

## Sample Energy Efficiency Initiatives

Here are some sample initiatives that the City might look to, which fall under the different types of mechanisms discussed previously:

### Education/Awareness Sample Initiatives

#### Encourage Bicycling/Walking

The City of Stratford could develop more trails, lanes, paths, and walkways throughout the community to provide additional transportation options. This could include secure and weather-protected bicycled racks at major travel destinations, and an extensive sidewalk system in urban corridors and compact neighbourhoods that are pedestrian-friendly, with amenities such as shaded areas, benches, water fountains, and landscaped walkways. The City of Stratford could also allow for the accommodation of bicycles on transit buses and shuttles with the use of bicycle racks. The City could also encourage businesses to provide showers to enhance “commuter bicycling.” Bicycling and walking are pollution-free and should be promoted as an alternative to other forms of transportation.

#### Carpooling and Vanpooling

The City of Stratford should encourage the public to carpool and vanpool. The City could petition the Ontario MOT for the development of HOV on major arteries and roads, serving to encourage car/vanpooling as an efficient transportation alternative. The City could encourage employers to provide preferential parking for carpool and vanpooling employees. The City could provide free parking for car/vanpools in the downtown area.

#### Telecommuting

The City of Stratford should encourage the business community to utilize alternative work schedules and reduce the number of commuter trips. With advances in computers and telecommunications, employees could telecommute from their homes (i.e. work from their home using home computer or laptop), or from regional telecommute centers.

#### Promotion of Energy Efficiency Programs

The City of Stratford should promote increasing the energy efficiency of existing and newly constructed buildings using other models, such as the “Green Buildings” program. The “Green Buildings” program focuses on sustainable building techniques which aim to minimize need for, and reliance on, energy and water supplies. There are many approaches that have been used to accomplish this, including but not limited to:

- Setting local building energy standards by modifying or developing City ordinances
- Requiring building permit applicants to outline energy efficiency measures, or document an energy efficiency plan
- Provide tax incentives to businesses, industries, and institutions that utilize energy efficient appliances and technologies in new construction, or in upgrades

Promotion of renewable energy systems can also be made through a different program.

### Regulation Command and Control Sample Initiative

#### Decrease Idling of Motor Vehicles

Traffic congestion causes excessive vehicle idling in traffic jams and at stoplights. Drivethrough windows at restaurants and banks also encourage excessive vehicle idling, since this “convenience” does not often save time. The average passenger vehicle emits 1 kg of GHG per minute during summer conditions. This number is higher in cold weather and among poorly maintained vehicles. Excessive vehicle idling can be reduced by improving the existing road system, thereby encouraging efficient traffic flow patterns. This will tend to decrease travel times, reduce driver frustration, increase worker productivity, and potentially reduce traffic accidents caused by anxious and careless drivers.

## Sample Energy Efficiency Initiatives

### Intelligent Traffic System

Another option for potentially reducing vehicle idling times is to install an Intelligent Traffic System (ITS) to improve traffic flow on the major roads and arteries, especially after traffic incidents. If the average idling time per vehicle could be reduced by at least 1 minute per day on major roads and arteries, then GHG emissions could be significantly reduced during the 20 year commitment period.

### Staggered Work Hours

Traffic congestion during peak rush hour traffic contributes much of the GHG emissions from motor vehicles. With increasing growth and the common use of single-occupancy vehicles, travel times are increasing every year, especially as congestion worsens. One option for reducing peak congestion is to encourage employers to utilize staggered work schedules to minimize peak hour traffic. Employers could stagger work schedules such that half of its work force (1<sup>st</sup> shift) would work from 7:00am to 4:00pm and the other half would work 9:00am to 6:00pm. To some extent, this has been implemented by many industrial companies, but there is the potential to expand this program further throughout the City. Assuming that average travel times could be reduced by 1 minute per day, per vehicle by expanding the use of staggered work schedules, then, the potential GHG emissions reduction would be similar to reductions from minimizing idling.

### Landscape Control

The City should strengthen its landscaping ordinance to encourage well-designed landscaping and tree planting, helping to reduce the amount of reflective heat from parking lots and to shade structures, which should also help to reduce cooling costs. The City could encourage existing developments and require new developments to consider the “Heat Island” effect during design, to leave more trees undisturbed and plan new landscaping to maximize the benefits of plants. Plants act as carbon sinks and can reduce building cooling costs through direct shading and through evapotranspiration, which tends to lower nearby air temperatures. Permeable geotextiles provide an alternative to paved areas. These materials provide the structural stability needed for vehicle access or parking, while reducing solar absorption. Using these permeable ground surfaces, interplanted with ground cover could enhance stormwater drainage and reduce atmospheric heating associated w/paved surfaces.

## Consumer/Market Driven Sample Initiatives

### Industrial Biodiesel Plant

Fostering the potential location of this type of facility in Stratford would have local economic and environmental benefits through the generation of lower GHG fuels.

### Encourage Use of Alternative Fuel Vehicles

The City of Stratford should encourage the use of alternative fuel vehicles by providing refueling stations or encouraging the private sector to invest in alternative fueling stations. Vehicles powered by compressed natural gas (CNG) or electric vehicles have 50 to 80% fewer GHG emissions per mile than conventional gasoline-powered vehicles. Presently, this is a major hurdle as private industry partners are not favouring the supply of alternative fuel vehicles. The goal of this general measure is to reduce GHG emissions from vehicles by encouraging businesses, industries, and the general public to switch to alternative fuels that emit less GHG. It is difficult to project how market conditions, regulatory actions, and consumer response will affect the type of alternative fuel used in the future. Therefore, GHG emissions reductions based on the use of several alternative fuels is given below for comparison. Actual implementation of an alternative fuel program may result in one fuel being selected or a combination of fuels being selected. Although the Provincial and Federal governments have typically been responsible for legislating and regulating the transportation sector, there are several options that the City can use for promoting the increased use of alternative fuels. The City of Stratford could encourage the use of alternative fuel vehicles by subsidizing the development of refuelling stations throughout the City. Refueling stations should be owned by the private sector, but the City could provide grants for the construction of CNG refueling and electric recharging stations throughout the City. The City could also provide electric recharging stations at the City’s parking facilities. The City could promote the use of alternative fuel vehicles through public education and advertising campaigns. Another potential strategy would be to officially lobby or encourage the Province to enact requirements for businesses to purchase alternative fuel vehicles.

# Sample Energy Efficiency Initiatives

## Residential Fuel Switching

The City of Stratford should encourage residents and builders to utilize cleaner fuels for home heating. The City could amend the local building code to restrict the use of heating oil. By 2021, many of the existing heating systems fueled by heating oil will reach the end of their useful life. The City could offer financial incentives, such as grants and low-interest loans, to encourage existing homes using heating oil to convert to a more efficient fuel. Many of these homes may be low-income households.

## Improve Home Energy Efficiency

Improving the energy efficiency of homes has potential for large reductions in GHG emissions by reducing the demand for electricity generated by coal-fired power plants. There are many ways to increase energy efficiency and reduce waste during the design and construction phases of residential units, as well as after construction. Energy efficiency upgrades range from inexpensive retrofits, such as fluorescent lighting, to upgrades of existing HVAC systems. Also, solar technology has advanced in recent years and the cost of these systems continues to drop.

## Energy Efficiency Improvements

Energy efficiency improvements can reduce energy demand by approximately 40%, compared to the average home. The following is a list of energy efficiency measures that could be implemented. The following section discusses energy efficiency measures that can be implemented in residential units.

### Lighting

Lighting accounts for 15% of residential energy demand. The typical household spends \$110 per year on lighting. Installing compact fluorescent lights (CFL) that utilize 50% less energy than incandescent lights can reduce energy costs. CFLs cost much more than incandescent lights, initially (\$20-30). However, CFLs can last 10 times longer than incandescent bulbs and save approximately \$45 in energy costs over the life of a 75 watt bulb.

### Heating/Cooling

Proper design and installation of HVAC systems can reduce energy costs by 10 to 30% by ensuring properly sized equipment, reducing air leaks, and purchasing efficient systems. Improving the R-value of the insulation will also reduce energy demand. Purchasing or specifying high R-value windows will reduce drafts and condensation.

### Passive Solar Design

Utilizing passive solar design techniques in home construction can reduce energy costs up to 25% by ensuring proper window orientation. Roof overhangs and awnings can be used to minimize direct sunlight entering the home during the summer months. Most of the windows should face south to maximize home heating during the winter months. Proper design of landscaping can also reduce energy costs by shading the home and preventing direct sunlight to heat the home during the warmer months, but also allowing the winter sun to provide secondary heating. Light-colored roofs and attic vents can help reflect heat and cool the attic, which reduces cooling costs during the summer months. Also, designs to increase natural lighting in the home will reduce daytime demand for lighting. Residential energy efficiency can be encouraged by the City through various strategies including:

- Amending local Building Codes for single-family and multi-family residential units to strengthen guidelines regarding insulation, HVAC systems, and appliances
- Encourage lenders to provide discount mortgage rates for energy efficient homes
- Time of sale energy efficiency requirement
- Offer rebates, low-interest loans, or other financing to retrofit existing low-income homes.
- Penalties, such as local tax, for less efficient equipment and appliances
- Expand Green Building program

# Sample Energy Efficiency Initiatives

## Appliances

The efficiency of major home appliances has increased considerably in recent years. The typical clothes washer consumes 40% more energy than models with newer technology. The EnerGuide program identifies appliances that meet certain energy efficiency guidelines.

## Residential Use of Renewable Energy

Renewable energy systems provide the cleanest form of energy. Currently, photovoltaic (PV) or solar systems have high initial costs, but they typically last for 20 to 30 years and require no energy or fuels. With advances in technology and programs, solar systems may become a more attractive option in the future for meeting residential energy demands. Power can be diverted from coal-fired power plants to a renewable energy with no GHG emissions.

## Corporate Sample Initiatives

### Expand Mass Transit System

This general reduction strategy is intended to reduce traffic congestion and GHG emissions by reducing the number of miles driven by single-occupancy, gasoline-powered vehicles. A specific measure identified to meet this goal is to include the expansion of the existing Bus Transit System in Stratford and ridership. The goal of this general reduction strategy is to reduce GHG emissions from the transportation sector.

### Land Use Planning to Reduce VKTs

One of the most effective options for reducing GHG emissions from the transportation sector is to reduce trip times through effective land use planning. The City should develop policies to encourage high-density and mixed-use developments. The Plan also encourages infill development, especially in the downtown area, where the older industrial complexes are being converted to mixed-use developments with apartments and condominiums as well as retail stores. High-density and mixed-use development can reduce GHG emissions by reducing the need for in-town driving. The purpose of these developments is to place residential areas closer to the commercial centers and reduce the number and length of trips for shopping and other errands. By some estimates, new development that improves accessibility by mixing land uses and clustering development generates about half as much VKT as does urban sprawl (Calthorpe, 1993: 43,64; Ewing, 1997:11).

While education and regulation can provide some success, by and large market driven strategies through partnering are the most successful and sustainable.