lu.

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Toronto Atmospheric Fund invests in urban solutions to reduce greenhouse gas emissions and air pollution. We are always ready to listen to your ideas about how to shrink the City of Toronto's carbon footprint. For more information, please visit our website at **www.TAF.ca**

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Executive Summary

Achieving deep greenhouse gas emissions reductions will require significant policy changes at all levels of government. There are a wide variety of low-carbon policy options to consider, many different means of advancing policy change, and precious little time left to avert dangerous climate change. With all that in mind, TAF undertook a research project to identify best practices in policy advocacy as well as a selection of high impact policy opportunities at the municipal, provincial and federal levels. The research was intended primarily to guide TAF's future funding and programmatic priorities, and is therefore focused on policy options which would have a significant impact on Toronto's greenhouse gas emissions. However, we believe that the research outcomes may be of use to a wide variety of stakeholders both within and outside Toronto, and have therefore made the report publicly available. Readers outside of Toronto should bear in mind that the suitability and carbon impact of policy options can vary significantly across jurisdictions. This report is organized in three sections:

Section One: Learning from Past Policy Advocacy Efforts

The paper examines six policy-focused projects TAF funded or undertook in the past, analyzing the outcomes to establish a set of best practices to guide TAF's future support for policy reform. The review resulted in a set of twelve key insights to support excellence in policy reform activity.

Section Two: Surveying Policy Opportunities

Based on a survey of the literature, the paper reviews over 80 potential low-carbon policy opportunities based on a survey of the literature in four main areas:

1) Energy use in the built environment
2) Transportation
3) Waste
4) Urban infrastructure

Within each of these areas, policy opportunities are organized into the following four general categories based on the mechanisms used to achieve change:

1) Improving the Business Case for Efficiency
2) Information, Analysis, Planning, and Capacity Building
3) Codes, Standards, and Regulations
4) Public Sector Investment

A list of resources consulted in the literature review that created this long list of policy opportunities can be found in the annotated bibliography which is available on request.

Section Three: Investigating Priority Opportunities

The paper investigates 14 selected policy opportunities and assesses their suitability as advocacy priorities for TAF based on potential impact, feasibility and fit with TAF's abilities and mandate.

Continuing the Conversation

We hope this reports serves as a useful resource for others engaged in climate change mitigation. Inevitably, important policy options will have been omitted, or undervalued, and new policy ideas will emerge. Readers are encouraged to contact us with their own ideas, corrections, and priorities.

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Introduction: The Project

The goal of this report is to identify and prioritize opportunities for TAF to advance key policies that will substantially reduce GHG and air pollution in the City of Toronto. The report is organized into three sections. Part one presents case studies of six of TAF's past policy-focused projects in order to identify factors that contributed to the degree of success the projects experienced. Part two presents a list of GHG reduction policy opportunities generated from a scan of the literature in four policy areas: 1) energy use in the built environment, 2) transportation, 3) waste, and 4) urban infrastructure. Part three of the report investigates a selection of the identified opportunities in order to assess their suitability as potential policy advocacy projects for TAF.

Definition: What is Public Policy?

At its most basic level, all policy is an attempt answer to the question "what should we do?" Public policy, therefore, is society's response to the question "what should we do?" as a community. As such, public policy is set by the representatives of the collective public: the government and its departments, agencies, and institutions. Thus, public policy can be thought of as "the deliberations and decisions made about an issue within a particular jurisdiction and time frame, where such decisions are seen to be in the public interest, and where it is expected that government(s) will play a role"[1].
However, it is important to recognize that what is "in the public interest" is subject to debate, and that public policy must balance competing interests and diverse opinions. Thus, consulting and engaging with interested stakeholders is an essential step in the process of developing good public policy. Furthermore, although policy is defined above as 'deliberations and decisions,' it is important to recognize that the policy cycle does not end when a policy decision is made – rather, it continues until a policy has been integrated into the existing policy landscape and then implemented.

Public policy, as defined above, can be documented in various forms, including but not limited to the following:

- Legislative documents (e.g. Acts, Regulations, and by-laws)
- Planning & strategic documents
  (e.g. Municipal Official Plans, transit plans, energy system plans)
- Codes and regulatory standards
  (e.g. Electricity and gas distribution codes, the Toronto Green Standard)
- Standard practices and procedures (e.g. permitting procedures)
- Program rules (e.g. rules for an energy conservation or GHG emissions reduction program)

In the context of this project, TAF is interested in public policy deliberations and decisions that impact GHG emissions and air pollution in the City of Toronto, and which will be taking place within the next 3-5 years, but which will significantly impact GHG and air pollution emissions out to the milestone years 2020 and 2050. This includes public policy at the municipal, provincial or federal level.

Moreover, TAF is interested in identifying strategic policies that have the potential to achieve significant reductions in city-wide emissions. Nevertheless, in some cases, minor policy changes are included where they are required to support or remove barriers to implementing higher-impact policies. Despite the potential of private sector or corporate policies to impact GHG and air pollution emissions in Toronto, an investigation of such policies is beyond the scope of this research project.

What is Policy Advocacy?

For the purposes of this paper, the term 'policy advocacy' encompasses a wide variety of activities associated with advancing and supporting the implementation of low-carbon policies. Activities included under this broad umbrella include, but are not limited to, the following: conducting or commissioning research, engaging in education and outreach (e.g. through webinars, workshops, seminars or presentations), building partnerships, convening collaboration, building capacity, mobilizing constituencies, participating directly in policy development processes and public consultations, communicating and disseminating knowledge, and supporting or contributing to policy or program design and/or implementation. In addition, TAF's engagement in policy advocacy activities may take the form of direct work from TAF staff, in-kind contributions from TAF staff to the efforts of others, or financial support of others' engagement in policy advocacy activities.

Context: Toronto's GHG Targets and Air Pollution Burden of Illness

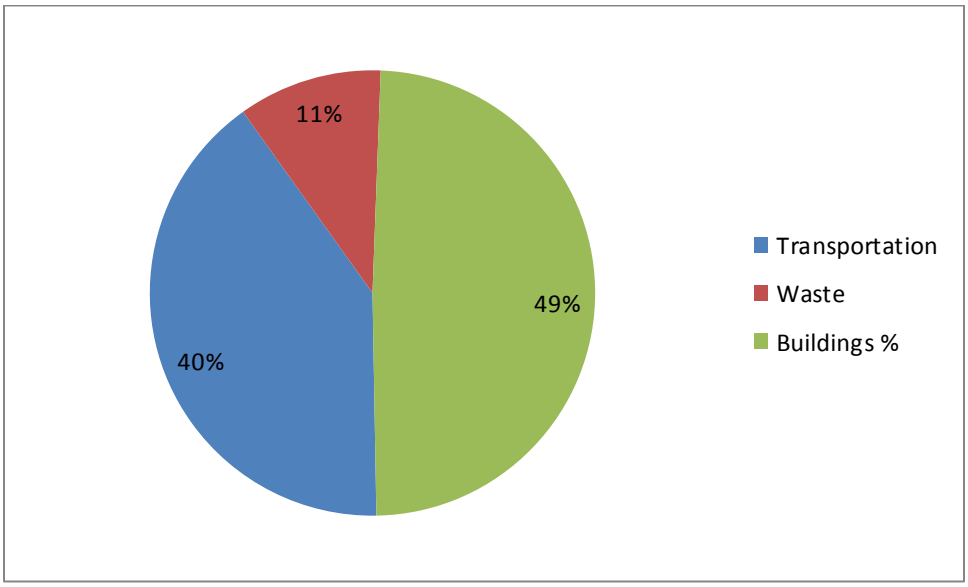
In 2007, the City of Toronto adopted the air quality contaminants (AQC) and greenhouse gas (GHG) emissions reduction targets listed in the table below.

Table 1: The City of Toronto's Emission Reduction Targets

Year	Air Quality Contaminants	Greenhouse Gases
1990		Baseline Year
2004	Baseline Year	--
2012	20%	6%
2020	--	30%
2050	--	80%

The City achieved and exceeded its 6% GHG reduction target in 2012 and is now working towards its 2020 target. In order to hit the 2020 target of 30% below 1990 levels, Toronto's level of annual GHG emissions in 2020 will have to be less than 18.9 million tonnes CO_2eq. This will require reducing annual emissions by over 1.8 million tonnes of CO_2eq from the average of 2011 and 2012 levels[2]. Figure 1 illustrates the major sources of GHG emissions in Toronto.

Figure 1: Toronto's GHG Emissions Sources (based on average of 2011 and 2012 values) [3]



Furthermore, according to the Toronto Medical Officer of Health, the two largest sources of air pollution within the city of Toronto[4] are car and truck traffic (which causes 280 premature deaths and 1,090 hospitalizations each year) and residential and commercial natural gas use (which causes 190 premature deaths and 400 hospitalizations each year)[5].

In light of these identified sources of GHG emissions and air pollution in the City of Toronto, the scan of policies in phase II of this project looks at policies in four main areas: 1. Energy use in Buildings, 2. Transportation, 3. Waste, and 4. Urban Infrastructure (which contributes to shaping the emissions profiles of the waste, transportation, and buildings sectors).

1.0 Learning from Past Policy Advocacy Efforts

One method of assessing the potential of policy advocacy projects is to evaluate them against a framework of factors crucial to success[6]. Part one of this report examines a selection of policy advocacy projects sponsored by TAF over the past 15 years in order to extract lessons about the factors that contributed to project successes –and failures. The following six policy advocacy projects represent a variety of approaches, players and stages of development:

1) **Ontario Coal Phase-Out** (Ontario Clean Air Alliance)
2) **Solar Permits** to Accelerate Uptake of Solar Thermal Energy (TAF, City of Toronto Buildings)
3) **Toronto Green Standard** Supporting Energy Performance in New Buildings in Toronto (TAF, City of Toronto Planning)
4) **Green Energy Act** Supporting Acceleration of Renewable Energy Deployment in Ontario (Ontario Sustainable Energy Association, Green Energy Act Alliance)
5) **Favourable Tax Treatment for Retrofits** to Support the Business Case for Energy Efficiency Investment (Canadian Federation of Apartment Associations)

6) **Move the GTHA** Supporting Increased Provincial Investment in Public and Active Transportation Infrastructure in the Greater Toronto and Hamilton Area (Evergreen, Move the GTHA Collaboration)

Table 2: Case Studies of Past Policy Advocacy Efforts

Case Study	Description
Coal Phase-Out 1997-2006	TAF provided eight grants, totalling $385,780, to Pollution Probe and the Ontario Clean Air Alliance (OCAA) over a period of nine years (from 1997 to 2006). The grants supported the work of Jack Gibbons and a diverse alliance of groups campaigning initially for air pollution regulations and emissions caps, and then for a phase-out of coal-fired electricity from Ontario's electricity generation mix. The campaign was successful in obtaining a commitment from the provincial government to phase out coal by 2014, a goal that was achieved by April 8, 2014. The phase-out is projected to reduce GHG emissions in the City of Toronto by over 68 million tonnes between 2005 and 2024. ***INSIGHTS:*** *The project was initiated by a small number of environmentalists who created OCAA to address an issue that had not been adopted by existing organizations. The phase-out was considered politically feasible due to the age of Ontario's existing coal plants and the lack of coal-mining industry in the province; credible economic research also helped to establish the project's economic feasibility; support voiced by health leaders drove the coal-phase out campaign; the work required long-term commitment to promote, secure and implement the action; multi-year funding was required; work was carried consistently by a committed leader, Jack Gibbons, Chair of OCAA.*
Solar Permits 2008-2010	TAF staff worked in collaboration with City of Toronto to simplify and streamline the process for obtaining building permits for domestic solar hot water heating systems. The effort was undertaken because the existing permitting requirements put an undue burden of expense and effort on property owners interested in offsetting gas or electric water heating with solar thermal energy. This permitting issue came to light when a TAF-initiated City of Toronto pilot project was launched to install 100 solar thermal systems in an East Toronto neighbourhood. TAF raised funds and hired Rob McMonagle, a policy specialist from the solar industry, to lead the project in partnership with Toronto Buildings. The project was successful in achieving a simplified permitting process for Toronto solar hot water systems, in achieving a change to the regulatory treatment of packaged systems in the Ontario Building Code, and in sharing best practices with other Canadian municipalities. ***INSIGHTS:*** *The project was politically feasible because of municipal and provincial public commitments to renewable energy i.e. the required policy change at the provincial level (Municipal Affairs and Housing) took only six months because the Provincial Government was very supportive of renewable energy (Green Energy Act), and was keen to remove obstacles to renewable energy; significant external technical expertise and involvement was available to support City of Toronto Buildings Department to create a robust, cost-effective permitting alternative.* *[inserted a hard return to make TGS case study start on next page]*

Case Study	Description
Toronto Green Standard 2011-2013	This policy advocacy effort focused on updating and strengthening the Toronto Green Standard (TGS), which is a two-tiered set of performance measures with supporting guidelines related to sustainable site and building design for new public and private buildings. TAF provided two grants in 2011 to Sustainable Buildings Canada for the creation of two research reports on recommended standard levels and the economic impacts of increasing the stringency of the TGS. TAF staff also participated on a steering committee for the research, conducted stakeholder consultations to vet TGS update recommendations, mobilized supporters, and deputed at a planning committee meeting. TAF played a key role in elevating the energy efficiency component of the TGS, which was not originally included in the TGS update to City Council. These activities succeeded in strengthening the energy efficiency requirements of the TGS in 2013. TAF and City Planning have since collaborated to offer training and support to stakeholders affected by the changes to the policy. ***INSIGHTS:*** *Credible research can drive and support policy development. Policy can often require an inside champion (TAF in this case). Resources to help stakeholders adapt to the new policy can help streamline and increase the desired impact of its implementation.*
Green Energy Act 2005-2010	TAF provided four grants, totalling $270,000, over five years (2005-2010) to support the Ontario Sustainable Energy Association (OSEA)'s efforts with respect to promoting greater use of renewable energy in Ontario's electricity system. The effort successfully brought interested parties together into the Green Energy Act Alliance, achieved changes to the Ontario government's Standard Offer Program (SOP), and contributed to the shaping and passage of Ontario's Green Energy and Green Economy Act (GEA). ***INSIGHTS:*** *This advocacy effort benefitted from leveraging a strong internal champion at the Province – George Smitherman. Groups leveraged the support of leaders from other jurisdictions (Germany, California) who had significant experience with SOPs. Communication of the policy by the Province was weak and as a result there was a lot of public confusion about the rationale for the pricing scheme for renewable energy. The Alliance did not continue very long beyond the establishment of the GEA, and implementation problems have plagued the policy. Multi-year funding was necessary, but perhaps should have extended further to help support groups' participation during the early implementation phases.*
Retrofit Gap Tax Incentive 2011	TAF provided one grant of $25,000 in 2011 to support the efforts of Tom Routley and the Canadian Federation of Apartment Associations (CFAA) to achieve a change in federal tax policy that would allow building owners to write off expenses related to energy retrofits over a period of 2-5 years instead of 25 years. This would allow building owners to save on their taxes in the first few years following the retrofit, effectively providing an incentive that would improve the financial metrics of energy efficiency retrofits. This policy advocacy effort was not successful in achieving the desired legislative change through the 2013 budget. However, the proponent assembled a coalition of interested groups to support the request, and this coalition continues to meet and work towards this type of policy change. The

Case Study	Description
	new strategy is to secure a more limited change which can be approved by the Canada Revenue Agency. ***INSIGHTS:*** *While staff at the federal Ministry of Finance was supportive, the budget process is now more highly influenced by the PMO, where support was weak; additional 3rd party research into economic impact could strengthen the case for this change in tax policy should political circumstances change.*
Move the GTHA 2012-2014	Since 2011, TAF has provided three grants totalling $190,000 to Evergreen for developing and supporting a multi-sectoral collaboration aimed at getting the Province of Ontario to establish new revenue tools totalling $2B annually dedicated to expanding public transportation infrastructure in the Greater Toronto and Hamilton Region. TAF has worked jointly with Evergreen to build skills and capacity to support multi-sector collaborations focused on urban sustainability issues, participating actively as a member of the collaboration. The profile of the issue increased drastically in the region between 2011 and 2014 and $1.5B annually of regional transportation funding was included in Ontario's Spring 2014 budget. This amount was subsequently confirmed by the outcome of the Spring 2014 Provincial election. The collaboration will continue to oversee implementation of this funding and to call for supplemental revenue to increase the commitment of $1.5B through generation of new revenues. ***INSIGHTS:*** *The electorate was not in favour of new revenue tools to fund transit, but the Provincial government did make a substantial commitment by prioritizing transit in their provincial budget. This initiative was supported by clear milestones to anchor the work – such as the Metrolinx Investment Plan –and strong leadership from CivicAction and Toronto and Region Board of Trade; Evergreen facilitated a common platform with diverse groups which amplified civic-level dialogue. Post-election, the group has expressed strong desire to continue to advance this file, and is jointly designing strategies and messages.*

Twelve Lessons Learned from TAF's Past Policy Experiences

1. **Know what success looks like**

   [Ensure that the policies considered are clearly linked to preferred outcomes]

   Have clear objectives and standards at the outset by which to evaluate the relative merit of policy options. Original objectives are an increasingly important touchstone as the battle continues, and as more diverse partners with multiple objectives are engaged. For example, Move the GTHA rallied behind a set of principles established by CivicAction's "Your 32" campaign which defined the specific criteria for what constituted acceptable funding mechanisms for the desired outcome. The group was able to evaluate new political proposals and reinforce and amplify its messaging by maintaining commitment to these principles over time.

2. **Choose your battles**

   [Ensure that a critical analysis of the viability of the effort is the first task undertaken]

   This may mean supporting early, short-term studies, convening stakeholders, or other preliminary assessments before investing in a larger issue. For example, TAF funded research to assess the economic viability of the Toronto Green Standard before the policy was promoted; and TAF also assisted the Ontario Sustainable Energy Association with grants to build a case for the Standard Offer Program before the advancement of this component as part of the *Green Energy Act.* It might also be worth keeping in mind that, given changeability of public attitudes and politics, a big idea could be worth developing and "tabling" so when circumstances change, robust new alternatives can be offered quickly.

3. **Do the homework**

   [Support research to demonstrate the feasibility and benefits of the policy change]

   It is important to see that efforts are supported by high-quality research prepared by reputable organizations. The coal phase-out campaign was supported by research from the Ontario Medical Association showing the links between coal pollution and public health impacts.
   The Toronto Green Standard was supported by research by Sustainable Buildings Canada that provided technical advice on the level of energy performance that should be included as well as an economic analysis of the return on investment that could be expected by building operators as a result of complying with the updated Standard.

4. **Pick your moment**

   [Support alignment with existing policy frameworks and leveraging of key milestones or crises]

   One of the reasons that the Solar Permits campaign was successful was that the City of Toronto was already running a Solar Neighbourhoods pilot project, and it would have been embarrassing if the pilot failed because participants were unable to obtain permits from the City who initiated the program. Similarly, the provincial government had been offering rebates for solar hot water heating equipment and promoting citizen participation in generating renewable energy, so it

was motivated to make sure that implementing solar domestic hot water systems was not being unintentionally impeded by provincial building code legislation. Move the GTHA developed as public frustration with regional traffic mounted, and was designed to leverage key reports and political events, such as the release of the Metrolinx Big Move Investment Strategy and the presentation of the Spring 2014 Provincial budget.

5. **Back the right people**
   [Carefully evaluate leadership and help them build capacity in themselves or their team]
   Make an evaluation of the skills and mindset of the leader(s) of the work a proactive part of the overall feasibility assessment, because success is as often about the leader as it is about the group they work for. And once leaders are identified, help them build their skills as needed. The successful policy advocacy efforts TAF supported were led by strong, passionate and determined leaders who were particularly well-equipped to pursue the policy outcome being sought. For example, the Solar Permits project benefitted not only from senior energy consultant Rob McMonagle's technical expertise with respect to solar hot water systems, but also from his familiarity with the City of Toronto's permitting department (Mr. McMonagle worked in the City of Toronto's Energy Efficiency Office but was seconded to TAF for the Solar Permits project). Jack Gibbons of the Ontario Clean Air Alliance is an energy economist with considerable depth of knowledge in the sector. His key role in advancing coal phase-out has been publicly acknowledged by two Ontario Premiers, Premier Dalton McGuinty and Premier Kathleen Wynne.

6. **Make it relevant**
   [Promote broad thinking about the implications of the proposed change and the leveraging of this understanding of stakeholders' relationship to the issue to build broader constituencies]
   The coal phase out was initiated by environmental groups, but was driven forward by support from doctors showing the relationship of coal burning to public health issues. Similarly, the expansion of public transit addresses the key source of greenhouse gases in the GTHA, but it is being driven forward by concerns about quality of life and business productivity being eroded by time lost in traffic. In some, but not every case, multi-stakeholder collaboration or "collective impact" approaches can be a powerful tool, strengthening the relevance and efficacy of a new proposed solution or policy. For example, OSEA's advocacy for the adoption of a *Green Energy Act* benefitted from forming an alliance with diverse organizations – including rural and urban groups – interested in increasing the share of renewable energy in Ontario.

7. **Listen and "co-create"**
   [Ensure policy development is supported by meaningful stakeholder consultation processes]
   Policy development is an art of balance, and more successful projects take the time to understand how new proposals can be refined to enhance palatability, reduce negative effects, and to ensure successful implementation. For example, TAF supported outreach and consultation with building owners to assess the response to the Toronto Green Standard energy efficiency requirements and developed proposed solar permitting approaches in co-operation

with building inspectors, solar installers, the City Buildings Department and the Province. TAF also supported building inspector training workshops to help smooth the implementation of the new permitting process.

8. **Leave room to move**

   [Take a developmental approach to evaluating policy work]

   Policy positions may need to evolve over time to take advantage of political opportunities, new information, new situations, and/or to help "on-board" new partners. And a clear picture about the "big win" or truly transformative options may take some time to emerge, as does the trust among diverse stakeholder groups who need to work together to make them happen. Taking stock of the full process of policy identification, policy advocacy, and post-policy action at regular intervals and allowing for adjustments can contribute to success.

9. **Get the insider view**

   [Support participation in formal and informal dialogue with policy-makers]

   Engagement with policy-makers from inside the policy development process – through formal and informal channels – helps to build a common understanding and set expectations. TAF's case studies commonly documented proponents' participation in policy-making consultations, making formal submissions, and meeting with government officials in order to advocate for their desired policy outcomes. This sometimes requires identifying windows when policies, codes, or standards are scheduled for review, and organizing policy advocacy around these timelines. It also offers the opportunity to educate public officials about issues they may not be aware of, and to become educated about challenges faced by policy-makers and how they can be overcome.

10. **See the long game**

    [Acknowledge the "in for a dime, in for a dollar" syndrome]

    Persistence and follow-through characterized many of the successful policy advocacy efforts. In the case of the coal phase-out, continued efforts were required to ensure that the government followed through on its commitment to phase out coal, and while the target dates for phasing out coal were pushed back a number of times, the persistence of OCAA's efforts ultimately resulted in legislation being introduced in the Ontario Legislature establishing full coal phase out in Ontario as of April 8, 2014. Funders – and advocates – may need to acknowledge sooner that a long-term commitment will be required and consider how this impacts their decision-making. The willingness of funders like TAF and Laidlaw Foundation to continue supporting the coal phase-out work through grants to OCAA and the Ontario Medical Association reinforces the importance of the funder's role and long-term commitment.

11. **Avoid the "race to the starting line"**
    [Consider extended support into the policy implementation period]
    Acknowledging that the "devil is in the details", the confirmation of a policy objective is often just the beginning of the journey. The Ontario *Green Energy Act* was met with many and ongoing challenges during the implementation phase, and the Toronto Green Standard has been shown to need further support to refine the method by which energy efficiency standards are applied and evaluated. Continuous improvement to policies to ensure they are implemented as designed, and that areas of policy weakness are identified and improved in subsequent iterations, requires strategic ongoing support, sometimes over multiple years beyond the original policy "win".

12. **Many hands make light work**
    [Multi-funder collaborations may be needed to ensure adequate support of policy campaigns]
    Multiple funders supported the Ontario Coal Phase-Out and the development of the *Green Energy Act,* but planned, co-ordinated funding collaboration – including joint evaluation of priorities and pooling and co-directing of funds could potentially offer better support to policy advocates and deeper outcomes for all parties. Also, it models collaboration activity that many funders expect to see from their grantees.

2.0 Surveying Policy Opportunities: What Options Are Out There?

Part two of this report presents a menu of available policy opportunities for reducing greenhouse gas emissions, based on a survey of the literature in four main areas: 1) Energy use in the built environment, 2) Transportation, 3) Waste, and 4) Urban Infrastructure.

Within each of these areas, policy opportunities are organized into the following four general categories based on the mechanisms the policies use to achieve change: 1) Improving the Business Case for Energy Efficiency, 2) Information, Analysis, Planning, and Capacity Building, 3) Codes, Standards, Regulations, and 4) Public Sector Investment.

The long list of policy opportunities that resulted from this literature survey is listed in the table below. A list of resources consulted in the literature review can be found in the annotated bibliography which is available on request.

Table 3: Long List of Policy Opportunities

The Built Environment
1. Improving the Business Case for Energy Efficiency Projects[7]
a) **Create price signals to encourage efficient use of energy**
a. Put a price on carbon (e.g. through a carbon tax, cap and trade program, or shadow carbon price) b. Eliminate subsidies for fossil fuel-derived sources of energy c. Tax incentives and program incentives d. Pay-for-performance arrangements (e.g. Renewable Heat Incentives[8]) e. Property tax adjustments based on building efficiency f. Feebates (charging fees and providing rebates to high-energy and low-energy buildings, respectively)
b) **Provide attractive financing for energy efficiency projects**
a. Property-assessed financing (e.g. Local Improvement Charge [LIC] financing) b. On-bill financing c. Provincial municipal revolving loan funds d. Government intervention to stimulate private sector investment in energy efficiency (e.g. Loan guarantees and loan loss reserve funds, interest rate buy-down, preferential loans from credit-enhanced capital pools, mobilizing capital through bonds, etc.)
2. Information, Analysis, Planning, and Capacity Building
a) Require energy use, water use, and GHG emission reporting and disclosure
b) Require energy efficiency labelling for new buildings (asset rating) and/or existing buildings (operational rating)
c) Require energy and water use audits
d) Create energy efficiency and renewable energy sectoral development strategies
e) Invest in green workforce development (e.g. training programs to promote excellence in engineering and to disseminate energy efficiency best practices)

f)	Set targets for reaching lower building Energy Use Intensity (EUI), net-zero buildings, and energy productivity
3.	**Codes, Standards, and Regulations**
a)	Set energy efficiency standards and codes for new buildings (e.g. the Toronto Green Standard [TGS] and the Ontario Building Code [OBC])
b)	Set standards for existing buildings (e.g. requirements for retro-commissioning, lighting upgrades, and sub-metering)
c)	Set energy efficiency equipment and appliance standards
d)	Strengthen energy utilities' mandate, obligation and ability to engage in energy conservation (e.g. through setting utility conservation targets, requiring utilities to pursue conservation first, and allowing utilities to earn an equivalent regulated return on investments in conservation).
4.	**Public Sector Investment Decisions**
a)	Require new government and institutional buildings to be built or managed to meet green building certification criteria (e.g. TGS tier 2, LEED).

Transportation

1.	**Improving the Business Case for Energy Efficient Travel**
a)	**Increase the cost of transportation fuels** (e.g. carbon tax, carbon cap and trade program, shadow price for carbon, transportation fuel tax, eliminating fossil fuel subsidies).
b)	**Increase the cost of operating a vehicle in the city** by implementing usage-based charges and fees (e.g. vehicle registration and licensing fees, pay-as-you-drive insurance, road tolls with exceptions for carpoolers and electric vehicles, congestion charges, fees for heavy emitters in low-emission zones, parking levies, increased taxation of surface parking)
c)	**Reduce the cost of lower-carbon modes of transportation** through subsidies, incentives, or tax credits for actions such as: a. Taking public transportation (e.g. freeze transit fares and provide fare reduction for those in financial need) b. Carpooling & rideshare initiatives c. Shipping freight by alternative modes such as rail, transit and cargo bikes d. Providing employees with public transit passes instead of free parking e. Purchasing high efficiency or alternative fuel vehicles (e.g electric vehicles) f. Improving vehicle fleet efficiency g. Retrofitting or trading in aging vehicles
d)	**Providing attractive financing for switching to lower-carbon modes of transportation** through such instruments as revolving green transport funds and loan guarantees (for such projects as alternative fuel or high-efficiency fleet upgrades, or using GPS vehicle tracking and wireless communication devices to help truck drivers and fleet managers make better trip routing decisions)
2.	**Information, Analysis, Planning, and Capacity Building**
a)	Requiring employers to conduct employee transportation surveys and to develop

	transportation demand management plans.
b)	Requiring transit service providers (GO, TTC, YRT) to share information to coordinate schedules (& redesigning existing transit routes and frequencies as needed)
c)	Sharing real-time data about road and traffic conditions, transit delays, and transit arrivals (to support improved travel decision-making and to enable the use of intelligent transportation systems applications).
d)	Providing supports for businesses to coordinate and consolidate freight deliveries (e.g. an online portal for matching partially-full trucks and companies with packages, supports for engaging in building-level or neighbourhood-level freight delivery planning)[9]
e)	Include information in Ontario's Official Driver Handbook about the impacts of driving habits and vehicle maintenance on fuel consumption
f)	Mandatory feedback instruments in new vehicles to allow drivers to see the impact of their driving habits on fuel-efficiency and emissions
g)	Mandatory vehicle energy efficiency labelling and time-of-sale emissions performance disclosure.
h)	Mandatory disclosure for vehicle fleets of vehicle fuel efficiency and emissions, coupled with low-emissions freight operator recognition program
i)	Adopt and implement policies to support Active Transportation (e.g. include a Complete Streets policy in the Official Plan, create 'slow zones' on residential roads, etc.)[10]
j)	Require seamless connections between travel modes at transportation hubs (e.g. sidewalk access to bus stops, integrated fare systems).
3.	**Codes, Standards, and Regulations**
a)	"Parking cash out" law (e.g. California)
b)	Restricting parking and decreasing minimum parking requirements for new development
c)	Zoning areas in the city centre as pedestrian-only, congestion charge-applicable, or traffic-restricted (based on time of day, size, type and weight of vehicles, or subject to a vehicle quota with a bidding system for plates – e.g. creating courier delivery zones in the downtown area during off-peak periods).
d)	Standards for vehicle fuel efficiency, fuel quality, and GHG and air pollution emissions (for individual vehicles, for manufacturers' fleet-averages, and for new government vehicles)
e)	Reducing speed limits (e.g. to 30km/h where cars, bikes, and pedestrians share space)
f)	Allow fuel efficient and electric vehicles access to HOV lanes and priority parking spaces (e.g. through expanding Ontario's green licensing program).
g)	Building codes that support electric vehicle charging infrastructure
h)	Electrifying personal and public transportation (e.g. cars, diesel trains and buses).
i)	Setting standards for frequency of transit service
4.	**Public Sector Investment Decisions**
a)	Increase capital and operational funding for transit service and infrastructure from the City, Province, and Federal governments (e.g. create a dedicated revenue stream for public transit from tools used to increase the costs of fuel/driving) with the goal of improving transit service and expanding public transit infrastructure (dedicated bus lanes, LRT lines, subways, park & ride stations, etc.)
b)	Invest in expanding active transportation infrastructure (e.g. bike lanes and bike parking, bike share infrastructure, pedestrian crossings and bridges, widening sidewalks, etc.).
c)	Invest in a network of publically accessible electric vehicle charging stations

Waste	
1.	**Improving the Business Case for Efficient Use of Resources**
a)	Waste collection charges (tipping fees and disposal levies[11])
b)	Revise government procurement policies to support products made in whole or in part from recycled materials
2.	**Information, Analysis, Planning, and Capacity Building**
a)	Establishing baselines for waste diversion rates, and keeping accurate database information on regional and sectoral diversion rates, waste composition, and change over time (e.g. by requiring producers[12] to report on waste diversion and disposal).
b)	Awareness and education programs to increase communication between landlords, tenants, and ICI waste management firms[13]
c)	Sharing of information about waste products that might be of use to others (e.g. an online portal to facilitate the matching of diverted resources with consumers)
d)	Require inclusion of environmental metrics on product labelling (i.e. Labelling regarding use of resources, GHG emissions, and production of waste from packaging).
3.	**Codes & Standards**
a)	Increase breadth of products covered by extended producer responsibility programs
b)	Standards for landfills
c)	Material bans
d)	Expand the list of materials diverted from landfill (e.g. wood and textiles)
e)	Increase City organics collection from MURBs, ABCD's and schools
f)	Expand organics collection to the wider ICI sector
g)	Standards for waste diversion infrastructure (e.g. building code requiring green bin chutes in MURBs)
4.	**Public Sector Investment Decisions**
a)	Energy from waste facilities (e.g. use of green bin biogas)
b)	Increase the capacity of green bin organics processing facilities

Low-Carbon Urban Development	
1.	**Improving the business case for location-efficient development and settlement[14]**
a)	Refine property taxes and development charges to discourage urban sprawl and reflect the true cost of servicing development in already-developed vs. undeveloped locations (e.g. property tax rebates for purchasing a house within a given proximity to work).
b)	Make Metrolinx transit funding contingent on pre-zoning areas around mobility hubs and transit corridors to require compact, transit-supportive densities.

c)	Make use of density bonuses for developers
2.	**Information, Analysis, Planning, and Capacity Building**
a)	Adopt urban planning guidelines that support location-efficient development
b)	Embed community energy planning into provincial legislation (as with requirements for municipalities to develop Official Plans), and provide a funding program for community energy planners.
c)	Integrate public transit and land-use planning
d)	Operationalize Toronto's existing Official Plan provisions around mixed-use, rid-rise development, transit, and active transportation
e)	Incorporate guidelines for electric vehicle charging infrastructure into urban planning
f)	Develop an electric mobility planning strategy
g)	Develop an energy storage strategy
h)	Provide a publically accessible online location cost calculator
3.	**Codes, Standards and Regulations**
a)	Pre-zone sections of Toronto's "avenues" for mid-rise mixed-use development
b)	Require that employment zones be served by public transit
c)	Set standards for allocating road space for sidewalks and pedestrian crossings and overpasses, as well as dedicated bike lanes, bus lanes, and high-occupancy vehicles (HOV) lanes
d)	Increase building code requirements related to electric vehicle charging infrastructure.
4.	**Public Sector Investment Decisions**
a)	Invest in low-carbon district energy infrastructure (e.g. sewer waste heat recovery, Deep Lake Water Cooling, distributed energy and energy storage infrastructure)
b)	Invest in maximizing efficiency of water treatment, pumping and distribution systems

3.0 Investigating a Selection of Opportunities

TAF undertook deeper investigation of a selection of the opportunities identified in the literature review and policy scan. The decision of which policy opportunities to investigate first was informed by:

- An interest in examining policies from each of the three major areas that contribute to GHG emissions in Toronto: 1) buildings, 2) transportation, and 3) waste.
- Prioritization of policies that might be implemented in the near term, with a view to helping Toronto reach its 2020 GHG reduction target.
- The judgement of TAF staff based on professional experience and key stakeholder consultation.

Policy opportunities selected for initial investigation are described in Table 4, below. A list of the full profiles can be found in Appendix A.

Table 4: Policy Opportunities Examined

	Opportunity	Description
Buildings	**Building Energy Reporting Requirement**	This policy opportunity concerns requiring property owners in the city of Toronto to report on their buildings' energy use. A building energy reporting requirement (ERR) for Toronto could be modelled on building energy benchmarking and disclosure policies in U.S. jurisdictions.
	Energy Standards for Existing Buildings	This policy opportunity concerns requiring existing buildings to meet specified standards of energy efficiency. Specifically, it investigates the following two opportunities: 1) Implementing energy standards for existing buildings as a subsequent phase of an energy reporting requirement policy (i.e. have poor energy performance reports trigger mandatory energy upgrades to meet specified standards), and 2) Implementing energy standards for existing buildings at time of renovation, triggered by building permit applications (i.e. requiring building owners to undertake appropriate energy upgrades when renovating).
	Energy efficiency standards for commercial boilers	This policy opportunity concerns adopting NRCan's proposed 2015 standards for commercial boilers. This would raise the efficiency of new commercial boilers in Toronto by up to four percentage points, and would reduce GHG emissions associated with natural gas usage.
	Conservation First requirement for natural gas utilities	This policy opportunity concerns getting the new 2015-2020 natural gas DSM framework to enable natural gas utilities to pursue all available cost-effective conservation opportunities. This would increase gas utilities' engagement in conservation activities and reduce consumption of natural gas in Toronto.
	Favourable Tax Treatment for Energy Efficiency Retrofits	This policy opportunity concerns changing the federal tax treatment of energy efficiency retrofits such that building owners would be able to write off expenses related to such retrofits over a period of 2-5 years instead of 25 years. This should increase uptake of such retrofits and decrease GHG emissions from buildings.
Transportation	**Improving Vehicle Emissions Standards**	This policy opportunity concerns participating in Environment Canada's stakeholder consultation associated with the 2018 mid-term evaluation of the GHG emission standards for 2017-2025 model year vehicles. The goal of TAF's participation would be to advocate for maintaining or increasing the stringency of the GHG emission standards that the government of Canada recently adopted for 2022-2025 model year vehicles.
	Increasing funding to expand public transportation	This opportunity concerns the need for increased funding to expand public and active transportation infrastructure and transit service in the greater Toronto and Hamilton area in order to reduce vehicular travel into and within the City of Toronto.
Waste	**Biogas Utilization**	This opportunity concerns making use of the biogas produced in the City of Toronto's organic waste processing facilities rather than flaring the biogas, as is currently done.

	Opportunity	Description
	Expansion of the City's Green Bin Program	The City of Toronto's Green Bin Program collects organic waste (e.g. fruit and vegetables scraps, paper towels, coffee grinds, etc.) and turns it into compost via anaerobic digestion and aerobic composting. Two different green bin expansion opportunities are investigated: 1. Expanding green bin participation to all of the Multi-Unit Residential Buildings (MURBs) that receive City waste collection, and 2. Expanding organics collection to the wider institutional, commercial, and industrial (ICI) sectors (e.g. restaurants, food courts, hospitals, nursing homes, and universities).
Cross-sectoral	**Pricing Carbon through a carbon tax**	This profile examines the opportunity for Ontario to adopt a provincial carbon tax similar to the one adopted in the province of British Columbia, where consumers are charged a tax on fossil fuel purchases (e.g. gasoline, diesel, natural gas, eating oil, propane, etc) equivalent to $30 for every tonne of CO_2eq emissions produced from burning the fuel.
	Pricing Carbon through a carbon cap and trade system	This profile examines the opportunity for Ontario to adopt a provincial carbon cap and trade system similar to the systems adopted in Quebec and California, whereby large emitters are required to limit their GHG emissions to quantities allowed by GHG emission allowances and/or offsets. Three cap and trade scenarios were considered based on the scope of the cap and trade system adopted: 1. System applies only to those electricity generation and industrial facilities expected to be subject to forthcoming federal regulations, 2. System also applies to all large emitters currently required to report annual GHG emissions under Ontario regulation 452/09, and 3. System also applies to transportation and residential heating fuels.

Criteria for Prioritizing Policy Advocacy Opportunities

Policy opportunities selected for investigation were profiled and assessed on each of the criteria listed in the table below. The selection of these criteria was informed by: 1) examining the factors identified in the case studies as having contributed to the success of past policy advocacy projects, 2) examining the relationships between the different policy opportunities identified in the literature review, and 3) by taking into account TAF's aims and capacity with respect to engaging in policy advocacy. These fifteen criteria or 'filters' are grouped according to three assessment categories: Impact, Level of Feasibility/Likelihood of Success, and Fit.

Table 5: Policy Assessment Criteria

Impact	**GHG Impact in Toronto**
	Air Quality Impact
	Enabling other GHG-reduction options
Level of Feasibility / Likelihood of Success	**Implementation in other jurisdictions**
	Amount of research needed or available
	Supported by existing policy framework
	Alignment with existing political priorities and direction
	Instrument for achieving policy change
	Co-benefits and potential for partnerships
	Potential opponents
Fit	**Alignment with TAF's strategic areas of focus**
	Fit with TAF's skills and expertise
	Need for TAF's involvement
	Potential impact on TAF's reputation
	Time-frame for involvement

Filter Analysis Results

Tier 1 Policy Opportunities: Top Priorities

As a result of the filter analysis, the following four policy advocacy opportunities are flagged as top priorities:

1. Carbon Pricing
2. Energy Reporting Requirements for Large Buildings,
3. Increasing Funding for Expanded Public Transportation, and
4. Conservation First for Natural Gas Utilities

These policies had the highest GHG impact scores as well as being deemed relatively feasible and a good fit with TAF's funding niche. For information about our approach to evaluating GHG impacts as low, medium or high, please see Appendix B.

Carbon Pricing

Two different types of carbon pricing policies were considered in this analysis: carbon taxation, and the adoption of a carbon cap and trade system. Both types of carbon pricing policies present the potential for high GHG savings in the City of Toronto, but differ with respect to their alignment with existing policy frameworks and political direction.

Carbon Tax

In analysing the carbon tax policy opportunity, this paper explored the possibility of Ontario adopting a carbon tax similar to the one adopted by the province of British Columbia in 2008. This policy opportunity scored very well in the impact category due to its high potential GHG and air pollutant emissions reduction potentials, as well as its ability –through increasing the cost of energy– to enable currently uneconomic energy conservation projects to become economically viable.

On the down side, of the two different carbon pricing mechanisms examined, carbon taxation is something the Ontario government has stated it will not pursue as a GHG reduction strategy, which presents a significant barrier that would have to be overcome in order to advance this policy.

Carbon Cap and Trade

On the other hand, the Ontario government has seriously considered developing a cap and trade system for GHG emissions in the past (even passing relevant enabling legislation), and has recently expressed renewed interest in exploring market-based GHG emissions reduction mechanisms like the cap and trade system in Quebec. Therefore, it appears that a carbon cap and trade system is currently better-aligned with the existing policy and political landscape than a carbon tax.

However, the GHG impact of a carbon cap and trade system varies dramatically depending on the scope of the system being considered. In the Ontario government's 2013 public consultation discussion paper on developing a GHG reduction program[15], the government indicated that it was considering a GHG emission reduction program only for those large emitters that were expected to soon become subject to anticipated federal regulations targeting fossil fuel-fired electricity generators and large industrial GHG emitters. The government indicated that it might also be amenable to extending a GHG reduction

program to all of the large emitters currently required to report their annual GHG emissions under Ontario Regulation 452/09, but indicated that further extending such a program to the transportation and residential heating sectors was not under consideration.

Quantifying the GHG impact of each of these three carbon cap and trade scenarios showed that applying a carbon cap and trade system only to electricity generation facilities and/or large industrial emitters would result in lower GHG savings compared to a more broadly applied system that included the transportation and residential heating sectors. However, even the more limited cap and trade systems still promise some of the largest GHG reductions of all the policy opportunities examined. Therefore, advocacy for a cap and trade system would be worthwhile even if it only results in one of the more limited cap and trade system scenarios. Nevertheless, the enormous GHG reduction potential represented by the most comprehensive cap and trade system option and the carbon tax option mean that with respect to carbon pricing policy, if a cap and trade system is applied only to large industrial emitters, then Toronto would be better off with a carbon tax.

Energy Reporting Requirement (ERR) for Large Buildings

Implementing an ERR in the City of Toronto would yield high GHG reductions from the built environment, as well as multiple ancillary benefits that could motivate other stakeholders to help drive the policy forward. An ERR would also open the door to subsequent policy opportunities like energy standards for existing buildings and mandatory energy audits and/or efficiency upgrades for poor performers. ERRs are becoming a best practice in North American cities, and TAF's instigation and ongoing support of ERR policy design and implementation is likely to make a real difference in realizing this policy opportunity. Having already instigated City staff to act on Council's direction to design an ERR for the City, TAF should continue to support the City in developing and implementing an ERR – whether through a series of grants, through facilitating consultation with stakeholders and subject-matter experts from other jurisdictions, or through in-kind contributions.

Increasing Funding for Expanded Public Transportation

Addressing the need for increased funding for public transportation is a high impact GHG reduction policy opportunity. In terms of sequencing, expanding public and active transportation infrastructure is also a necessary prerequisite for other policies aimed at encouraging drivers to switch transportation modes – from personal vehicles to public transportation and active transportation. Advocating for increased funding for public transportation is also a good fit for TAF, as it would build on previous work TAF has engaged in as part of the Move the GTHA coalition. Part of the reason this policy opportunity scored well under the feasibility filter is that there seems to be political will to prioritize public transportation at both the City and provincial levels at the moment. In the spring of 2014, Ontario's Premier announced $15 billion in dedicated transportation funding over the next ten years. The new Mayor of Toronto also prioritized public transportation in his 2014 election campaign. This presents TAF and the Move the GTHA coalition with an opportunity to build on the momentum created by this recent attention to public transportation and work to direct government efforts at this pivotal juncture towards pursuing high-potential new revenue tools to properly fund the implementation of Metrolinx's The Big Move regional transportation strategy, rather than pursuing low-potential revenue tools or focusing on implementing less comprehensive transportation plans (e.g. from election campaign platforms).

Conservation First for Natural Gas

Similarly, requiring gas utilities to pursue all cost-effective conservation would result in high GHG savings, as well as ancillary benefits. Like ERR, the conservation first opportunity for natural gas aligns with existing policy direction from government (i.e. the Minister of Energy), but would benefit from TAF playing an instigating and supporting role to ensure that such policy direction is followed. For this reason, TAF should take advantage of the time-limited opportunity to influence the OEB's development of a new DSM framework for natural gas utilities for the 2015-2020 period. TAF could provide research into how best to ensure that the new DSM framework reflects the Minister of Energy's direction to enable all cost-effective conservation, and could engage and mobilize the wider stakeholder community to participate in the OEB's consultation process around the DSM framework. TAF should also contribute to the mid-term review of the 2015-2020 natural gas conservation framework anticipated in 2017.

Tier 2 Policy Opportunities: Also Worthy of Attention

Two additional policies also scored relatively well in comparison to the other policy opportunities:

1. Improved Energy Efficiency Standards for Commercial Boilers
2. Favourable Tax Treatment for Energy Efficiency Retrofits

These two policy opportunities present some challenges in terms of feasibility, but they score well enough in the impact and fit categories that they are worth looking into further.

Improved Energy Efficiency Standards for Commercial Boilers

Implementing NRCan's proposed 2015 commercial boiler standards has the potential to significantly reduce GHG emissions in Toronto, providing a medium impact opportunity. The opportunity also aligns well with TAF's focus on GHG reduction from buildings through energy efficiency and TAF's experience replacing commercial boilers through the Towerwise program. However, the process at the federal level for adopting NRCan's proposed boiler standards has stalled, and it is unknown when forward progress will resume. Ontario currently has boiler standards in place, but while these align with standards that have been adopted in the U.S., they are not as stringent as NRCan's propose d standards. The opportunity for TAF lies in convincing the Ontario Ministry of Energy to review and update provincial commercial boiler standards to the level of efficiency called for in NRCan's proposal, and to contribute feedback to the public consultation when a new boiler standard is published on Ontario's Environmental Registry.

Favourable Tax Treatment for Energy Efficiency Retrofits

The opportunity to achieve faster tax write-offs for energy efficiency projects is another medium impact opportunity that falls within TAF's areas of focus on reducing GHGs from buildings and improving the business case for energy efficiency retrofits. It also aligns with TAF's existing skills and expertise in energy efficiency retrofits and finance. However, efforts to achieve this policy change through the federal budget cycle process are unlikely to be successful under the current federal government because energy efficiency is not one of the current government's priorities. In this context, TAF might take on

this policy advocacy opportunity as a mid-term or long-term project. TAF could invest in building the case for the desired tax policy change in anticipation of a future time when a different government or different government priorities will make pursuing this policy opportunity viable (at which point, TAF would already have prepared the evidence necessary to support the change – e.g. through targeted research).

Tier 3: Lower feasibility policies worth considering as longer term advocacy projects

The next two policy opportunities are presented as options for longer-term engagement that have medium impact potential, but whose feasibility is limited by particular barriers:

1. Improved Vehicle Emission Standards, and
2. Expanding Green Bin collection to the ICI sector

Improved Vehicle Emission Standards

This policy opportunity has a medium impact rating for GHG reduction, but presents a challenge in terms of feasibility. The federal government recently amended Canada's GHG emission regulations for passenger vehicles and light trucks with model years 2017-2025, in order to improve them by 5% per year over that period, in alignment with emissions regulations adopted by the U.S. government. However, the U.S. standards for 2022-2025 model year vehicles are scheduled to be reassessed and adjusted if necessary in response to a U.S. EPA-led mid-term evaluation (to be completed by April 2018). The Canadian government has a policy of aligning Canadian vehicle emission standards with those in the Unites States, and Environment Canada will collaborate with the EPA on technical studies and research to inform this mid-term evaluation. Environment Canada will also consult with Canadian stakeholders during the evaluation process, and will review any new U.S. standards that emerge for possible adoption in Canada.

The policy opportunity for TAF concerns participating or supporting participation in the public consultation associated with the mid-term evaluation to ensure that Canada's 2022-2025 standards are actually implemented as planned and not adjusted downwards, or to advocate for an increase in the stringency of the standards if adjustments are warranted.

This opportunity is challenging because the lever that needs to move in order to improve vehicle emissions standards is the U.S. EPA, and since TAF's influence on the policy decision-making process would be limited to engaging with Environment Canada, there is a real possibility that any participation by TAF would have little influence on the outcome of the mid-term evaluation process. However, given the sizable GHG reduction at stake in the reassessment of the 2022-2025 emission standards[16], it may be worthwhile for TAF to investigate this opportunity further and to partner with the City of Toronto and a coalition of other stakeholders to encourage the federal government to pursue continued improvement of vehicle emission standards in its alignment with U.S. standards. (Advocating for Canada or Ontario to adopt more stringent vehicle emissions standards than the U.S. is not recommended due to the standardization of vehicle standards across the U.S. and Canada).

Expanding Green Bin collection to the ICI sector

Another medium impact policy opportunity that presents challenges in terms of feasibility is expanding collection of organics to the wider Institutional, Commercial, & Industrial (ICI) sector. Several challenges would need to be addressed in pursuing this policy opportunity, including the lack of good data on organic waste production from the ICI sector, the reality that the majority of waste from Toronto's ICI sector is collected privately rather than by the City, and the current lack of legal requirement to separate organics in the ICI sector. Making organics separation mandatory would require a change in provincial legislation, and although the province's Waste Reduction Strategy does propose that the Ministry should develop a strategy to increase organics diversion generally, the government did not include a requirement to separate ICI sector organics in the proposed Waste Reduction Act it introduced during the last session of parliament. In addition, waste diversion and organics processing falls outside of TAF's areas of experience and expertise, and primary focus on the built environment. For these reasons, this policy opportunity did not score very highly under the feasibility and fit filters. If TAF does decide to engage in advocacy in this area, a good starting place would be reporting standards and requirements for the waste collected from the ICI sector. Good data on the amount and composition of ICI waste is currently lacking, and would be helpful in building the case for requiring separation of ICI organics. In addition, since TAF lacks internal expertise in waste management, this opportunity might best be pursued by supporting the efforts of a waste -focused organization through TAF's grants program.

Tier 4 Policy Opportunities: Not recommended for pursuit by TAF at this time

Policy opportunities that did not perform particularly well under the filters were:

1. Energy Standards for Existing Buildings (Building Permit trigger)
2. Energy Standards for Existing Buildings (Poor ERR Report trigger)
3. Utilization of Biogas
4. City Green Bin expansion – to all MURBs

These policy opportunities performed poorly in at least two of the three filter categories (Impact, Feasibility, and Fit), and have relatively low estimated GHG impact potential, where quantified. For the most part, it is not recommended that TAF pursue these advocacy opportunities, although in one particular case (Energy Standards for Existing Buildings – Poor ERR Report trigger), further investigation may be merited.

Energy Standards for Existing Buildings (Building Permit Trigger)

This policy opportunity aligns strongly with TAF's areas of focus and expertise. In addition, City Council has already adopted a resolution to apply aspects of the Toronto Green Standard to existing buildings. However, doing so would likely depend on the City of Toronto gaining new powers through changes to the City of Toronto Act. If TAF does decide to advocate for energy efficiency standards for existing buildings that would be triggered by building permit applications, a first step might be to encourage the City of Toronto to run a pilot project to provide building permit applicants with some form of incentive to voluntarily include energy efficiency upgrades in their renovation plans (e.g. a free energy audit).

However, running a successful pilot project can require a great deal of time and effort, and the potential for GHG impact is rated as low. If Toronto does proceed with Energy Reporting Requirements (ERR) for large buildings, then requiring existing buildings with poor ERR reports to comply with energy stan dards might encompass more buildings and require less effort per building than requiring compliance at time of renovation.

Energy Standards for Existing Buildings (Triggered by poor ERR report)

This policy opportunity aligns strongly with TAF's areas of focus and expertise. However, whether it is viable depends on whether an ERR policy is implemented for the City of Toronto, and also on the City of Toronto gaining the power to impose energy standards on existing buildings – something that would likely require changes to the City of Toronto Act. Furthermore, the potential GHG impact of imposing energy standards on buildings with poor ERR reports would depend on the number of buildings that submit poor ERR reports and the actual level of energy performance of those buildings. Nevertheless, the GHG reduction impact from this policy opportunity is expected to be larger than the impact of imposing energy efficiency standards on existing buildings at time of renovation, triggered by building permit applications. This is because the number of buildings with poor energy performance is likely to be much larger in any given year than the number of buildings with poor energy performance that apply for a renovation-related building permit. For this reason, if the City moves forward with energy reporting requirements (ERR) for large buildings, it is recommended that TAF invest in quantifying the GHG impact of this opportunity, through modelling or through using the data about the level of energy performance of Toronto's existing building stock from the first ERR reporting period.

Utilization of Biogas

The opportunity to use the biogas produced in the City of Toronto's green bin processing facilities scored relatively poorly under the filters because doing so would only likely yield under 200,000 tCO_2eq in GHG reduction impact, which is small compared to the Tier 2 and Tier 1 policy opportunities. It also had poor alignment with TAF's experience, expertise, and strategic areas of focus. In addition, the City is already in the process of assessing biogas utilization options, and the project is likely to go forward with or without TAF's involvement (though TAF's involvement might contribute to hastening the achievement of biogas utilization). If TAF does engage in advocacy around this policy opportunity, it might consider supporting the City's decision-making process by funding research into the GHG impacts of the different biogas utilization options.

City Green Bin Expansion – to all MURBs

Expanding City green bin collection to all City waste collection customers in multi-unit residential buildings (MURBs) was the poorest performing policy opportunity examined using the filers. The GHG impact of the expansion was low, and the roll-out is already underway at the City, with no clear role for TAF in hastening the roll-out.

4.0 Conclusions and Recommendations

Top Priorities: Immediate

The following four policies are recommended to TAF as immediate opportunities for advocacy due to their high GHG savings potential, strong alignment with TAF's expertise and strategic focus, and alignment with recent government direction or time-limited opportunities to influence the direction of policy for years to come.

Carbon Pricing

Both carbon taxation and carbon cap and trade systems promise significant GHG savings, but a cap and trade system seems more in line Ontario's existing policy framework and the government's current policy direction. However, the magnitude of the GHG reduction likely to be achieved through a carbon cap and trade system differs dramatically depending on how comprehensively the policy is applied across all sectors. The current political climate and policy framework provide an opportunity to influence the direction of carbon pricing policy for years to come. In order to support and encourage decision-makers to pursue the most effective carbon pricing policy possible, TAF might commission research into the likely economic impacts of adopting a carbon tax and a carbon cap and trade system in Ontario. TAF might also convene or fund an organization to bring together different stakeholders in order to collectively advocate for the adoption of effective carbon pricing policies.

Energy Reporting Requirements (ERR) for Large Buildings

TAF has already supported the development of an effective ERR policy by the City of Toronto through creating a background paper and hosting a Dan Leckie Forum on the topic. TAF should continue to support the advancement and implementation of this policy, whether through educating councillors on the manifold benefits of the policy, supporting the City's Energy and Environment Division with grants to support effective policy implementation (e.g. bringing in speakers from jurisdictions like New York or San Francisco to share best practices), or funding research and analysis of the first year of ERR building data.

Increasing Funding for Expanding Public Transportation

Increasing funding for public transportation to a level that would enable the full implementation of Metrolinx's The Big Move regional transportation strategy has the potential to yield significant GHG savings and would also enable other policies aimed at getting drivers to switch to lower-carbon modes of transportation (i.e. public transit and active transportation). At this critical juncture when political attention to transit has created momentum around funding for public transportation, TAF has the opportunity to encourage decisions about transit funding in the direction of effective new revenue tools and fidelity to Metrolinx's comprehensive regional transportation plan. This type of advocacy seems best accomplished through continuing TAF's involvement with the Move the GTHA coalition.

Conservation First for Natural Gas Utilities

The OEB's development of a new Demand Side Management (DSM) framework for natural gas utilities for the 2015-2020 period presented TAF with a time-limited opportunity to engage in activities to

support the development of an effective new gas DSM framework. The 2017/2018 mid-term review of the new gas DSM framework presents TAF with an opportunity to build on its 2014 gas DSM advocacy and to continue to support the development and implementation of a DSM framework that enables utilities to pursue all cost-effective conservation opportunities.

Other Potentially Impactful Policies

The following policies are recommended as advocacy opportunities that may not be appropriate to pursue immediately, but will likely merit consideration in the not-to-distant future.

Improved Energy Efficiency Standards for Commercial Boilers

The delay of proposed federal energy efficiency standards for commercial boilers presents TAF with an opportunity to advocate for the Ontario Ministry of Energy to review and update *provincial* commercial boiler standards to the level of efficiency proposed by NRCan in 2011.

Favourable Tax Treatment for Energy Efficiency Retrofits

Although faster write-offs for energy efficiency retrofits through a change to federal tax policy are not likely to be achieved in the near term (due to misalignment with federal government priorities), this policy opportunity's relatively large GHG reduction potential and potential for synergies with utility-run conservation programs merit attention. TAF might invest in some targeted research to support the case for this policy change in order to be prepared for quick mobilization if and when government priorities change to allow this change in tax policy to be achieved.

Energy Standards for Existing Buildings (Poor ERR Report Trigger)

Adopting energy efficiency standards for existing buildings (ESEB) could be an effective way to raise the efficiency of the worst performing buildings in Toronto's building stock. However, the appropriate level at which to set such a standard should be informed by the actual level of performance of Toronto's existing building stock – for which data is currently lacking. Implementing an Energy Reporting Requirement (ERR) for large buildings in Toronto would provide the data needed to design an appropriate energy standard for existing buildings, and to accurately assess the GHG potential of adopting such a standard for buildings with poor ERR reports. An analysis of the GHG reduction potential of an ESEB for the lowest performing buildings could then provide support for advocacy directed at gaining the City of Toronto the power to impose energy standards on existing buildings – something that will likely require changes to provincial legislation.

Long Term Opportunities

Location-Efficient Development

Location-Efficient Development (LED) has significant potential to reduce GHG emissions in Toronto over the long-term. However, changes in Toronto's urban form and density are likely to occur gradually over time at the pace of redevelopment, so policies that facilitate location-efficient development are not likely to yield major savings over the 2015-2018 period. Nevertheless, GHG emissions from these changes are likely to be large over a long period of time. Therefore, TAF might consider engaging in or

supporting some work on LED policy advocacy during the 2015-2018 period with a view to these policies contributing to meeting Toronto's long term 2050 target. A prudent place to start would be to commission research into determining what selection of location-efficient development-oriented policies are most worth advancing[17].

Improved Vehicle Emission Standards

The review of American and Canadian vehicle GHG emission standards in 2018 presents an opportunity to influence the stringency of emissions standards for 2022-2025 model year vehicles. Improvement in vehicle emission standards is a medium impact opportunity for GHG reduction and has the potential to yield sizable air pollution reductions. However, the harmonization of U.S. and Canadian vehicle GHG emission standards presents a barrier to Canada adopting standards higher than those in the U.S. If TAF is interested in engaging with this policy opportunity, TAF should look more closely into the mid-term evaluation consultation process in order to assess whether TAF's participation is truly likely to make a difference. If yes, TAF might consider participating or funding others' participation in the stakeholder consultations associated both with the mid-term review and the development of emissions standards for vehicles with model years beyond 2025.

Expanding Green Bin collection to the ICI sector

Expanding Green Bin collection to the Institutional, Commercial, & Industrial (ICI) sector offers a medium GHG impact but presents challenges in terms of feasibility. If TAF decides to engage in advocacy in this area, a good starting place would be reporting standards and requirements for the waste collected from the ICI sector. Good data on the amount and composition of ICI waste collected is currently lacking, and would be helpful in building the case for requiring separation of ICI organics. Furthermore, since TAF lacks internal expertise in waste management, this opportunity might best be pursued by supporting the efforts of a waste-focused organization through TAF's grants program.

Appendix A: Policy Opportunity Profiles

Full profiles of the policy options reviewed for this paper (listed below) are available on request.

- Carbon Pricing – Carbon Cap & Trade
- Carbon Pricing – Carbon Tax
- Conservation First for Natural Gas Utilities
- Energy Reporting Requirements for Large Buildings
- Energy Standards for Existing Buildings
- Expanding Provincial Transportation Funding
- Favourable Tax Treatment for Energy Efficiency Retrofits
- Green Bin expansion – to all MURBs
- Green Bin expansion – to the wider ICI sector
- Improved Energy Efficiency Standards for Commercial Boilers
- Improved Vehicle Emission Standards
- Utilization of Biogas

Appendix B - Relative Greenhouse Gas Reduction Opportunity

Where possible, GHG Impact[18] is estimated for the City of Toronto in terms of Carbon Net Present Value (C-NPV). C-NPV represents the cumulative GHG emissions savings that can be expected over the next 20 years as a present amount (in units of tonnes of carbon dioxide-equivalent emissions, or tCO_2eq). A discount rate of 5% is applied to future GHG savings in order to represent the higher value we place on present and near-term emissions reductions, as opposed to emissions reductions that occur in the distant future.

In terms of scoring for this filter, GHG impact is scored relative to the other options being considered. At the time of writing this paper, the highest scoring policy option promised savings of approximately 34.2 million tCO_2eq, and the lowest-scoring policy option promised savings of approximately 39,000 tCO_2eq. (See table below). Greenhouse gas estimates used for this paper are preliminary and are being used only to assess the relative impacts of various policy options. For this reason, we have simply assigned "high, medium or low" impact scores for individual policy options.
Please contact us if you are interested in reviewing a full set of criteria used to create TAF's priority list, as well as the methodology used to analyze them.

Table 6: GHG Impact of Policy Opportunities

Score	Policy Opportunities and C-NPV Impact
High	**More than 2.5 million tCO_2eq** • Carbon Cap & Trade *Scenario 3* (34.2 million tCO_2eq) • Carbon Tax (33.9 million tCO_2eq) • *Increasing Public Transportation Funding (Metrolinx study: 7.23 million tCO_2eq)** • Building Energy Reporting Requirement (6 million tCO_2eq) • Carbon Cap & Trade *Scenario 2* (5.0 million tCO_2eq) • Carbon Cap & Trade *Scenario 1* (3.9 million tCO_2eq) • Conservation first for natural gas (3.6 million tCO_2eq)
Medium	**750,000 -2.5 million tCO_2eq** • *Increasing Public Transportation Funding (Pembina study: 2.16 million tCO_2eq)** • Improved Vehicle Fuel Efficiency Standards (1.47 million tCO_2eq) • Expansion of Toronto's Green Bin Program to the wider ICI sector (1.1 million tCO_2eq) • Energy efficiency standards for commercial boilers (935,000 tCO_2eq) • Favourable Tax Treatment for Energy Efficiency Retrofits (914,000 tCO_2eq)
Low	**Less than 750,000 tCO_2eq** • Utilization of the Biogas Produced at the City's Green Bin processing facilities (178,000 tCO_2eq) • *Energy efficiency standards for existing buildings – triggered by poor ERR report* (>164,000 tCO2eq)* • Energy efficiency standards for existing buildings – triggered by building permit applications (164,000 tCO_2eq) • *LED via Wood frame construction (<120,000 tCO_2eq)** • Expanding Green Bin collection to remaining MURBs (39,000 tCO_2eq)

*Estimates of GHG emission savings for italicized policy opportunities are subject to uncertainty for various reasons[19].

Air Quality Impact

Air quality is also part of TAF's mandate, and has very real health consequences for Torontonians. For example, a recent report by Toronto's Medical Officer of Health found that air pollution is responsible for 3550 hospitalizations and 1300 premature deaths in Toronto each year. In this report, air quality impact was estimated where possible by applying emissions factors[20] for NO_x, VOC, TPM, CO, and SO_x to the average annual fuel use numbers used in the calculation of GHG Impact in Toronto. Please contact us if you are interested in the air quality analyses.

References

[1] Salter, L. (2009). *Course Outline for ENVS 6180: Applied Research Methods – Policy and Regulatory Research*. Toronto: York University

[2] City of Toronto (2013). Summary of Toronto's 2011 GHG and Air Quality Pollutant Emissions Inventory, p. 5; City of Toronto (2014). Toronto's 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory, p. 7

[3] City of Toronto (2013). Summary of Toronto's 2011 GHG and Air Quality Pollutant Emissions Inventory, p. 5; City of Toronto (2014). Toronto's 2012 Greenhouse Gas and Air Quality Pollutant Emissions Inventory, p. 7

[4] As opposed to sources of Toronto air pollution outside Toronto, like trans-boundary pollution from the United States

[5] Toronto Medical Officer of Health, 2014, Path to Cleaner Air: Toronto Air Pollution Burden of Illness Update – Staff Report, http://www.toronto.ca/legdocs/mmis/2014/hl/bgrd/backgroundfile-68506.pdf

[6] Ivan Barkhorn, Nathan Huttner & Jason Blau, 2013, "Assessing Advocacy," *Stanford Social Innovation Review*, http://www.ssireview.org/articles/entry/assessing_advocacy

[7] This paper focuses on policies to advance and encourage energy efficiency projects rather policies to advance and encourage renewable energy projects (e.g. behind-the-meter generation, public and private generation and storage projects, or for moving from fossil fuel use to electrification).

[8] United Kingdom (n.d.). *Policy: Increasing the use of low-carbon technologies – Renewable Heat Incentive (RHI)*, https://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/renewable-heat-incentive-rhi

[9] For more information about strategies for reducing GHGs from freight, see the Pembina Institute's 2014 paper *Greening the Goods: Opportunities for low-carbon goods movement in Toronto*, http://www.pembina.org/reports/greening-the-goods.pdf

[10] Toronto Centre for Active Transportation (2014). *Building a Toronto that Moves*, http://www.tcat.ca/wp-content/uploads/2014/09/BuildingATorontoThatMoves_2.pdf

[11] (For more information, see levy information on pp.29-30 of Ontario Ministry of Environment, 2009, *From Waste to Worth: The Role of Waste Diversion in the Green Economy, Minister's Report on the Waste Diversion Act 2002 Review*, http://c.ymcdn.com/sites/www.productstewardship.us/resource/resmgr/imported/Ontario-ministers-report-Oct-2009.pdf)

[12] A 'producer' is a manufacturer, brand owner, or first importer of a product or packaging made with a designated material (Ontario Ministry of the Environment, 2009, *From Waste to Worth: The Role of Waste Diversion in the Green Economy: Minister's Report on the Waste Diversion Act 2002 Review*, p. 16.)

[13] TRCA & Greening Greater Toronto (2011). *The Living City Report Card 2011: An assessment of the environmental health of the Greater Toronto Area*, p. 40, http://www.thelivingcity.org/lcrc/LivingCityReportCard_web_r1.pdf

[14] For more information about encouraging location-efficient development in Ontario, see the Pembina Institute's 2012 report *Live Where You Go*, http://www.pembina.org/reports/live-where-you-go.pdf

[15] Ontario Ministry of the Environment (2013). *GHG reductions in Ontario: A Discussion Paper*,, http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2013/011-7940.pdf

[16] Implementing the emission standard improvements currently planned for the 2022-2025 period would reduce GHG emissions from vehicles by about 1.48 million tCO_2eq relative to maintaining the 2021 standards throughout the 2022-2025 period, and improving 2022-2025 emission standards would yield even greater reductions (which are not quantified in this report).

[17] In this vein, in 2014, TAF approved a grant to the Pembina Institute to develop a strategy to promote location-efficient development (LED) in the Grater Toronto Area, setting out the multiple benefits of LED and outlining the most effective policies for realizing LED.

[18] At this time, GHG emission estimates include only scope 1 and scope 2 emissions (not scope 3 emissions). Scope 1 emissions refer to CO_2eq emissions from the combustion of energy sources within Toronto. Scope 2 emissions refer to CO_2eq emissions associated with Toronto's consumption of purchased electricity, irrespective of whether this electricity is generated inside or outside of its geographic boundaries. CO_2eq emissions are therefore accounted for at the point of energy use. This avoids double counting of emissions, and savings achieved on them.

Scope 3 emissions refer to all other indirect emissions not covered by scope 2. Examples of scope 3 emissions include those associated with Toronto's consumption of food and consumer goods, and travel to and from the city.

[19] Quantification of the GHG impact of the opportunity to increase funding for public transportation produced a GHG impact range of 2.16-7.23 million tCO_2eq because two different reports were used as the basis for the quantification The 2.17 million tCO_2eq is derived from figures in Pembina, 2010, *Bridging the Gulf: Changing the way Ontarians commute will cut oil demand, protect the environment and save money*, https://www.pembina.org/reports/bridging-the-gulf-report.pdf, and the 7.23 million tCO_2eq figure is derived from figures in Metrolinx, 2013, *The Big Move Baseline Monitoring Report*, http://www.metrolinx.com/en/regionalplanning/bigmove/The_Big_Move_Baseline_Monitoring_Full_Report_EN.pdf).

In order to accurately estimate the GHG impact of imposing an energy standard for existing buildings on buildings that have poor ERR reports, one would first need to estimate the number of buildings with poor reports, and that information is not available. However, the number of buildings submitting poor ERR reports is likely to be larger than the number of buildings submitting applications for renovation-related building permits in any given year, so Energy Standards triggered by poor ERR reports will likely have a larger GHG impact than energy standards triggered by building permit applications.

[20] Emissions factors are taken from Table 4 in IFC International's 2007 GHG inventory for the City of Toronto: *Greenhouse Gases and Air Pollutants in the City of Toronto: Toward a Harmonized Strategy for Reducing Emissions*, p. 10, http://www1.toronto.ca/city_of_toronto/toronto_atmospheric_fund/files/pdf/ghginventory_jun07.pdf