



STAFF REPORT ACTION REQUIRED

The Power to Live Green: Toronto's Sustainable Energy Strategy

Date:	October 19, 2009
To:	Executive Committee
From:	Richard Butts, Deputy City Manager Cam Weldon, Deputy City Manager and Chief Financial Officer
Wards:	All
Reference Number:	P:\2009\Cluster B\TEO\EX09011

SUMMARY

In 2007, City Council established an international benchmark with its adoption of "Change is in the Air," Toronto's Climate Change Action Plan, complete with progressive targets for greenhouse gas emission reductions and improved air quality. To achieve those targets, a comprehensive energy strategy is required for the City of Toronto and the Toronto urban area, founded on conservation, renewable energy, and "smart" energy distribution. This report and the strategy attached as Attachment A, entitled "The Power to Live Green: Toronto's Sustainable Energy Strategy," together address that need through a four-track process of:

- (i) meeting the energy requirements of our businesses and homes;
- (ii) reducing dependence on fossil fuels;
- (iii) investing in green technology, supporting the creation of green jobs and global marketing of sustainable energy goods and services, and
- (iv) partnering with industry, businesses, institutions, non-profits, other levels of government, utilities, and residents.

RECOMMENDATIONS

Richard Butts, Deputy City Manager and Cam Weldon, Deputy City Manager and Chief Financial Officer recommend that:

RE: VISION, PRINCIPLES, AND TARGETS FOR THE POWER TO LIVE GREEN

1. Building upon its adopted goals for reducing greenhouse and smog causing emissions, City Council adopt the following as its vision, principles and targets for Toronto's sustainable energy future:

a. Vision Statement

In the year 2050 Toronto is a low carbon city, having achieved the greenhouse gas emission reduction targets adopted unanimously by City Council in 2007. At the same time the city has a clean, reliable and affordable energy supply that meets our environmental, economic, social and consumer needs in 2050 and beyond.

b. Principles

Implementation of the Power to Live Green: Toronto's Sustainable Energy Strategy will be built upon the following key principles:

- Energy conservation and efficiency – the cleanest form of energy is the one that was never produced and our first priority;
- Renewable energy – replacing polluting fossil fuel sources with sufficient clean renewable energy sources; and
- Smart energy distribution – will improve reliability, provide security of supply, reduce waste, and promote energy efficiency and conservation;

c. Cumulative Targets

(Based on 2007 levels of 5,000 Megawatts (MW) of electricity consumption and 4,200 Million cubic metres (Mm³) of natural gas consumption.)

SOURCE	By 2012	By 2020	By 2050
Conservation – Electricity	Reduce by 200 MW	Reduce by 550 MW	Reduce by 1050 MW
Conservation – Natural Gas Heat	Reduce by 240 Mm ³	Reduce by 730 Mm ³	Reduce by 1560 Mm ³
Renewable Electricity Generation	Increase by 120 MW	Increase by 550 MW	Increase by 1000 MW
Renewable Thermal Energy	Displace 20 Mm ³ of Natural Gas	Displace 90 Mm ³ of Natural Gas	Displace 200 Mm ³ of Natural Gas

Note: Conservation targets are in addition to existing Ontario Power Authority Toronto directive for 330 MW reduction.

RE: MAKING IT POSSIBLE TO LIVE GREEN

2. City Council work with all appropriate stakeholders to make it possible for residents and businesses to take action on climate change and energy and water conservation and efficiency, and renewable energy programs by facilitating a one-window approach through the following directions:
 - a. Direct the Deputy City Manager, Cluster B, to facilitate before the end of 2010 the formation of an active partnership, to be called the **‘Live Green Toronto Energy and Water Efficiency Initiative’**, among the City of Toronto and its Agencies, Boards, Commissions, Corporations, and Divisions, such as Toronto Water and Toronto Hydro, and other appropriate stakeholders, such as Enbridge and Enwave. This initiative will see the parties involved working collaboratively in the design, delivery and co-ordination of energy efficiency and water conservation programs and renewable energy programs for all market sectors in Toronto and would include:
 - i. coordination of programs, policies and resources;
 - ii. building upon existing community support programs, door-to-door and marketing efforts and other outreach activities to more fully engage residents and businesses in taking action;
 - iii. development of new programs and initiatives to address emerging issues associated with supporting residents and businesses in taking action;
 - iv. investigation and development of new financing tools and options to support residents and businesses in taking action;
 - v. coordination of initiatives that involve installation of simple energy efficiency, water conservation, and climate change adaptation measures;
 - vi. establishing of reporting guidelines to track performance against the targets of the Sustainable Energy Strategy and the Climate Change Action Plan; and
 - vii. providing a one-stop resource to access information and resources on, but not limited to:
 - Grants, finance options and financial incentives;
 - Options for completing energy and water consumption audits;
 - Assistance in the preparation of conservation and renewable energy plans;

- Identification of and advice on obtaining required permits;
 - Advice on how to find qualified contractors and installers; and
 - Educational programs.
- b. Direct the Deputy City Manager, Cluster B and the Deputy City Manager and Chief Financial Officer, to work with all appropriate City Agencies, Boards, Commissions, Corporations and Divisions to ensure:
- i. Conformity of all existing policies, programs and initiatives with the vision, principles, targets, and recommendations from this staff report and the Power to Live Green: Toronto's Sustainable Energy Strategy;
 - ii. Integration of the goal and objectives of the Power to Live Green: Toronto's Sustainable Energy Strategy into planning efforts; and
 - iii. Integration of the goal and objectives of the Power to Live Green: Toronto's Sustainable Energy Strategy in the design of sustainable community planning frameworks used for community based neighbourhood redevelopment planning;

RE: IMPROVING ENERGY EFFICIENCY IN EXISTING BUILDINGS

3. City Council recognize that to achieve the 80% greenhouse gas reduction target by 2050, the majority of existing homes, businesses and industries will need to become much more energy efficient - net zero in terms of their emissions and, therefore, City Council:
- a. Direct the Deputy City Manager, Cluster B, to develop by 2011, a phased-in implementation plan for a by-law(s) that will eventually establish an energy efficiency standard for all buildings, both for new construction and existing retrofits that will assist in the achievement of the City of Toronto's stated greenhouse gas emission reduction targets and that this plan address the following:
 - i. Strategy for phase-in of the by-law(s);
 - ii. Proposes energy efficiency standards for both new and existing buildings;
 - iii. Thresholds that trigger application of the by-law(s);

- iv. Economic impact of the plan and a stakeholder engagement process;
 - v. Financial and other supports that will be provided to property owners to bring their buildings into compliance with the by-law(s); and
 - vi. Timelines for the phased-in implementation of the by-law(s);
- b. Direct the Deputy City Manager, Cluster B, to identify all opportunities where the City could encourage residents and businesses to consider implementing energy efficiency retrofits (e.g. Committee of Adjustment; building permit applications; licensing applications) and create the necessary operational changes to take advantage of those opportunities;
 - c. Direct the Chief Corporate Officer to build upon existing programs and successes and prepare in 2010 a plan to further enhance the building efficiency and integration of renewable energy in all City-owned facilities;
 - d. Direct the Director of the Toronto Environment Office to coordinate advocacy efforts to federal and provincial regulators and the banking industry to allow for and offer, respectively, more competitive lending practices for energy retrofits and renewable energy projects;
 - e. Direct the Chief Planner to consider during the 2011 review of the City's Official Plan changes, including implementation plans, strategies and guidelines, that will help advance the objectives of the Climate Change Action Plan and the Sustainable Energy Strategy; and
 - f. Direct the Deputy City Manager, Cluster B, to undertake the actions necessary in 2010 for the City to evaluate and implement a building energy benchmarking and energy use labelling program, initially for institutional buildings and subsequently for commercial/multi-unit and residential buildings;

RE: GREENING THE GRID FOR TORONTO TO BECOME THE RENEWABLE ENERGY CAPITAL OF CANADA

- 4. City Council work with key stakeholders and the community to aggressively “green the grid” by embracing new renewable energy opportunities under the Green Energy and Green Economy Act and its related Feed-in-Tariff provisions and that City Council;
 - a. Direct the Deputy City Manager, Cluster B, to ensure that all City, Agency, Board, Commissions and Corporation by-laws, permit processes,

policies and operational procedures are designed to accommodate and streamline the installation of renewable energy systems on public and private property;

- b. Direct the Chief Planner to consider during the 2011 review of the City's Official Plan changes, including implementation plans, strategies and guidelines, that will help advance the renewable energy goals and targets set by Climate Change Action Plan and the Sustainable Energy Strategy;
- c. Direct the Deputy City Manager and Chief Financial Officer to coordinate the actions necessary, including accessing the Feed-in Tariff, that will see by 2020 the installation of renewable energy systems, where feasible, on all City owned buildings and properties; and
- d. Direct the General Managers of Solid Waste Management and Toronto Water, to implement all viable opportunities for utilizing the bio-gas generated from the processing of waste at landfills, source separated organic facilities and waste water treatment facilities;

RE: INVESTING IN DISTRIBUTED ENERGY INFRASTRUCTURE

- 5. City Council facilitate the development of district/distributed energy system in existing and new neighbourhoods to reduce greenhouse gas emissions and enhance energy security of supply and that City Council:
 - a. Direct the Deputy City Manager, Cluster B, to work with key stakeholders to establish in 2010 the system potential, identify barriers and potential mechanisms to facilitate the installation of district/distributed energy infrastructure including:
 - i. Identifying the geographic areas with the greatest potential for district/distributed energy installations, based on energy utilization mapping and other research, experiences of existing programs, such as the Mayor's Tower Renewal, and assessments of neighbourhood interest;
 - ii. Identifying and assessing appropriate energy sources for the district/distributed energy systems that will help achieve the greenhouse gas and smog causing emission reduction targets set in the Climate Change Action Plan;
 - iii. Coordinating the installation of the infrastructure with other City infrastructure and stakeholder work, in order to reduce start-up costs;

- iv. Identifying and addressing any issues associated with existing City of Toronto by-laws and policies;
- v. Advocating for any required changes or investments from the Province of Ontario, the Ontario Power Authority, the Ontario Energy Board or other relevant provincial bodies; and
- vi. Developing any necessary provisions, as permitted, under the City of Toronto Act;

RE: SUPPORTING DEVELOPMENT OF A SMART GRID

- 6. City Council acknowledge that Toronto Hydro is investing in the development and implementation of a smart grid in the City of Toronto that will modernize an aging infrastructure, significantly improve the efficiency of the existing electricity distribution system, provide access for renewable energy and smart grid technology, prepare for electrified transportation, and empower customers with information, options, and control, to manage their electricity and reduce their carbon footprint, and that City Council:
 - a. Direct the City Manager to continue to monitor and encourage the development by Toronto Hydro and provincial and federal authorities of smart grid technologies and innovations;
 - b. Direct the Director of the Toronto Environment Office to collaborate with Toronto Hydro to support Toronto Hydro’s Smart Grid education, outreach and advocacy plan to enhance the public profile of Smart Grid and its relevance to the City’s Energy Strategy;
 - c. Direct the Chief Corporate Officer to ensure all City owned buildings are fully equipped and enabled to take advantage of the smart grid, innovative technology and pending rate options;

RE: FOSTERING THE GREEN ECONOMY AND GREEN JOBS

- 7. City Council build upon its adoption in July 2007 of the Green Economic Sector Development Strategy and its recognition of the significant job creation and economic opportunities being created by the shift to energy conservation/efficiency and renewable energy and that City Council:
 - a. Direct the Deputy City Manager, Cluster B, to work with stakeholder partners and renewable energy business associations to ensure that any mechanical, structural, and related inspection requirements specific to

Toronto and/or Ontario are integrated into existing and contemplated national and provincial training programs;

- b. Direct the General Manager of Economic Development, Culture and Tourism to market and promote existing energy efficiency and renewable energy certification programs available in Toronto and the GTA;
- c. Direct the Director of the Toronto Environment Office to work with local school boards on the design of a training course as part of the Specialty High School Majors program in the area of energy efficiency retrofits and renewable energy generation;
- d. Direct the Director of the Toronto Environment Office to work with appropriate stakeholders to develop a program that will provide job placement support to the community for skilled tradespeople positions in the areas of retrofitting buildings and generating renewable energy;
- e. Direct the Director of the Toronto Environment Office to work with local Community Colleges in the design, development and marketing of training programs that will generate people with the skills necessary to assist property owners in complying with emerging energy efficiency and renewable energy by-laws and regulations; and
- f. Direct the Deputy City Manager and Chief Financial Officer, to establish in 2010 the business processes necessary for internal coordination within the City of Toronto to more proactively evaluate, pilot and implement new and emerging energy conservation and renewable energy technologies;

RE: SUSTAINABLE TRANSPORTATION AND DEPLOYMENT OF ELECTRIC VEHICLE INFRASTRUCTURE

- 8. City Council continue to build upon its existing efforts in the area of sustainable transportation and that City Council;
 - a. Direct the Deputy City Manager, Cluster B, to ensure that the first priority for transportation planning and infrastructure development is for net zero energy modes of commuting such as walking and cycling, and, as a second priority, for alternatives such as telecommuting, public transit and car-pooling;
 - b. Direct the Director of the Toronto Environment Office, working with all appropriate internal and external stakeholders, to complete an analysis of mobile source emissions among trucks, cars, rail, airports, and other sources to help inform the design of and priorities for mitigation measures,

including potential by-laws, as previously authorized under the Climate Change Plan;

- c. Direct the Chief Corporate Officer to ensure the City's Green Fleet Plan incorporates the integration and utilization of electric vehicles, where appropriate for City operations;
- d. Direct the Deputy City Manager, Cluster B, building upon the existing work of the City of Toronto, the Toronto Atmospheric Fund, Toronto Hydro and others, to initiate and undertake economically viable actions necessary to support and facilitate the utilization of electric powered motor vehicles in corporate and commercial fleets; and
- e. Direct the Chief Planner to consider during the 2011 review of the City's Official Plan policies and guidelines changes, including implementation plans, strategies and guidelines, that will help advance infrastructure requirements for and deployment of electric vehicles;

RE: INNOVATIVE FINANCIAL TOOLS

- 9. City Council direct the Deputy City Manager, Cluster B, and the Deputy City Manager and Chief Financial Officer to explore with key stakeholder partners all viable funding options including, but not limited to, revenue bond financing, grants, tax incentives, funding from the Federation of Canadian Municipalities, funding from the rate-base through Ontario Energy Board, and funding from Ontario Power Authority, in particular the new Municipal Renewable Energy Program;

RE: ADVOCATING FOR ACTION PROVINCIALY, NATIONALLY AND INTERNATIONALLY

- 10. City Council continue to show leadership in advocating for action on climate change, energy conservation and efficiency and renewable energy generation and that City Council;
 - a. Direct the City Manager to engage provincial and federal authorities on the following Sustainable Energy Strategy issues and, if necessary, pursue alternative, local measures as permitted under the City of Toronto Act:
 - i. Amendments of the Planning Act, Building Code Act and/or related laws to remove barriers to more widespread energy efficiency, renewable energy, and "smart" distribution;
 - ii. Amendments of the City of Toronto Act, the Planning Act, Building Code Act and/or related laws to explicitly authorize application of the appropriate elements in the Toronto Green

- Standard to existing residential, commercial, institutional, and industrial buildings, triggered by action such as renovations or changes in ownership;
- iii. Amendments of provincial laws to require energy audits and disclosure of energy consumption of buildings at point of sale and that the Province of Ontario fund the required energy audits;
 - iv. Higher energy efficient standards for appliances and heating and cooling systems;
 - v. Economic support and other measures to remove barriers hindering the growth of the local, green building materials industry;
 - vi. Allowing more competitive lending practices to the commercial, institutional, and industrial sectors for conservation and demand management processes;
 - vii. City representation on the advisory board established under the Green Energy and Green Economy Act for reforming the Ontario Building Code to assure greater energy efficiency;
 - viii. Stronger incorporation of renewable energy into the provincial and federal governments' long-term energy reliability planning so that aspects of the City's future energy and climate change actions, that may contribute to an increase on the load (e.g. increased number of street cars/light rail cars; promotion of electric vehicles) do not generate substantial increases in greenhouse gas emissions;
 - ix. Reduction and removal of barriers that hinder growth and competitiveness of a locally produced, low carbon, green building materials;
 - x. Reducing and removing barriers that contravene City policies or adopted targets or otherwise limit the City's ability to secure Ontario Power Authority funding for renewable energy generation projects and conservation measures undertaken by the City;
 - xi. Implement stricter standards for corporate average fuel economy (CAFE) standards and alternative fuel development for internal combustion vehicles;
- b. Direct the Chief Corporate Officer and the Director of the Toronto Environment Office with support from Legal Services to intervene when needed to support City objectives at the Ontario Energy Board in

connection with the City's Climate Change Action Plan and Sustainable Energy Strategy goals;

RE: MONITOR AND REPORT REGULARLY ON PROGRESS

11. City Council direct the Deputy City Manager, Cluster B, to prepare, starting in 2010, an annual environmental achievements and challenges report that:
 - a. integrates reporting on the implementation of the Climate Change Action Plan, the Sustainable Energy Strategy and related initiatives, such as the Green Economic Development Sector Strategy, the Sustainable Transportation Initiatives and the Water Efficiency Plan;
 - b. identifies the outcomes of these policy, program and other activities; and
 - c. identifies emerging issues and challenges and makes recommendations for new or amended actions required to further achieve the targets established in the Climate Change Action Plan and the Sustainable Energy Strategy; and
12. Direct the Director of the Toronto Environment Office to augment its existing responsibilities to monitor, inventory and report on the greenhouse gas and smog causing emissions reductions within the context of the targets set in the Climate Change Action Plan, by also monitoring and reporting, with the cooperation of stakeholders, on energy consumption and renewable energy generation within the context of the targets set in the Sustainable Energy Strategy.

Financial Impact

There are no immediate financial implications associated with this report. As implementation occurs of the adopted recommendations, there may be financial implications and these will be reported on as part of the implementation process.

DECISION HISTORY

At its meeting of July 16 – 19, 2007 City Council adopted the Climate Change, Clean Air and Sustainable Energy Action Plan: Moving from Framework to Action (the “Climate Change Action Plan”). Included in the Climate Change Action Plan were the following adopted recommendations:

“. . . to report on progress in moving the City to a state of energy sustainability, and update Toronto’s Sustainable Energy Plan annually, . . .”; and

“. . . to report on air quality and greenhouse gas emissions, outcomes of policies, programs and activities . . . and recommend changes and new actions . . .”.

At its meeting of November 10, 2008 the Executive Committee of City Council directed staff to develop an energy strategy consistent with the Climate Change Action Plan and to identify the institutional and regulatory barriers to the City of Toronto realizing its greenhouse gas emission and sustainable energy goals along with proposals for removing those barriers.

More recently, at its meeting of August 5th and 6th, 2009, City Council adopted the recommendations of the Economic Development Committee that the Sustainable Energy Strategy identify how the City can maximize local green job creation through implementation of this strategy.

Web-link to the [Climate Change Action Plan](#).

Web-link to the [November 10th, 2008](#) decision, item EX26.19.

Web-link to the recommendations made to the [August 5th Council](#) meeting by the Economic Development Committee, item ED23.1.

ISSUE BACKGROUND

The burning of fossil fuels is by far the largest source of greenhouse gas emissions in Toronto. According to the City of Toronto’s inventory of greenhouse gas emissions and smog causing emissions there were approximately 24.4 million tonnes of greenhouse gas emissions in Toronto in 2004. Of that total, it was estimated that over 60% of the emissions can be linked to use of natural gas, coal and oil for the heating, cooling, lighting and operation of primarily buildings. The remaining estimated 40% is tied to transportation and the release of methane into the environment.

Achieving our adopted long term target of an 80% reduction in greenhouse gas emissions by 2050 against 1990 levels means reducing our reliance on the use of fossil fuels. Getting to 80% will not be easy, but it is necessary to ensure a sustainable future for present and future generations.

All residents, businesses, institutions (e.g. schools, governments and hospitals) and organizations must aggressively pursue energy conservation and efficiency, the installation of renewable energy systems and smart distribution of energy. Existing buildings must be retrofitted to conserve electricity and natural gas while future construction must be the most energy efficient, if not zero emission, design. When pursuing energy efficiency, we must look to install and support renewable energy generation, whether solar, wind or geothermal, to more cleanly power our lights, our appliances, our technology, and our business operations.

As Toronto shifts increasingly to becoming an energy efficient, low-carbon city, this change must be done in balance with economic and social priorities. Becoming more efficient in our use of energy and installing renewable energy systems will create new jobs that require new skills and abilities, rendering other jobs potentially unnecessary or redundant. As Toronto becomes more energy independent and less reliant upon the provincial and national central energy production systems of today, more of the money spent on energy will remain in the local economy.

As non-renewable energy prices increase as a result of limited resources and externalities, issues of access to affordable energy will become increasingly important. Currently it is estimated the most low-income households spend up to 8% of their pre-tax income on utilities while the average income households spend just over 3%. With around 160,000 low-income households in Toronto, the changes made to Toronto's energy systems must be done in manner that will benefit all households.

The burning of fossil fuels for power, as articulated in the Climate Change Action Plan, is not solely a climate change issue. The burning of oil, diesel, and coal for power is the major cause of smog, which contributes to the premature death of an estimated 1,700 people a year and hospitalization of an estimated 6,000 people a year. Making the shift to an energy efficient, low-carbon city will significantly reduce the economic and social costs tied to air pollution.

By continuing with the momentum created by the Climate Change Action Plan, that was built upon a foundation of existing progressive initiatives, the Power to Live Green: Toronto's Sustainable Energy Strategy moves Toronto further along the path to a low-carbon future. Recognizing that City Council, the Toronto Public Service, and Toronto Hydro can not do it alone, the strategy recommends a framework that will make it possible for residents and businesses to take action and live green.

COMMENTS

A Foundation of Progressive Action

Toronto has a long and strong history in taking action on climate change and improving energy efficiency and recently received in the category of greenhouse gas reductions a

national award from the Canadian Council of Ministers of the Environment for those efforts (<http://www.toronto.ca/environment/news/2009-09-24/index.htm>).

A few examples of existing efforts that were in place prior to the adoption of the Climate Change Action Plan in 2007 are:

- Toronto Hydro, which is solely owned by the City of Toronto, is an acknowledged leader in the development and delivery of sustainable energy programs. Some of their key programs include Peaksaver, The Great Refrigerator Roundup, the Festive Light Exchange, Social Housing Program, and the Business Incentive Program. In 2007, Toronto Hydro programs achieved electricity savings of 167 megawatts.
- Toronto Hydro and the City are engaged in a the development of a number of renewable energy systems, including biogas cogeneration at Ashbridge's Bay treatment facility; biogas generation using material from the green bin program; and potential wind energy projects, including the development of an off-shore project in Lake Ontario;
- Toronto is home to the largest lake-fed deep water cooling system where cold water from Lake Ontario is utilized by Enwave (a partly owned corporation of the City) to cool 3.2 million square meters of office space in the downtown resulting in an annual reduction of 70,000 tonnes in greenhouse gas emissions;
- Established in 1997 the City's Better Buildings Partnership has contributed to reducing greenhouse gas emissions by focusing on building renewal and energy efficiency in buildings. Over 47 million square feet of gross floor area has been retrofitted realizing approximately \$20 million in annual operating cost savings and reducing greenhouse gas emissions by 200,000 tonnes annually; and
- Through its Energy Efficiency Retrofit Program the City has -- in under seven years -- implemented energy efficiency retrofits of over 500 City-owned buildings achieving savings of \$5 million a year in energy costs for City operations.

With adoption of the Climate Change Action Plan in 2007, City Council set in motion implementation of a number of new and aggressive actions. These include:

- The Sustainable Energy Funds;
- Live Green Toronto;
- Mayor's Tower Renewal;
- Home Energy Assistance Toronto; and
- The Toronto Solar Neighbourhoods Initiative.

These and other programs were in addition to the negotiated agreement between the Ontario Power Authority, Toronto Hydro, the Building Owners and Managers Association (BOMA), and the City of Toronto to deliver 330 megawatts of electricity conservation by the end of 2010.

In October 2009, the Parks and Environment Committee received a staff report highlighting the many different policies, programs, and actions being implemented by the City of Toronto and its Agencies, Boards, Commissions, and Corporations and the outcomes of these actions. A total of over 180 initiatives were presented to the Committee, and can be viewed at http://www.toronto.ca/environment/initiatives/presentations_pe_committee.htm.

The staff report can be viewed at <http://www.toronto.ca/legdocs/mmis/2009/pe/bgrd/backgroundfile-23951.pdf>.

While all these initiatives are making a difference, research outlined in Attachment A of this report (The Power to Live Green) has identified that a large gap still remains. Existing and proposed initiatives, in particular the new initiatives outlined by Toronto Hydro in Attachment B, have the potential to help Toronto achieve the greenhouse gas emission reduction target for the year 2020, but they will not be enough to achieve the 80% target for 2050. Although the year 2050 may seem a long time away, sustainable energy policies, programs, and initiatives need to be commenced today if they are to have enough time to deliver the results needed to meet our target.

For example, the majority of the buildings in existence today will be in existence in the year 2050. Getting an 80% reduction in greenhouse gas emissions, means those building must become almost net zero by becoming more efficient in the use of energy and through increased utilization of renewable energy sources. A combination of incentives, policies, regulations and other programs are needed to make it possible for residents and businesses to achieve this goal. Implementing that process takes time.

Stakeholder and Community Engagement

One of the first steps in identifying what additional actions that could be taken, involved going back to the suggestions and ideas presented by residents who were engaged in the development of the Climate Change Action Plan. There were a number of ideas and issues raised during that process (a copy of the results of the public engagement activities found in 2007 can be viewed at <http://www.toronto.ca/legdocs/mmis/2007/ex/agendas/2007-06-25-ex10-ai.htm>).

To confirm that the ideas and issues previously raised were still important to the community, residents were given the opportunity to provide their views through a community forum hosted by Councillor Fletcher (Chair, Parks and Environment Committee) and held on October 14, 2009 and through a variety of other mechanisms, such as written and email submissions and verbal discussions with City Staff. The major issues and ideas raised were:

- taking steps to make it easier and possible for residents and businesses to take action;
- ensuring efforts are being made to promote the development of renewable energy systems;
- recognizing that we must retrofit our built environment;
- integration of energy planning with land use planning, through the Official Plan, secondary and neighbourhood planning, and other planning activities;
- ensuring that the appropriate education and job training opportunities are in place to support implementation of a new green economy;
- exploring all opportunities to produce energy, including combined heat and power systems;
- the City needs to have a stronger presence at the Ontario Energy Board to ensure City interests and goals are articulated at that forum;
- making it easy for people to utilize alternative transportation;
- working in partnership with all appropriate bodies and partners, including environmental faith groups;
- continuing to conduct required research to help understand issues and opportunities;
- promotion of the concept of “Transition Towns” as one approach for engaging residents and businesses in reducing their carbon footprint;
- increased planting of native trees, plants and vegetation; and
- engaging people in taking proactive action.

Further recognizing that collective action is required by a range of parties, extensive efforts were made to engage key external and internal stakeholders in the identification of issues and opportunities for further action. These involved one-on-one sessions with senior management from City Agencies, Boards, Commissions, Corporations and Divisions with a substantive focus on energy policy, planning, and operations. Numerous one-on-one sessions also were held with key external stakeholders who were invited to participate in a half day open discussion forum where participants were able to discuss their ideas with other key stakeholders.

The other major effort undertaken to facilitate the development of the necessary partnerships involved taking advantage of an offer from the secretariat of the C40 Cities – Climate Leadership Group and the Clinton Climate Initiative to fund, organize and test a multi-stakeholder process for developing an action plan. Involving 35 representatives from City ABCCDs and external stakeholders, such as Enbridge, Toronto Environmental Alliance, Pollution Probe, residents, and others this two day forum engaged the participants in the development of a plan of action for making one neighbourhood in Toronto more energy sustainable. One of the key outcomes of this forum was to identify the challenges faced in taking larger city or community wide goals and making it possible for residents and businesses to participate in helping achieve these goals, such as the greenhouse gas emission reduction targets.

Issues and Opportunities for Action

While a strong foundation of policies, programs and proposals exists between Toronto Hydro, the City of Toronto, and various other key stakeholders, research and the views expressed during the stakeholder and community engagement has highlighted that there are institutional, regulatory, financial and other barriers. The recommendations presented in this report take advantage of the leadership Toronto has shown and looks to put in place approaches and mechanisms to further advance Toronto towards the goal of being an energy efficient, low-carbon city by the year 2050.

Underlying the recommendations are the following three principles:

- Energy conservation and efficiency – the cleanest form of energy is the one that was never produced and our first priority;
- Renewable energy – replacing polluting fossil fuel sources with sufficient clean renewable energy sources; and
- Smart energy distribution – will improve reliability, security of supply, reduce waste, and promote energy efficiency and conservation.

The proposed actions presented in this report are the next phase of the City's Climate Change, Clean Air and Sustainable Energy Action Plan. The proposals look to address the following issues:

- **External Coordination:** Currently there are over 80 programs offered by the three orders of government, the utility companies and others aimed at energy conservation or increasing renewable energy generation. Unlike other key areas, such as transportation (Metrolinx) and the waterfront (Waterfront Toronto) there is no body to coordinate functions and allow for interagency cooperation. Better coordination is critical and with that comes the possibility to establish a collaborative approach that will make it possible for residents and businesses to achieve deeper more substantive energy conservation changes and renewable energy consumption.
- **Energy Efficiency in Existing Buildings:** The majority of the buildings that will be in existence in the year 2050 are already built. Therefore the greatest challenge that must be addressed is putting in place the policies and tools necessary to support residents and businesses in retrofitting their buildings for energy efficiency and accessing renewable energy.
- **Renewable Energy Generation:** While energy conservation and efficiency will always be the first priority, there will be a need for energy and it should be produced using renewable energy sources. The Province of Ontario with its Green Energy and Economy Act and generous feed-in-tariffs for renewable energy supply has increased the viability of renewable energy. Policies, procedures and

programs are required to ensure the City and various stakeholders can take advantage of this opportunity.

- **Distributed/District Energy Systems:** A frequent comment during the stakeholder consultations was that there are a number of opportunities within the city for distributed/district energy systems. An approach is required to identify and evaluate those options and where appropriate taking action.
- **Smart Grid:** The energy distribution infrastructure is aging and new technologies are emerging that will allow for energy to be distributed smartly and improve the overall efficiency of the systems. These developments should be encouraged and facilitated whenever possible.
- **Green Economy:** The change to an energy efficient, low-carbon city means there will be a change in the local economy and job market. New jobs and skills will be required to help facilitate the development of a green economy while new business opportunities will be generated in both energy conservation and renewable energy. Actions are required to facilitate both the skills development and business development.
- **Sustainable Transportation:** Transportation does account for roughly one-third of the greenhouse gas and smog causing emissions in Toronto. With its transportation infrastructure plans, such as Transit City and the Bike Plan, Toronto has put in place the actions necessary to create viable alternative transportation choices. Work needs to continue in identifying opportunities for reducing emissions in this sector and exploring alternative technologies, such as electric vehicles.
- **Financial Tools:** With the growing awareness and interest in energy conservation and renewable energy, there are changing opportunities for creating the financial tools necessary to support residents and businesses in taking action. These range from revenue bond financing to rate-based funding through the Ontario Energy Board to the feed-in-tariff and other sources through the Ontario Power Authority.
- **Advocating for Change:** In order to achieve the vision and targets outlined in this report changes will be required by provincial and federal authorities. Those desired changes should be identified and appropriate actions taken to advocate for the changes. When changes are not forth-coming Toronto should continue to show leadership and take advantage of the full range of tools available to the City to take action on its own.
- **Monitoring:** The actions recommended in this report represent the next phase of the Climate Change Action Plan. Issues and opportunities are always changing and it is only through regular monitoring of outcomes, emerging issues and new opportunities that one can ensure the most appropriate actions are being taken to

achieve the vision of an energy efficient, low-carbon city. Regular monitoring and reporting is necessary.

- **Internal Coordination:** Despite numerous opportunities for energy efficiency, renewable energy generation, and smart distribution projects, many ABCCDs expressed during the consultations a need for a central place where they could compare projects with others, obtain assistance, and learn of best practices. Consequently, the City's Executive Environment Team will establish intra-City working groups in the following areas to enable central coordination of energy developments during implementation: (a) Renewable and New Energy-Focused Technologies Implementation Working Group; (b) Distributed Energy Infrastructure Working Group; (c) Sustainable Transportation and Electric Vehicle Support and Implementation Working Group. These working groups will report to the City's Executive Environment Team, thereby assuring constant engagement of the City's management.

Attachments

Attachment A to this report -- "The Power to Live Green: Toronto's Sustainable Energy Strategy" -- provides more detailed discussions about the issues and challenges still faced and the rationale for the recommendations made in this report. The document will be submitted on the Committee's Supplementary Agenda.

Attachment B to this report -- "Toronto Hydro's 500/500 Renewable Power and Conservation Plan Summary" -- carries highlights of one of the key initiatives that will enable the City to reach the energy conservation and renewable energy generation targets recommended for adoption in this report. Toronto Hydro's 500/500 Plan is being presented to the Ontario Energy Board, and upon approval will provide Toronto Hydro with the authority and financial resources to help Toronto residents and businesses achieve 500 MW of electricity conservation and 500MW of renewable energy generation.

CONCLUSION

With adoption and implementation of the recommendations presented in this report, Toronto will continue on the path to establishing an energy efficient, low-carbon city. This approach will provide reliable, clean and affordable energy in a manner that does not generate any more carbon dioxide than the atmosphere can absorb without increasing the greenhouse effect or adversely affecting human health and the natural environment.

The recommendations presented in this report build upon the foundation established in the Climate Change Action Plan, adopted by City Council in July 2007 and the many pre-existing initiatives. City Staff, as directed in the Climate Change Action Plan, will

continue to monitor and report on the implementation of these recommendations, evaluate changing circumstances and make additional recommendations for action to ensure Toronto achieves its greenhouse gas reduction targets.

CONTACTS

Lawson Oates, Director of the Toronto Environment Office, Tel: 416-392-9744, Email: loates@toronto.ca

Jim Kamstra, A/Director Business and Strategic Innovations, Facilities and Real Estate, Tel: 416-392-8954, Email: jkamstra@toronto.ca

Richard Butts
Deputy City Manager

Cam Weldon
Deputy City Manager and
Chief Financial Officer

ATTACHMENTS

Attachment A: The Power to Live Green: Toronto's Sustainable Energy Strategy.

Attachment B: Toronto Hydro 500/500: Renewable Power and Conservation Plan - Summary