WHY ENERGY EFFICIENCY MATTERS TO NEWFOUNDLAND AND LABRADOR
2.0 WHY ENERGY EFFICIENCY MATTERS TO NEWFOUNDLAND AND LABRADOR

2.1 Defining the Challenge

Energy efficiency is frequently referred to as the “fuel of first choice” for meeting future energy needs, as it is often regarded as the cheapest, cleanest and safest way of ensuring society has secure, affordable and clean power. The financial benefits of improvements in energy efficiency are clear. It can lower household energy bills and improve business competitiveness by lowering costs, but its benefits go beyond this. In the 2007 Energy Plan, government acknowledged the multiple advantages of energy conservation and efficiency and committed to promote and facilitate it going forward.

Newfoundland and Labrador’s energy consumption, including households, the commercial sector, public administration, industrial and manufacturing facilities, and transportation increased from 148,600 terajoules (TJ) in 1990 to a peak of 153,200 TJ in 2003. Provincial energy consumption has since declined to 144,800 TJ in 2009, driven in large part by reduced industrial demand. In 2009, approximately 41 per cent of energy was consumed in transportation, 31 per cent in the industrial and manufacturing sector, 14 per cent by the residential sector, and 12 per cent by commercial businesses and institutions, as illustrated in Figure 2.

Energy efficiency has featured prominently in intergovernmental discussions. At the Council of the Federation (COF) meeting in 2007, all provinces committed to achieve a 20 per cent increase in energy efficiency by 2020 and, at the Conference of New England Governors and Eastern Canadian Premiers (NEG-ECP) meeting in 2010, all jurisdictions committed to reduce energy consumption in, but not limited to, homes, buildings and industry by 20 per cent by 2020 from business-as-usual projections.

The intergovernmental targets are intended to be challenging and they are designed to motivate action and raise levels of ambition on energy efficiency. As a result, the Provincial Government’s commitment to pursue these targets will help to stimulate a major shift in the uptake of energy efficiency, so that the province can realize the significant environmental and economic benefits that energy efficiency can offer. Government is committed to providing the leadership

Current projections by the Provincial Government indicate that, in the absence of any additional measures, energy consumption is expected to show a modest increase by 2020, as illustrated in Figure 3. There have been shifts in the type of energy consumed since 1990 with an increased share from electricity. Electricity consumption is expected to continue to grow, while consumption from refined petroleum products and other sources is expected to remain stable or decline.

Figure 2: Newfoundland and Labrador Energy Consumption by Sector, 2009

Figure 3: Newfoundland and Labrador Actual and Predicted Energy Consumption, 2009 and 2020

1 These data exclude offshore natural gas consumption.
2 Energy consumption is shown on a terajoule (TJ) basis to allow for a comparative overview of different forms of energy that are expressed in different natural units such as tonnes (coal), GWh (electricity) and litres (petroleum products). One TJ, for example, is the equivalent of approximately 163 barrels of crude oil or 0.277 GWh of electricity.
necessary to move the province forward in partnership with all parts of society. The publication of this plan, and the commitments within it, represent an important milestone on that path.

2.2 What is Energy Efficiency?
Energy efficiency refers to using less energy to provide the same or better level of service. In the residential sector, increasing the amount or quality of insulation in homes can allow households to reduce their energy consumption and thereby save money while maintaining the same level of comfort. In the industrial sector, new technology investments and processes may mean that a company can use less energy to generate the same or greater levels of production. In the transportation sector, aerodynamic devices can reduce fuel consumption and thereby improve business competitiveness.

Energy efficiency differs from energy conservation. Conservation measures, broadly speaking, seek to alter the behaviour of individuals, companies and governments by encouraging them to reduce energy consumption. Conservation could include measures as simple as switching off lights when leaving a room, turning off televisions or computers when not in use, or lowering thermostat settings at night. For simplicity, energy efficiency is used in this plan as inclusive of both conservation and efficiency.

There are four main ways to improve energy efficiency:
• New homes and buildings can be built to more energy-efficient standards, thereby reducing the amount of energy needed to heat and cool them. This can be done by installing energy-efficient windows, more efficient heating systems and better insulation.
• Existing homes and buildings can be retrofitted to require less energy by, for example, reducing drafts and increasing the overall coverage of insulation.
• Machinery, equipment, appliances and vehicles used by businesses, households and individuals can be built to use less energy. For example, it takes less energy to keep a high-efficiency refrigerator chilled to the desired temperature compared to less efficient models. Similarly, industrial processes can be made more efficient so that they require less energy to produce a unit of output.
• Better information and advice can be made available to help businesses, households and individuals understand how small changes in behaviour can save both energy and money.

Examples of Energy Efficiency
When a household or business replaces an older window with an energy-efficient one, the window prevents heat from escaping during the winter. This means that the furnace or electric heater does not have to generate so much heat, thereby reducing the amount of energy consumed and saving money. In summer, efficient windows can also keep the heat out, reducing the need for air conditioning and thereby saving electricity.

When a business has to replace office equipment, such as computers, printers or photocopiers, and households have to replace appliances, such as a washing machine, refrigerator or freezer, buying more energy-efficient models will save energy and therefore money. The new equipment provides the same service, but uses less energy to do so.
2.3 Benefits of Energy Efficiency
Taking action on energy efficiency offers Newfoundland and Labrador a broad spectrum of positive impacts, and it deserves increased efforts by all parts of society. The key benefits of energy efficiency include:

- **Lowering Household Energy Bills** – Energy efficiency is the easiest, most affordable and most effective way for families to use energy more wisely and save money on both household and transportation expenses.

- **Improving Business Competitiveness** – Energy costs affect a business’s bottom line. Businesses that control their energy consumption enjoy lower heating, electricity and transportation costs. Energy consumption and commodity prices are rising around the world and the uncertainty and volatility associated with these trends can negatively impact economic activity. Businesses that use energy wisely will be better positioned, over time, as they will be less vulnerable to these impacts.

- **Increasing energy available for export** – Energy exports are an important pillar of economic activity and employment in Newfoundland and Labrador. By using energy more wisely, energy exporters like this province will have additional power to sell into global markets.

- **Increasing Consumer Welfare** – Energy efficiency can help jurisdictions achieve social as well as economic and energy goals. Lower income households tend to spend a higher share of income on energy costs and may not be able to afford to heat their homes to an adequate level of comfort in winter. Inadequately heated homes can make occupants more susceptible to a range of health problems.

- **Reducing Local Air Pollutants** – Energy efficiency can reduce the amount of local air pollutants emitted. These pollutants, which include fine particulate matter and other chemicals such as sulphur dioxide, can be harmful to human health and are distinct from GHG emissions which are the principle cause of climate change.

- **Reducing GHG Emissions** – Climate change is being caused by the release of growing quantities of GHG emissions into the atmosphere, such as carbon dioxide, methane and nitrous oxide. The largest source of these emissions is the combustion of fossil fuels such as coal, oil and natural gas, to generate heat and electricity and fuel vehicles. Energy efficiency can reduce GHG emissions by reducing reliance on fossil fuels.
2.4 Barriers to Action

While there are clear benefits to taking action on energy efficiency, there are a number of potential barriers that can prevent higher levels of investment. Given this, there is strong rationale for government to help overcome these barriers and reduce the difficulties that consumers face in acquiring and acting on information about the value of energy efficiency. The main barriers to action include:

- **Lack of Information and Awareness** — Taking action on energy efficiency can involve a diverse spectrum of potential initiatives ranging from buying energy-efficient light bulbs to designing high-efficiency buildings. However, consumers, contractors, households, and businesses may not be aware of the opportunities or know where to access reliable and timely information.

- **Hassle Factor** — Gathering information and acting on it may require time and persistence. In view of this, consumers may think that the end result does not justify the effort. For example, insulating a basement may necessitate clearing it out first and installing energy-efficient products or systems may require finding a suitably skilled contractor to do the work.

- **Up-front Costs** — Investments to improve energy efficiency, such as buying higher-grade products or heating systems, may have greater up-front costs. This may be a barrier to action even though the resulting energy savings may save enough money to pay for the additional cost within a few years.

- **Availability of High-Efficiency Technologies** — Individuals and businesses may not always have ready access to high-efficiency building materials, appliances and machinery, or the expert advisers to support installation and maintenance.

- **Split Incentives** — Progress on energy efficiency can be hampered by a lack of alignment of incentives on energy efficiency. For example, developers may have little incentive to construct energy-efficient buildings where future tenants and owners will pay the heat and light bills.

- **Long Payback Periods** — Some energy efficiency investments can have long payback periods. A payback period refers to the period of time required for the return on an investment to “repay” the sum of the original investment. For example, the length of time it takes for the energy and cost savings derived from installing an efficient heating system to amount to the cost of the initial investment. This can be a barrier to action, especially when it is combined with high up-front costs.