

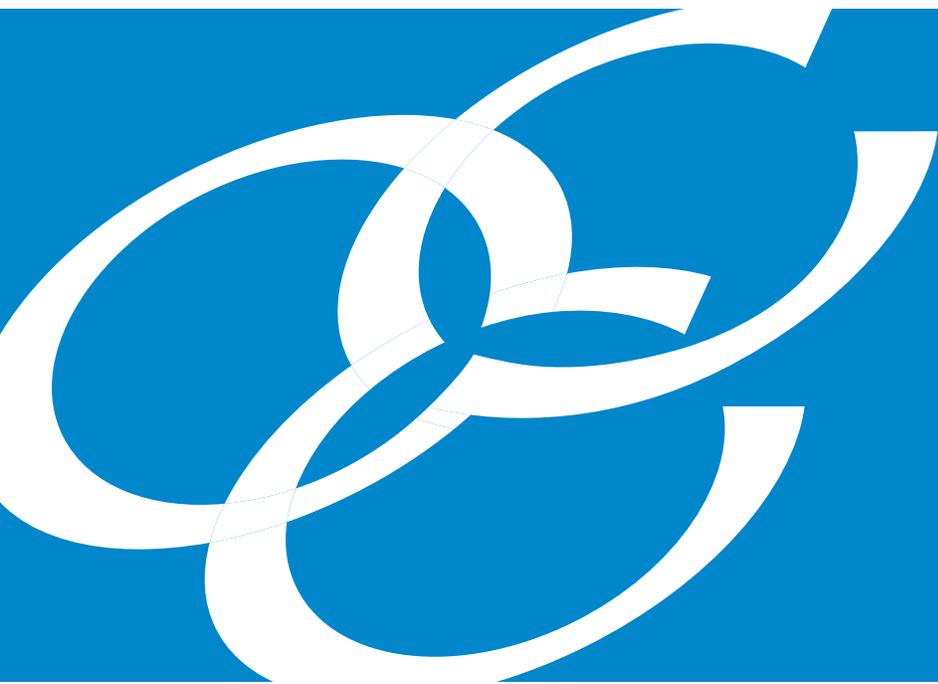
ENERGIZE ONTARIO

DEVELOPING SUSTAINABLE CLIMATE CHANGE POLICY

DECEMBER 2010

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INTRODUCTION

Climate change is a global problem that requires a global solution. In recent years, businesses have emerged as some of the strongest advocates for a national climate and energy legislation that mandates the reductions of greenhouse gas (GHG) emissions.

Climate change is not strictly an environmental issue. Instead, it is multi-faceted, encompassing national security, international diplomacy, and most crucially for business, economic policy. On a fundamental level, businesses stress the need for a coherent national and North American strategy that will serve to strength the economy. The absence of a complete strategy creates uncertainty, which is a hindrance to sustained economic growth and an obstacle to the development of new markets and business opportunities.

The Ontario Chamber of Commerce (OCC) firmly believes that economic growth and prosperity provide the best conditions to address key challenges such as climate change. However, while the global response to climate change can be strengthened by the right trade policies, the wrong ones can also weaken it.

Nowadays, Ontario finds itself in a critical stage in the development of a climate change policy on a tripartite level: at a Canadian level, with its provincial and federal counterparts; at a regional level, as one of the key economic clusters of North America's prosperity; and at an international level, as a major destination of foreign investments. The recent global financial crisis has highlighted the need to work efficiently and cooperatively to develop the policy and financial drivers needed to link climate change impacts with economic growth. There is an urgency to act, and while the crisis creates new challenges, it also underscores the importance of seeking cost-effective opportunities for action.

CLIMATE CHANGE AND ENERGY POLICIES ARE LINKED

There is an increasing consensus in both the scientific and political communities that significant reductions in GHG emissions are necessary to limit the magnitude and extent of climate change.

Recently, there has been increased understanding of the links between energy and climate change. The majority of GHG emissions come from the use of fossil fuel to power the \$60 trillion-world economy. Industrialized countries are responsible for the majority of current and historic emissions, but many developing countries are significantly increasing their shares as their economies expand. This is especially true in some of the large emerging economies, such as China and India that have sustained high economic growth.

Ontario's current energy policy plans are taking place in the context of national and international climate change negotiations. The province actively participates in the international climate negotiation process and it has pledged to reduce its GHG intensity. While there is no appropriate mitigation or adaptation strategy in Canada, in 2008 the provincial government declared it will address these issues through the Climate Change Action Plan. This program contains ambitious targets for reducing GHG emissions through a series of initiatives and programs in the province. The major part in this process would be driven by initiatives such as the Green Energy and Economy Act, an ambitious plan that aims to replace all coal generation in the province with green energy supply by 2014 and to boost the creation of new "green" jobs.

The government recently released its Long-Term Energy Plan. The Plan addresses seven key areas: demand, supply, conservation, transmission, capital investment, electricity prices and Aboriginal communities. Although the Plan mostly reiterates existing government policy, it provides greater detail regarding existing policy or policy initiatives in the area of energy supply and transmissions. The LTEP addresses each of the main components of Ontario's current generation supply mix within a climate change perspective. In particular, it reiterates the Government's commitment to ending the use of coal for electricity generation by 2014. The Plan also reiterates the province's commitment to nuclear power and significant investments in renewable generating facilities and five new priority transmission systems.

In this context, the OCC is concerned by some proposals and strategies contained in the Climate Change Action Plan and in the LTEP to enact unilateral measures and its effects on the business community. The OCC does not believe that such an approach should be pursued without taking into account the effects on the long-term competitiveness of businesses in a provincial, federal and international context. More fundamentally, such measures would potentially undermine the establishment of a rules-based multilateral system that is essential to the rapid dissemination of climate-friendly technologies.

The OCC recognizes that Ontario needs to develop new resources to power its economy with a secure and affordable energy supply. The development of renewable resources is critical to ensure that the province is able to meet both its economic and environmental objectives. However, our business community is concerned about the potential impacts that a 'green energy only' system will have on their operations and business. Issues such as a higher price of electricity, the intermittence of supply and the competitive disadvantage with provinces/states with less strict adaptation strategies are the core of our businesses' concerns.

In order to continue a trajectory towards full economic recovery and growth, Ontario must be to ensure a sufficient and stable supply of power. Energy, in all its forms, underpins both past and future growth. Ontario needs to address its energy challenges, which cross all sectors and impact all citizens. Electricity – both in terms of quality and access – is a key challenge. The quality and reliability of electricity supply would be the driver to boost economic growth. However, issues such as brown-outs, frequency variation, peak demand deficit and voltage fluctuation would impact industrial, commercial and residential consumers. Addressing these challenges will be critical for Ontario to address its growth targets.

This report will discuss needs and recommendations in three key areas (3Es):

1. Endorsing a National Climate Change strategy
2. Ensuring Energy Security
3. Exploring new opportunities for energy efficiency and economic development

The reports makes six recommendations that recognize the importance of energy planning as a concrete and measurable way to tackle Climate Change and bring economic prosperity in the province.

SUMMARY OF RECOMMENDATIONS

The reports makes six recommendations that recognize the importance of energy planning as a concrete and measurable way to tackle Climate Change and bring economic prosperity in the province.:

1.

To pursue a harmonized and non-discriminatory approach for GHG reduction standards in parallel with the Federal government and the United States

2.

To include Clean Air issues within a provincial Climate Change Action plan

3.

The establishment of a diverse energy supply mix at sustainable prices

4.

Engage the Federal Government for the creation of a National Nuclear Strategy

5.

Province should continue to promote bioenergy development in the energy mix and engage business experts across sectors to better understand economic, technological, energy, land use, water use, environmental, labour and market realities.

6.

Demand management (EDM) strategies and the strategic investment in more efficient options for transmission and distribution.

A. PROVIDING REGULATORY CERTAINTY IN TERMS OF CLIMATE CHANGE MITIGATION ACTIONS WITH FEDERAL GOVERNMENT

Our members understand that some form of climate change policy is inevitable, but they do not know exactly what it will look like or what will be required of them. Today, when business look at areas such as GHG requirements or air emissions standards, they see an uneasy mix of evolving municipal, provincial, national and regional programs and regulations. It is unclear how these policy initiatives will unfold and interact with one another. This creates uncertainty, which hobbles business planning, especially for industries, such as electric utilities, that build and operate long-lived, capital-intensive assets. The OCC believes that the provincial government's priorities to alleviate such uncertainty and to allow more intelligent business planning should be to pursue a harmonized and non-discriminatory approach for GHG reduction standards in parallel with the Federal government and the United States and to include Clean Air issues within a provincial Climate Change Action plan.

B. PROMOTING GHG REDUCTION STRATEGIES BY COMBINING ENERGY SECURITY AND ECONOMIC GROWTH

The pursuit of GHG emission reductions should not, therefore, occur in isolation from efforts to address energy security and, mostly, economic growth. Meeting energy security challenges through greater energy efficiency and conservation, diversification of supply, and application of advanced technologies can indeed complement efforts to reduce GHG emissions. The OCC believes that a common energy strategy for climate change should take into account the establishment of a diverse energy supply mix at sustainable prices.

With the elimination of coal generation in the province by 2014, the OCC believes that the expansion of low emissions nuclear power capacity is the key issue for the reliability of our supply. In the last Long Term Energy Plan, the provincial government showed its commitment in expanding the current nuclear power capacity. However, in order to bring benefits in terms of emissions reductions, reliability of supply and creation of new jobs, Ontario should also engage the Federal Government for the creation of a National Nuclear Strategy.

A diverse, reliable and emissions-free supply mix might also focus on the development of bioenergy. Biofuels, in the form of biogas or ethanol, have the capability to be used in several sectors, such as transportation or heating. Recently, the development of first-generation biofuels has caused concerns on their impact on agricultural commodity prices and land use. The OCC believes that a bioenergy plan in Ontario should include a sustainability strategy in order to provide a low emission source of energy in the transportation and service sectors and economic development of the agricultural sector. Therefore, the province should continue to promote bioenergy development in the energy mix and engage business experts across sectors to better understand economic, technological, energy, land use, water use, environmental, labour and market realities.

C. EXPLORING NEW OPPORTUNITIES FOR ENERGY EFFICIENCY

In its Fifth Assessment Report (2009), the International Panel of Climate Change showed that energy conservation and efficiency play the second largest role in attaining climate stabilization targets up to 2030. As the time frame increases to 2100 and emission reduction targets get more ambitious, the importance of energy efficiency still remains very important. Energy efficiency technologies can be found through the system, from transmission and distribution systems to end-use consumers, and involve everything that allow us to do more with less energy. Aside from reducing CO₂ emissions, energy efficiency also reduces the overall spending for businesses. In Ontario there are two areas where efficiency would bring considerable results in the short term: the promotion of energy demand management (EDM) strategies and the strategic investment in more efficient options for transmission and distribution.

BACKGROUND

Climate change is a significant global environmental issue. Increasing global greenhouse gas (GHG) emissions are largely, but not exclusively, related to the production and use of fossil fuels. Carbon dioxide (CO₂) emitted from the burning of fossil fuels accounts for roughly 55 percent to 60 percent of global GHG emissions.

Therefore, climate change should be addressed as part of an integrated agenda that enhances energy security, maintains economic prosperity, reduces pollution, and mitigates GHG emissions. In the climate change debate, energy is viewed as the problem. In reality, affordable energy provides a solution to climate change because it sustains the economic growth necessary to drive technology change and environmental protection. History has shown that poor economies do not have the resources to make the environment a priority as do countries with more vibrant economies. A smart energy policy can capitalize on this dynamic, providing clean energy to power economic growth and poverty eradication across the globe.

Achieving energy security goals through greater efficiency and a highly competitive marketplace of energy options can effectively contribute to the reduction of GHG emissions. Encouraging greater energy conservation and efficient use of all forms of energy (including fossil fuels) and diversifying energy supplies (through greater use of nuclear, wind, and solar power; biofuels; flex-fuel and plug-in hybrid vehicles; clean coal; smart grid; and other technologies) make sense from both an energy security and an environmental perspective.

Nevertheless, one cannot ignore the challenges that do exist between energy security and climate change policies. Converting from coal to other forms of 'clean energies' such as natural gas or renewables, for example, can lead to GHG reductions, but it is appropriate to assess the cost impact on families and business, and the overall economy.

Balancing these and other global issues in Ontario cannot take place without first examining the situation from a federal and international perspective. In Ontario, the Climate Change Action Plan sets an ambitious target for GHG emissions in the long term, but the absence of a common federal – provincial framework represents a clear obstacle for business productivity. Rather than compound the present ambiguity, we need to increase the regulatory certainty businesses are seeking.

Furthermore, provincial policies in the field of climate change need to be reconciled with the federal position. Federal policy should not be driven by any province or group of provinces. The federal government should make it clear that any GHG reduction strategy in the country will follow the same path and guidelines in all the provinces. Issues of global impact, such as climate change, need to be debated and resolved in a comprehensive dialogue that can produce a clear assessment of the costs and benefits of any proposal.

This report continues the efforts of the Ontario Chamber of Commerce (OCC) to provide government and stakeholders with relevant information about environment and energy policy that can be transformed as a win-win strategy not only for the economy but also for the broader public interest and well being of the province.

The OCC has developed a set of principles for the province to consider. The three areas are based on the principle of a tripartite synergy between climate change policy, energy planning and business productivity. Our members believe that fostering alignment and mutual compatibility between climate change and business strategies will enable the government to reap beneficial effects of trade for both economic development and environmental protection. Indeed, economic growth generates the resources needed for the province to address climate change risks as well as opportunities to develop and invest in cleaner and more efficient technologies.

However, to be successful, Ontario's businesses need the support of a reliable and secure energy system at affordable prices and a regulatory certainty for the competitiveness of our economy.

Cap and Trade vs Carbon Neutral Tax

The WCI released in July 2010 a comprehensive strategy designed to reduce GHG emissions, stimulate development of clean-energy technologies, create green jobs, increase energy security and independence, and protect public health. The objective of the WCI plan is to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The regional goal will be reached by:

1. Creating a market-based system that caps GHG emissions and uses tradable permits
2. Encouraging GHG emission reductions in industries not covered by the emissions cap
3. Advancing policies that expand energy efficiency programs, reduce vehicle emissions

The OCC members believe that before starting any commitment on the cap and trade plan, the provincial government should evaluate other solutions that will produce the best benefits to Ontario's economy. The International Energy Agency, the western countries energy watchdog member of the Organization for the Economic Cooperation and Development, defines the cap and trade system as '...a market-based approach to controlling pollution that allows corporations or national government to trade emissions allowances under an overall cap, or limit, on those emissions'. The government sets a cap on pollution, limiting the amount of carbon dioxide and other harmful output that companies, or other groups, are allowed to release. The government then issues credits that allow companies to pollute a certain amount, as long as the aggregate pollution equals less than the set cap. Since some companies can reduce pollution more inexpensively than other industries, they may engage in trading some extra credits. Companies that can more efficiently reduce pollution sell credits to companies that cannot easily reduce their emissions. Aside from the value and clarity of the 'cap' that WCI members agree to use, OCC members fear that if businesses and corporations are financially penalized for their emissions, the cost will be transferred to the consumers. It is recommended that the provincial government look at other practices that have been successfully implemented in other jurisdictions. One example is to look at revenue neutral carbon tax as implemented in British Columbia. This is a tax on the carbon dioxide emissions from burning fossil fuels. Revenue-neutral means that little if any of the tax revenue rose by taxing carbon emissions would be retained by government. The vast majority of the revenues would be returned to the public. hidden tax as dollars flow to market participants, lawyers and consultants.

ONTARIO CLIMATE CHANGE CONTEXT

A. PROVIDING REGULATORY CERTAINTY IN TERMS OF CLIMATE CHANGE MITIGATION ACTIONS WITH FEDERAL GOVERNMENT

The performances of industry and the competitiveness of our labour force have played a crucial role in the past 60 years in raising living standards, creating employment, and widening consumer choices in Ontario. They have also been indispensable in helping diminish the ever-present forces of protectionism. The provincial government should focus on ways to secure the mutual benefits of a strengthened rules-based multilateral trading system and a new long-term global framework for combating climate change. Climate change is a global issue that requires a harmonized strategy. Our members recognize the importance of a long-term strategy to fight global warming. However, the provincial government should not be side-tracked by measures that would undermine interprovincial cooperation and Ontario's competitiveness.

In the past, basic policy questions were raised to address energy planning within the context of climate change. Questions include how to ensure continued technological progress, overcome implementation barriers and accelerate the shift towards cleaner and greener forms of energy. There are many good political, economic and social reasons for stimulating a more rapid development of renewable energy. However, such stimulus, if not supported by efficient economic development strategies, could bring market disruption with negative consequences on business productivity. OCC members believe that Ontario should address these challenges in other ways. Ontario should lead the efforts to contribute a unique long-term strategy with the provinces and the federal government and to boost the development of its economy. In short, Ontario needs an energy strategy that could support a climate change-economic development synergy.

Ontario is Canada's second-largest emitter of GHG emissions. In June 2007, the Ontario government launched Ontario's Climate Change Action Plan. The plan established province-wide emission reduction targets and outlined policies and programmes to promote greater use of clean and renewable energy sources. The plan included a wide range of measures to reduce the carbon footprint of the Ontario government and the province's industrial, commercial, transportation, municipal and residential sectors. Reaching beyond Canada's international obligation, the Ontario government has set itself ambitious GHG emission reduction targets: 6 percent reduction (based on 1990 levels) by 2014, 15

percent by 2020 and 80 percent by 2050. To achieve these targets, the provincial government has been pursuing a range of measures to decarbonise its economy. One course of action has been to

The advantages of a revenue neutral carbon tax compared with the the cap and trade regime are the following:

1. Carbon taxes will lend predictability to energy prices, whereas a cap and trade system will aggravate the price volatility that discourages investment in less carbon intensive electricity generation, carbon-reducing efficiency and carbon-replacing renewable energy.
2. Carbon taxes can be implemented much sooner than complex cap and trade systems.
3. Carbon taxes are transparent and easily understandable, making them more likely to elicit the necessary public support than an opaque and difficult system such as cap and trade.
4. Carbon tax revenues would most likely be returned to the public through dividends or progressive tax-shifting, while the costs of cap-and-trade systems are likely to become a hidden tax as dollars flow to market participants, lawyers and consultants.

reduce emissions from the power sector, in particular through the elimination of coal generation by 2014 with the replacement of renewables. 2009's Green Energy Act is certainly the most innovative measure in this context.

In January 2010, the federal government announced a new set of GHG emission targets. This new framework introduced a revised target: to achieve a 20% GHG emissions reduction below 2006 levels by 2020 (equivalent to 3 percent below 1990 levels in Kyoto terms or approximately 574 Mt CO₂-eq) and a 60 percent to 70 percent reduction by 2050. More important, these standards do not align with the recent development of Ontario and Canada's major trading partners, the United States.

Ontario remains in a difficult position, despite developing one of the most ambitious initiatives in North America; indeed, its economy is inexorably linked to that of its most immediate neighbour to the south. In absence of an agreed global solution, any emission-related measure taken by the provincial government that is unmatched by parallel measures at the federal level and with the United States, stand to disadvantage Ontario's economy. The lack of a coordinated approach sends confusing

and negative signals to Ontario's key industrial partners. On this basis, OCC members strongly encourage the federal government to develop a national climate change strategy and to promote a dialogue with the United States for a harmonized North American strategy. The provincial government should build on this momentum and seek further opportunities for engagement and climate change coordination while continuing to develop its own initiatives within a national and, ideally, continental context.

Businesses make investment decisions based on expectations about the future. Assumptions about economic growth, consumer preferences, trade patterns, and labour and material costs are all considered as executives plan their strategies to design, build, and ultimately market new products and services. Assumptions about government policy are also critical. In the case of carbon heavy, capital intensive industries that build and operate long lived assets, assumptions about the nature and shape of future climate policy can be the determinative factor in deciding what type of plant to build. But without a harmonized and clear, climate policy framework in place, companies today face a real dilemma. Our businesses share the general consensus that climate change regulations are coming, but significant uncertainty remains regarding the precise form and timing of the rules. This uncertainty has a crippling effect on business planning and investment.

In short, regulatory uncertainty at the national level delays investments and stymies growth. While electric utilities provide a stark example of this effect, they are not alone. Ontario automakers have also suffered from the absence of a clear national climate and energy policy. In this industry, it can take up to seven years to bring a product to the market, and the technology development process can take up to a dozen years. This means that auto engineers are currently designing vehicles for the 2017 market at the earliest, a market that will undoubtedly look very different than today's. As a result, automakers are calling for a longer term regulatory framework to help guide their investment decisions over the next few decades. A national framework would help automakers more intelligently assess the relative costs and benefits of various low carbon options including electrification, lightweighting, biofuels and hydrogen fueling, and lower the probability of making expensive bets on the wrong technology.

Still, some companies continue to believe it is in their best interests to try and beat back climate change rules for as long as possible. Permanent abandonment of GHG regulation provides its own sense of certainty, or so the thinking goes. The evidence is clear that different standards provincially and federally will continue to address climate change, but in ways that may be less consistent, more costly for Ontario's business and potentially less effective. Our members are concerned that conflicting provincial/federal standards could drive up costs and complexity for businesses that operate throughout the country.

Other jurisdictions, such as the European Union, have successfully adapted a unique long-term strategy for Climate Change with considerable success. Since 2005, many European businesses, in particular the power sector and energy-intensive industries – have seen their GHG emissions regulated by the European Union Emissions Trading System (EU ETS) and a range of supporting policies and initiatives. Together, these provide a useful comparative model for Canada and its dialogue with the United States. The EU ETS has been deployed without evidence of significant adverse impact on sectors or companies.

OCC members applaud Ontario's effort in working with other Canadian provinces and US states within the framework of the Western Climate Initiative (WCI). However, OCC members are concerned about the commitment of the parties within these initiatives and the measures to be taken for developing a broader cap-and-trade system. First, there is a growing confusion on the structure per se of the initiative. The WCI has no official headquarters and it is unclear how decisions are taken and where the accountability of the policy making process lies. Second, there is a growing concern on Ontario's plan to introduce a cap and trade system under the WCI, in regards to the criteria chosen by WCI members. For several years, California has been one of the major proponents of the WCI's cap and trade plan. However, the provincial government should recognize the differences in the economies and the structure of the industries of the other WCI parties and their impact on a federal climate change action.

The International Energy Agency (IEA) praised provincial initiatives in its last review of Canada's energy policy released in 2010. However, 'while this may bring very welcome benefits in the short term, (provinces should) ensure that the goals and the objectives of each (province) are consistent with the long-term intentions of the federal government and any emerging international arrangements that Canada may be party to'. Furthermore, 'It also remains unclear how national targets are to be co-ordinated, divided and enforced among provinces and territories (including the role, if any, of a cap-and-trade system, renewable energy standards and low-carbon fuel standards). Recognising the strong powers of the provincial governments in determining their own energy and environmental policies, the federal government should provide leadership and facilitate a multilateral dialogue between provinces and territories to enable a harmonised and co-ordinated Canadian system. That system should be one that provides clear marketbased signals and maintains Canada's competitive advantage...'. Given the government's agenda, any actions or commitment towards GHG mitigation measures should be pursued on a national level, with the involvement of Ontario's largest trading partner, the United States.

Recommendation 1: Pursue a harmonized and non-discriminatory approach for GHG reduction standards in parallel with the Federal Government and the United States.

Issues of clean air requirements should also benefit from a harmonized framework within a climate change strategy. Air quality issues are directly linked to the evolving situation on climate change. Recent research confirmed that global climate change would likely trigger increases in smog and health problems in the atmosphere. Just as climate change exacerbates air pollution, air pollution also exacerbates climate change. Indeed, incomplete combustion of fossil fuels, biofuels, and biomass produces black carbon, also called soot or particulate matters.

Air quality issues have a long history of regulation in North America. Particulate matter was an air contaminant originally regulated in Canada as "criteria pollutants," some 30 years ago. Although these air pollutants have been historically regulated, and air quality improvements are evident, they continue to be important indicators of air quality. This importance reflects an evolving understanding of their impact on health, particularly as new scientific techniques and epidemiological methods identify more precise cause-and-effect relationships between exposure and wide-ranging health outcomes. Ongoing scientific research has confirmed that even at comparatively low concentrations, these air contaminants are associated with morbidity and mortality responses in the general population. In addition, the pollution concentration estimates associated with these effects are at levels that most Ontarians frequently encounter. Thus there is a compelling public health commitment to manage and reduce exposures to these pollutants.

Due to its linkage with climate change, air quality issues need be centrally administered for the economic productivity of businesses. In Ontario, there is an ongoing debate about the effects of air

Feed in Tariff, Micro Fit and Smart Grid

The Ontario Power Authority (OPA) is the agency responsible for planning and procuring electricity supply, ensuring the reliability of electricity resources in Ontario, and facilitating the diversification of Ontario's energy supply, among other things. Pursuant to the Green Energy Act, the Ontario Minister of Energy is provided with the ability to direct the OPA to develop a feed-in-tariff (FIT) program designed to procure energy from renewable energy sources. A FIT program is a program for procurement; it includes a procurement process and provides standard program rules, standard contracts and standard pricing for various classes of generation facilities, as differentiated by energy source or fuel type, generator capacity and the manner by which the generation facility is used, deployed, installed or located.

The term of the FIT contract is for a period of 20 years, or in the case of a waterpower project, a period of 40 years. The FIT program establishes long-term pricing for electricity delivered from projects. The pricing is based on the renewable fuel, the contract capacity and, in certain cases, the category of applicant or other project characteristics. The pricing is intended to cover development costs, plus a reasonable rate of return, for projects meeting certain assumptions relating to cost and efficiency. The pricing, in Canadian dollars, is dependent on the renewable fuel in question and the size of the project.

The program includes a stream called microFIT which is designed to encourage homeowners, businesses and others to generate renewable energy with projects of 10 kilowatts (kW) or less. MicroFIT is designed to make it simpler and faster to get small-scale renewable projects installed and producing power. The FIT program is designed for larger projects greater than 10 kW. As a strategy to promote green energy investment, the weak spots of FITs or Microfit have to be located out of the FIT framework itself.

quality regulations on business costs and business locations decisions. The OCC is concerned about how air quality, and specifically particulate matter, is administered. In the current approach, Canada's provincial environment ministers, under the auspices of the Canadian Council of Ministers of Environment, establish national standards, guidelines and criteria for the protection of the environment and human health. Provincial governments can adopt Canada Wide Standards (CWS) as benchmarks for their own provincial standards that take into account their own priorities and circumstances.

Businesses across the province expressed the view that fragmented environmental regulations affect the cost of production of goods and services to the point of significantly reducing Ontario's competitiveness. The regulation of air quality in Ontario falls under the responsibility of different ministries, with distinct objectives and strategies. Although the Minister of Environment is currently investigating the responsibility to administrate fine particulate matter on a provincial level, the government should undertake more studies to see how clean air solutions could be translated into climate protection.

In the context of a greener future, it is also important to highlight that clean air solutions alone do not necessarily translate to climate protection. For example, smog-creating air pollution decreased substantially in the US following the Clean Air Act of 1970. By contrast, CO₂ emissions rose during the same period because air quality tactics such as "tailpipe" controls and smokestack scrubbers have little or no impact on carbon dioxide. Furthermore, some clean air technologies actually increase CO₂ by lowering plant efficiency, thus requiring more energy to be used. Some alternative fuels that are good for air quality either have no effect or increase GHG emissions. Congestion management measures like signal synchronization often reduce emissions only temporarily. Emissions may actually increase in the long run because short-term traffic relief encourages people to drive more. Although strategies that cut standard air pollution often miss GHG emissions, strategies that reduce GHG emissions almost always improve air quality as well.

Recommendation 2: Include Clean Air issues within a provincial Climate Change Action Plan.

B. PROMOTING GHG REDUCTION STRATEGIES BY COMBINING ENERGY SECURITY AND ECONOMIC GROWTH

The Action Plan on Climate Change also assigns the 2014 and 2020 GHG reduction targets to different sectors of the economy, the most significant of which will be the phasing-out of coal-fired generation.

Climate change and energy are two key issues that play a significant role in shaping the future of economic development. Although they produce distinct challenges, climate change, energy security and economic development are inextricably linked. Huge volumes of fossil fuel in the form of gasoline, oil, coal and natural gas are currently used to sustain Ontario's business activities. However, these fossil fuels are the main contributors of carbon dioxide in the atmosphere. These, with other emissions generated by human activities and transportation, accentuate the natural greenhouse effect in the atmosphere.

The OCC recognizes that off-grid renewable energy is a practical, cost-effective alternative to an expansion of grid systems in remote areas of the province. However, the pursuit of a green energy strategy should not, occur in isolation from efforts to address energy security and, economic growth.

Coal-fired electricity is one of the province's most significant sources of GHG emissions. Ontario will cease to burn coal at the four remaining coal-fired generating stations by the end of 2014. Coal replacement represents a reduction in GHG emissions of up to 30 Mt CO₂-eq, the single largest GHG reduction initiative in North America. Furthermore, Ontario is the first jurisdiction in North America to eliminate coal-fired power.

To better understand Ontario's GHG targets outlined in the Climate Change Action Plan, one needs to compare the plan with the current federal strategy. In early 2010, Canada announced its 2020 emissions reduction target under the Copenhagen Accord. Canada's 2020 target is an economy-wide 17 percent emissions reduction below 2005 levels.

In addition to reducing emissions, Ontario's Climate Change Action Plan relies on the establishment of a greener, more sustainable economy. Indeed, the government's approach focuses on the development and adoption of green technologies with the creation of a green economy infrastructure and finding alternatives to traditional energy supply, such as increased conservation, nuclear capacity and renewable energy.

The successful development and adoption of green technologies depends on the creation of a green economy infrastructure and finding alternatives to our traditional energy supply – such as increased conservation and renewable energy, which are being driven by the Green Energy Act (GEA).

Modelled on Germany's Energy Renewable Act, the GEA has created an environment in which renewable energy sources may become profitable and less risky to develop through the creation of a "Feed-in Tariff" and 'micro-fit' system. Building on the former Renewable Energy Standard Offer Program (RESOP), the GEA guarantees producers a predetermined rate for all electricity generated. In addition, the GEA establishes the "right to connect," which ensures access to the grid at all times and for all renewable energy produced in the province.

A further initiative that has been implemented to facilitate the augmentation of renewable energy in the province is the net metering system, which allows Ontario residents to produce their own electricity and send it to their local utility. The local utility company either credits or debits the customer, depending on the amount of electricity produced versus the amount consumed.

There are growing concerns in the business community about the reliability and costs of this new green energy supply. The strength of Ontario's economy had relied on a direct correlation between energy use and prosperity. OCC members feel that the future prosperity of the province will come from ensuring an abundant and affordable supply of energy to families and businesses. Indeed, ensuring a diversity of supply in the grid will:

- Start Competition
- Stimulate innovation
- Preserve energy

Ensuring a diversity of supply will also help business invest in new technologies that will help meet their needs in a more sustainable manner. Ontario has a well-diversified portfolio of energy resources and these include fossil fuels such as coal, natural gas, nuclear power and renewables such as bioenergy, solar and wind. Each of these energy resources presents opportunities and constraints, which may be different depending on local circumstances.

Companies doing business in global markets will seek to minimize energy costs and therefore improve their competitiveness as much as possible. Business benefits from choices and diversification from the perspective of efficiency and risk management. The challenge is to support choices and access within the framework of cooperation and competitive markets.

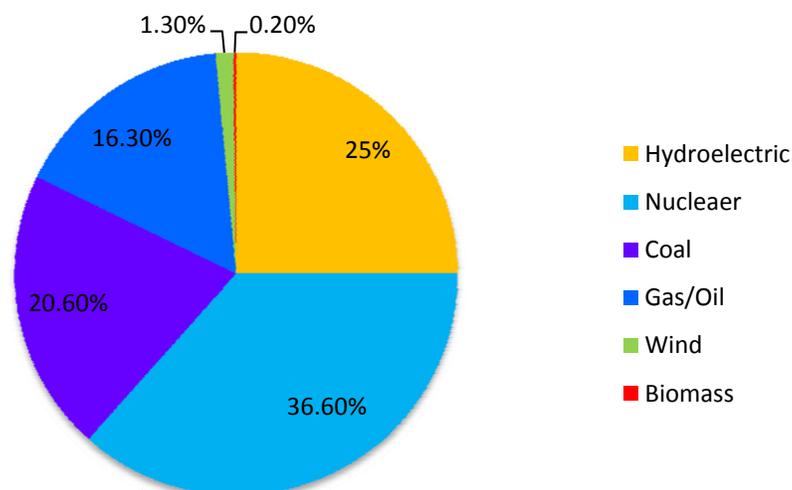
The availability of a broader mix of energy supply options can assist companies in performing their daily operations. Addressing these challenges is an integral part of broader business strategy and planning and involves use of energy management systems to deal with risk and uncertainty in short-, medium- and long-term timeframes. Energy diversification helps improve performance, provides options and opportunities to spread risk, keep costs low and seek out competitive advantage.

Due to the number and complexity of sustainability issues, energy-related decisions often involve a series of trade-offs, including a wide range of economic, social and environmental aspects. Tradeoffs can occur across environmental performance and cost, and between long-term risk and short-term needs and requirements. The 2009 European Climate and Energy package, for example, addresses these issues through investment towards climate change targets, by accelerating the diversification of the supply mix and lowering the import dependency on fossil fuels.

When faced with decisions about energy sources and investments, businesses will consider a wide range of inter-related issues. These include technology scale and dispatchability in relation to demand, technology risk, capital and operational costs, rate of return, availability of financing, supply chain considerations, competitive edge and environmental and social impacts. Circumstances where the investment is to take place are a critical factor, as are infrastructure, regulatory frameworks and permitting requirements and investment incentives. International policy requirements across a range of disciplines (trade, environment, investment) also effect these business decisions regarding energy. Another critical element in decision-making is where the technology is along the maturity scale. For technologies in the R&D phase, different policies, incentives or collaboration may be needed than for technologies that are already on the market.

In an Ontario business context energy security means confidence in its ongoing ability to access reliable and affordable energy wherever it operates. Energy security is thus an important consideration, not only for day-to-day operations, but also for long-term investment. In terms of long-term security, many companies face energy mix decisions that impact not only current investments, but also R&D, investment and sourcing of future resources. Strategic choices relating to future energy mix “tracks” can have major implications on long-term competitiveness of the business due to possible future legislative frameworks and fleet strategies, where companies can standardize certain technologies and thus leverage and optimize economies of scale.

ONTARIO ENERGY MIX, 2008



The Ontario government will phase out coal generation by 2014 and replace it with a green energy supply, like hydro, wind and solar energy. Until 2007, coal provided approximately 20 percent of Ontario’s electricity supply, making it the second largest source (after nuclear) of domestic, reliable, and affordable energy.

Recent studies have shown that Spain’s ‘green job’ policy has created a surprisingly low number of jobs. Two thirds of new employment were in construction, fabrication and installation and just one out of 10 has been created at the more permanent level of actual operation and maintenance of the renewable sources of electricity.

Minimum guaranteed prices generate surpluses that are difficult to manage. In Spain's case, minimum electricity prices for renewable-generated electricity, far above market prices, wasted a vast amount of capital that could have been otherwise more economically allocated in other sectors. Arbitrary, state-established price systems inherent in "green energy" schemes leave the subsidized renewable industry hanging by a very weak thread and, it appears, doomed to dramatic adjustments that may result in unemployment, loss of capital, dismantlement of facilities and the perpetuation of inefficient ones.

While Ontario's first priority is to ensure an emission-free supply by 2014, priority should be given to sources that guarantee a continuous and sustainable flow of supply, such as new large hydro and nuclear power plants. The OCC is pleased to acknowledge that nuclear and hydropower are the top two priority projects in the 2010 Long Term Energy Plan (LTEP).

Recommendation 3: Invest in the establishment of a diverse energy supply mix at sustainable prices to sustain the economic development of the province.

Nuclear power is the province's largest emissions-free source of electricity. From a life-cycle perspective including the impacts of uranium mining, uranium enrichment, fuel fabrication, plant construction, and fuel disposal-nuclear power offers a huge emissions advantage over any other large-scale method of baseload power generation and is on par with renewable sources. Nuclear power currently supplies almost half of Ontario's electricity supply. Ontario's 16 operating nuclear power reactors are also the cheapest source of baseload electricity on a per-kilowatt-hour basis because operational and fuel costs are comparatively low. Ontario's existing reactors have to be decommissioned or refurbished by 2020 which has been cause of concern in terms of reliability of supply.

The issue lies not only in the urgency for renewing Ontario's plants, but rather in establishing a clear and defined nuclear strategy in partnership with the federal government that can provide reliable energy supply, create jobs and boost the Canadian economy. New nuclear power plants are capital-intensive, requiring an estimated \$8–10 billion dollars per plant. A provincial-federal strategy for building new nuclear reactors is a crucial tool to enable utilities to finance the construction of new plants by increasing access to capital and enabling a higher share of leveraged debt.

To address this issue, Ontario needs to adopt a regulatory framework consistent with competitive electricity market structures. Although they recognize the importance of reducing GHG emissions from coal generation, OCC members are extremely concerned about the reliability of supply and affordability of new generation. Our members ask the government to ensure that an adequate base load supply at an affordable price is secured by the time coal plants are shut down.

Since the last nuclear power plants were built in Ontario, the domestic manufacturing base, which is necessary to produce nuclear grade equipment, has significantly diminished. Rebuilding the domestic manufacturing base will create tens of thousands of new jobs and ensure that the supply chain does not become a constraint on the deployment of new nuclear power plants.

Furthermore, more advanced nuclear generating technologies, like high-temperature reactors that can produce nuclear process heat as well as electricity, are necessary to prepare for the long-term viability of nuclear energy and must continue to be developed. Additionally, the province must continue to work with industry to study the effects of aging on our existing fleet of reactors to determine if they can be safely operated beyond 60 years.

Ontario's nuclear waste policy has been crafted at a time when the province believed there would be no additions to our fleet of nuclear reactors, and the current fleet would be phased out, leaving us with a finite amount of used nuclear fuel to manage. Combined with other investments in hydropower, biofuels and renewables, the expansion of nuclear power facilities would ensure that electricity supply would keep pace with demand, while avoiding hazardous air emissions and GHG strategies.

However, due to the complex economic and technical dynamics of the nuclear industry, the OCC encourage the Ontario government to engage the federal government in the establishment of a National Nuclear Strategy (NNS). A NNS would help foster the sector's expansion, to ensure that timelines would be controlled and respected and to enhance funds for innovation and sustainability.

Recommendation 4: Engage the Federal Government in the creation of a National Nuclear Strategy.

Ontario is engaging in innovative strategies to reconcile the challenges of reducing fossil fuel dependency in order to address global warming, promote energy security and diversification while sustaining economic development. Bioenergy can and does play a role in addressing growing energy demand. Bioenergy exists in various forms and applications, and the experiences and issues that are encountered depend on the application and singular circumstances, as well as the scale of use, relevant market conditions, water availability, social and environmental acceptance and other contexts.

Overly broad generalizations and criteria for the wide range of bioenergy options can only go so far. For example, the use of biomass in stationary applications can offer greater GHG emissions savings per hectare of land use than conventional biofuels. In addition, the use of bioenergy-based power plants fitted with Carbon Capture and Geological Storage (CCS) offers the opportunity to remove carbon dioxide already in the atmosphere. As a sector in continuing expansion, Ontario should seek early opportunities to improve R&D in biofuels.

Bioenergy has a great future potential in electric power generation and space heating, cogeneration and transportation. Being emission free, bioenergy also support the province's climate change strategy. While encouraging the development of biofuels as part of the energy mix, policy decisions should not create market distortions, for example, by contributing to trade discrimination and distortion of agricultural markets. A technical approach should be undertaken with representatives from industry, suppliers and consumers, across impacted sectors. Associated modifications to infrastructure should be consulted in forming a realistic view of costs, timing, environmental and societal acceptance and uptake. Where targets or mandates are defined, careful assessment of feasibility and comparison to other energy sources that would be displaced is necessary. All energy sources should compete equally against a common set of objective criteria for performance and environmental and social costs.

However, in addressing and advancing bioenergy options as part of a diverse energy mix, the government's priorities should be to maximize its benefits to avoid unintended consequences of bioenergy in the following areas:

- Climate Change (GHG performance)
- Agricultural, land and water use and biodiversity considerations
- Industrial use (towards a bio-based economy) and biotechnology
- Food production and impact on costs for consumers, farmers income, communities
- Infrastructure and vehicle compatibility
- Broader economic benefits and impacts

Criteria which do not take a broad view of the economic, environmental and social benefits and impacts will not be helpful, and could undermine the sustainability potential of bioenergy, therefore discouraging innovation.

The sustainability aspects show how different aspects of biofuels relate and interact. The provincial government should bear in mind the challenges that the biogas strategy of the LTEP has on other sectors of the economy. Increasing amounts of first generation of biofuels (such as corn, wheat, rapeseed, soy and sugar) are being used for ethanol and bio-diesel production. This impacts crop and food prices and indirectly, through higher feed costs, the prices for livestock products. There are several cross-sectoral impacts related to increased biofuels production, for food and animal feed industries as well as for other sectors that depend on biomass as industrial feedstock. However, these commodities are also subject to other factors, related to weather, energy costs, subsidies, tariffs, consumer demand for food and feed as well as to non-market forces. Impacts from the use of food crops for bioenergy can be reduced by pursuing investment in second and third generation biofuels, by using other types of biomass, including wood and wood residuals.

Bioenergy production and use are clearly emerging processes, but they should be strategic emissions options to support various aspects of our businesses' activities. However, their development should be viable and sustainable. The government's comprehensive strategy should consider the economics of biofuels, their lifecycle environmental impacts, their implications for other sectors, as well as the impact of further scientific and technological advancements.

Recommendation 5: Continue to promote bioenergy development in the energy mix and engage business experts across sectors to better understand economic, technological, energy, land use, water use, environmental, labour and market realities.

ENERGY EFFICIENCY

C. EXPLORING NEW OPPORTUNITIES FOR ENERGY EFFICIENCY

The IEA's 2010 World Energy Outlook shows that, while renewable energy would play an increasing role in developing low carbon emission economies, end use energy efficiency measures will carry the bulk of reductions. The UNFCCC also includes energy efficiency, the promotion of renewables and a sustainable transport system, as the three major program areas that countries should pursue in their commitment against climate change. Energy efficiency is a fundamental element in the progression towards a more sustainable energy future. As Ontario's energy demand continues to grow, actions to increase energy efficiency will be essential. Improving energy efficiency can be both highly profitable and support conservation and access goals. In many cases, significant progress can be made through the widespread deployment of existing technologies, many of which are already commercially competitive.

As access to modern energy services increases, quality of life improves. OCC members believe that energy efficiency needs to be pursued in two key initiatives: implementing effective demand side management practices and improving energy infrastructure.

An improved demand management strategy entails actions that influence the quantity or patterns of use of energy consumed, such as actions targeting the reduction of peak demand during periods when energy-supply systems are constrained. Peak demand management does not necessarily decrease total energy consumption but could be expected to reduce the need for investments in networks and/or power plants. Energy utilities have therefore a great interest in implementing a demand side management program. For example, smart meters that indicate individual appliance consumption can alert users to waste. Power utilities can also alert users to excessive consumption by providing comparative information about energy use on the bill or through the internet, as already happens with some consumers in Japan and the United Kingdom.

In the last 10 years, Ontario has been subjected to a radical change in its annual electricity system peak demand, passing from the winter season to the hottest days in the summer. At the time of annual system peak, 38 percent of Ontario's electricity is being used for residential, commercial and institutional air-conditioning.

The cost of supplying electricity on peak demand days is very high. Specifically, the cost of supplying electricity during the 90 hours of maximum annual demand (1 percent of the time) is greater than or equal to \$1.36 per kWh. The cost of supplying electricity on peak demand days is dramatically higher than the average consumer price at non peak times. For example, the cost of supplying peak electricity is 14 times greater than the average price of electricity for a Toronto Hydro residential consumer.

Even in the most active jurisdictions, demand response programs have only scratched the surface of what is possible; most customers are unaware of how they could participate or how they could reconfigure their operations to benefit. In our view, efficient demand response programs provide the tools to reduce the "peak day" demand in the province, ensuring more available supply for industries and business sectors. According to the Ontario Power Authority (OPA)'s forecast, Ontario's peak day demands will increase by 21 percent by 2025.

The government should make it a priority to integrate efficient demand management measures. To obtain all of Ontario's cost-effective demand response potential, the OPA should let electricity prices reflect the real market price, in order to enact strategies to reduce consumers' demand on peak days.

By increasing electricity productivity (dollars of Gross Domestic Product produced per kWh of electricity consumed), the province can simultaneously reduce air pollution and GHG emissions. However, the prime reason for Ontario's low electricity productivity is due to low electricity prices that discourage smart and efficient energy use. Ontario's electricity prices are the result of several subsidies that distort the market and affect efficiency. This will increase the likelihood of power disruptions with consequences to our economy.

Energy audits are essential for all sectors of the economy (including residential/tertiary sector buildings as well as industrial sector and transport companies) to promote a better understanding of the current status of end-use energy efficiency. The audits, which are usually coordinated by engineering or facility departments, will not only create awareness among those who are functionally involved in the management of energy but also justify the necessity for retrofitting activities and the creation of new energy infrastructure.

A more sustainable growth in energy use in the residential sector will decrease the need to invest money to expand or upgrade Ontario's electricity network in the future. Not only can demand management initiatives reduce growth in peak electricity demand, but can also provide savings in future energy infrastructure costs and mitigate greenhouse gas emissions.

The rationale behind these assumptions is that peak demand in electricity use is the major driver for investment in electricity infrastructure and consequent electricity price increases. The capacity of the electricity network can be more effectively used by energy conservation measures and shifting electricity use from peak times. There is strong evidence internationally and from research organizations that early intervention by energy utilities to manage peak demand leads to long-term benefits for energy consumers and utilities.

A growing energy supply that would meet future demand with reduced environmental impacts will require significant long-term investment. More sustainable energy pathways play a key role in ensuring that economic activity advances social development and environmental protection.

A robust and flexible energy infrastructure is of critical importance to the provision of many other services as well as industry and manufacturing. Energy contributes to meeting basic needs, such as clean water, food preservation, transportation, healthcare, sanitation, education and communications. A stable supply delivered to homes and businesses underpin a robust Ontario economy. Robust investments are needed to modernize, protect, and upgrade these critical assets, which are essential to Ontario's economy, energy security, and prosperity.

In urban areas most of the greenhouse gas emissions come from combustion of fossil fuels in vehicles, heating plant and electricity generation. The technologies that can displace fossil fuel energy with non-fossil fuel energy in these applications generally require that additional electricity be generated in rural areas and delivered via transmission lines to urban areas. Existing urban municipal plans often do not provide sufficient additional electricity transmission corridors to allow electricity to displace fossil fuels. Hence, in order to reduce urban greenhouse gas emissions, substantial amounts of urban property must be expropriated to form the required additional electricity transmission corridors.

In rural areas, electricity transmission equipment is primarily used to guide electromagnetic energy from energy sources in rural areas to loads in urban areas. The unconstrained outputs of renewable energy sources are variable both with respect to time of day (as with of wind turbines and solar) and are variable with respect to the time of the year (wind turbines, run-of-river hydraulic generation and solar). The average annual output of a wind farm is typically only 30 percent of its peak output. Since the transmission line connected to a wind farm without adjacent energy storage must be sized to handle the wind farm's peak output, on average only of 30 percent of that transmission line's capacity is effectively used. This problem is compounded by the fact that a wind farm requires the generation that is often located elsewhere. The transmission line connected to that balancing generation is also inefficiently used. In simple terms, renewable energy generators without adjacent

energy storage generally require several times as much transmission per kWh of electricity delivered as do nuclear generators. The net result is that, without energy storage, as the fraction of total energy supply from renewable generation increases, the required amount of rural transmission increases several times faster.

The required amount of rural transmission can be mitigated through the use of daily energy storage located close to the generators and the loads. Seasonal energy storage, involving large hydroelectric projects and major transmission system enhancements, is also required for seasonal balancing of renewable generation. The combined cost of daily and seasonal energy storage may exceed the cost of the generation. Constructing rural transmission requires expropriation of lengthy corridors of land. The OPA has yet to address the full costs of energy storage and rural transmission required to support large amounts of renewable generation.

One solution would be to build smaller generators within a grid network, referred to as 'distributed generation'. These can provide a number of benefits, including reduced greenhouse gas emissions – for generation based on renewable energy and low carbon fuel; increased energy security and diversity of supply; and reduced costs – as electricity is generated by more efficient systems and closer to the point of consumption. Independent Power Producers (IPP) frameworks and net metering regulations offer ways for an efficient growth of renewable energy distributed generation. In net metering regulation, consumers/generators are allowed to sell power to the grid and are charged the same rate for the power that is either taken or sold. The customer/generator only pays for the net consumption, with the difference in retail and buy back rates being factored in.

Environment, equipment depreciation, rural transmission and urban transmission have led to the electricity industry being subject to intense public scrutiny. Ontario's electricity system has deteriorated to such an extent that Ontario presently relies on both large amounts of fossil fuel electricity generation and electricity imports from the US for meeting our peak electricity load. The government should eliminate the multiple layers of required approvals needed for investment in infrastructure that have been discouraging private sector participation.

Regular inspections, maintenance and renewal are key elements to ensure energy efficiency in the long term. For example, under the Asia-Pacific Partnership on Clean Development and Climate (APP), Power Generation and Transmission Taskforce, a series of "peer review activities" have been implemented among plant engineers and managers of APP countries including China and India, in order to share the best practices of management of transmission and distribution lines.

Resolution 6: Promote energy efficiency through Energy Demand Management and provide strategic investment in transmission and distribution systems.

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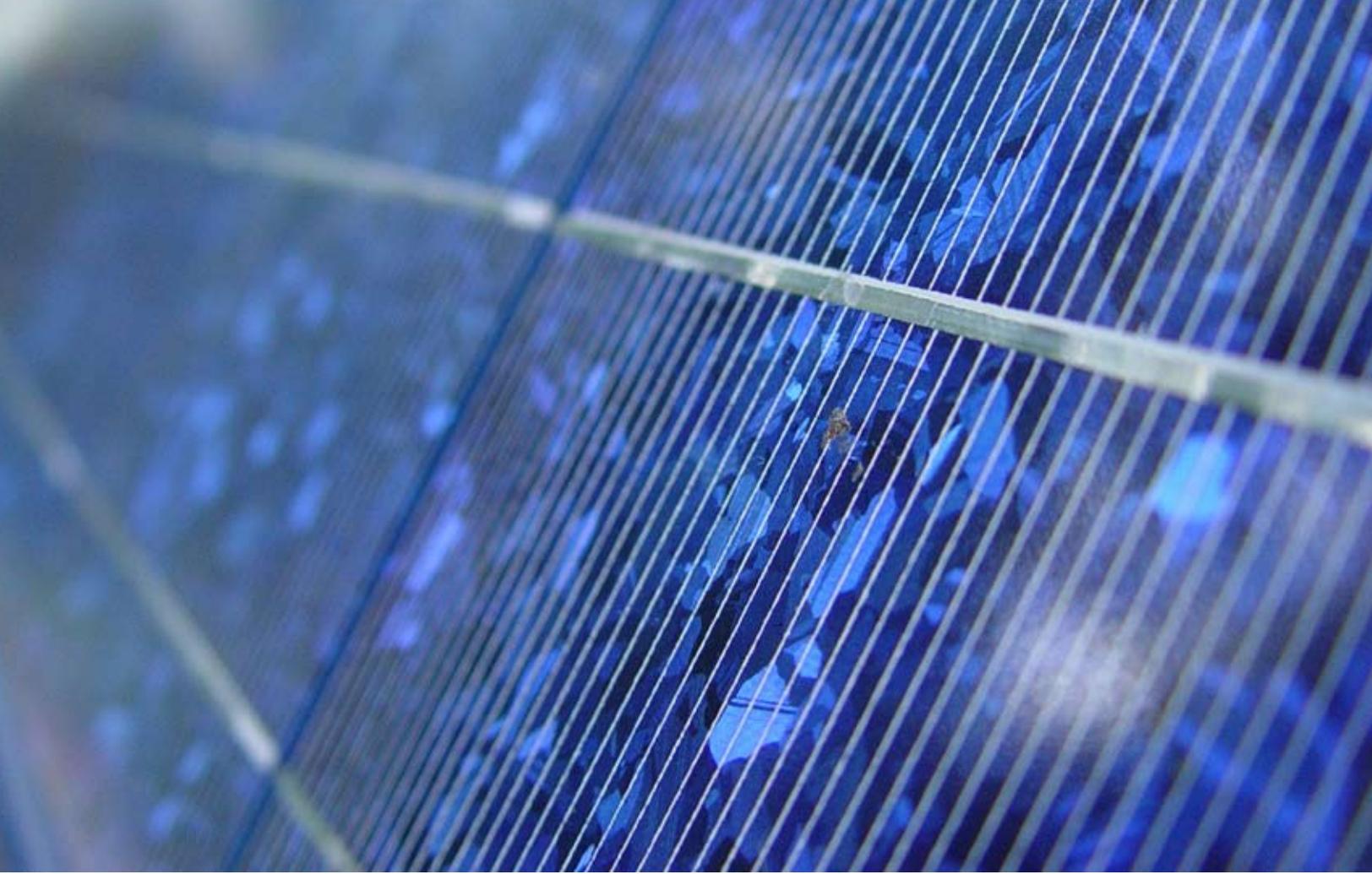
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