



ADVICE TO COUNCIL NO: 06-01

Re: Renewable Energy Alternatives: Bio-Fuels, Solar Energy and Wind Power

The Joint Public Advisory Committee (JPAC) of the Commission for Environmental Cooperation (CEC) of North America;

IN ACCORDANCE with Article 16(4) of the North American Agreement on Environmental Cooperation (NAAEC), which states that JPAC “may provide advice to Council on any matter within the scope of this agreement [...] and on the implementation and further elaboration of this agreement, and may perform such other functions as the Council may direct”;

RECOGNIZING THAT rapid and large-scale deployment of renewable energy technologies and aggressive energy conservation strategies could significantly reduce greenhouse gas emissions and contribute to energy self-sufficiency;

HAVING conducted a JPAC public workshop, “Renewable Energy Alternatives: Bio-fuels, Solar Energy and Wind Power,” on Tuesday, 27 June 2006, in Washington, DC, which featured sessions with expert speakers from government agencies, nongovernmental organizations and the private sector, as well as breakout sessions moderated by JPAC members;

PROVIDES the following recommendations for consideration by Council in planning CEC work to help meet the challenges faced by these renewable energy sectors in the NAFTA region.

General

- JPAC recognizes the important work that the CEC is undertaking to promote the use of Renewable Energy in North America.

Bio-fuels

Bio-fuels can be the primary renewable substitutes for transportation fuels. The high and, at times, unpredictable changes in the price of oil, the preference for North American self-sufficiency in energy sources for security and economic reasons, as well as the associated environmental consequences/impacts associated with burning this oil, make this an opportune time for our three governments and the CEC to take the lead on promoting sustainable bio-fuels.

Three bio-fuels were examined in our workshop. The first was ethanol, which can be derived from a number of feedstock including sugar cane, sugar beets, corn, wheat or

barley. The second was bio-diesel. The feedstock used to make bio-diesel includes organic oils made from palm, rapeseed, sunflower seeds, flaxseeds, castor beans and soybeans. The third, cellulosic ethanol, is a blend of normal ethanol that can be produced from a great diversity of biomass, including waste from urban, agricultural, and forestry sources. Unlike normal ethanol, which is made from sugars and starches, cellulosic ethanol is produced from cellulose. Two methods of producing cellulosic ethanol are acidic or enzymatic hydrolysis and synthesis gas fermentation (gasification of cellulosic materials followed by a fermentation step). Neither process generates toxic emissions when it produces ethanol. Pilot projects using these technologies are currently being undertaken.

Recommendations:

- Given the numerous options available in the bio-fuels area, the CEC, along with other interested organizations, can help develop criteria for choosing the most sustainable bio-fuel, taking into account the available resources of the region in question.
- Our workshop noted that the feedstock necessary for producing bio-fuels needs to be locally grown and match the available agricultural inputs. For example, in Mexico, an agricultural feedstock in the production of bio-diesel that does not require much water or rich soil to grow is the chilacayote (*Cucurbita ficifolia*). This suggests that the CEC should sponsor work on sustainable sources of biomass that not only takes into account the agricultural resources available in the region in question but also explores any unintended consequences associated with the expansion of this feedstock as the demand for bio-fuels grows. Moreover, this can also be undertaken via the CEC's support of indigenous and small community pilot projects to develop bio-fuels from local sources of biomass.
- Finally, we would encourage the Council to work with their respective domestic governments to examine their government procurement policies to determine where they can increase their procurement of renewable energy and harmonize or coordinate their policies. In the bio-fuels area, this would, for example, entail an examination of the procurement of transportation equipment and the fuels such equipment employs.

Solar energy

Solar energy is inexhaustible; secure as an energy resource, clean and available. Solar energy can supply all energy needs for present and future generations.

Cultural, economic, and technological barriers must be overcome to accomplish a massive deployment of renewable energy technologies. This demands that governments take a pro-active role in facilitating technological penetration in the marketplace, to educate our societies about these relevant issues, to enforce conservation measures, and to encourage new technology developments.

Recommendations:

- It is our recommendation that the CEC promote the utilization of solar energy for electricity generation via both photovoltaic and solar thermal power means, by supporting initiatives already taken, such as the Million Solar Roofs (MRS), the Solar America Initiative (SAI), and the California Solar Initiative (CSI) in the United States, and promoting them to our three countries as best practices.
- The CEC can undertake an analysis of the institutional practices undertaken by domestic federal/provincial/state governments, in collaboration with utility companies, that have provided incentives for companies, citizens and governments to emphasize conservation and/or purchase renewable energy equipment. Utility companies are the key players in exploiting renewable energy.
- The CEC can undertake research on the performance-based incentives for solar energy systems offered by governments and other institutions across the three countries.
- We encourage the Council members to work with their respective domestic governments to suggest targets for increasing solar production capacity. For example, based on the presentations at the workshop and recent information from recognized experts, a target which would increase solar production to one percent of the electricity consumed in North America within five years seems both technically and economically feasible.
- Finally, we also encourage the Council members to work with their respective domestic governments to develop a cooperative North American plan for increasing solar production capacity.

Wind power

During 2005, 11,769 megawatts (MW) of wind power generation capacity were installed around the world, some 43 percent more than in 2004, when 8,207 MW were installed. This means that, by the end of 2005, nearly 60,000 MW had been installed globally. In addition, there were approximately 200,000 jobs linked to the development of wind electricity, and this generation capacity is expected to quadruple over the next five years.

More than 18,000 MW of wind electricity generation capacity have been installed in Germany alone—a country whose territory is one-sixtieth the size of North America and which lacks the enormous wind energy resources enjoyed by our continent, which have been estimated at several million MW.

Wind electricity utilities pay employee salaries, use local resources when present, and require a significant percentage of local integration. Currently, these facilities constitute the most economical form of generating electricity on a large scale, if we consider the direct and indirect economic, social and environmental costs linked to electricity

production—or, in other words, the perspective of sustainability. They do not cause serious environmental problems—the loss of bird and bat life is almost insignificant, and these rates can be reduced even further via easily applied measures. Wind energy is, together with bio-fuels and photovoltaic electricity generation, the basis for the transition to the use of hydrogen as the advanced fuel of the future.

Wind electricity generation fits perfectly into a new restructuring of the electricity grid, based on distributed generation, the use of renewable sources, and the administration of demand. With its modular nature, it is equally possible to hook up to a network a single wind turbine with medium capacity, from 50 to 500 kW, on a farm or small ranch, or a 200 MW wind electricity facility, which can be considered very large. On the one hand, such a system can grow by stages, beginning to supply electricity four months after construction begins, with the first machines set up and interconnected, or on the other hand, they can be financed in stages and from different sources, growing in line with the availability of resources.

Small-scale generation of electricity has an additional advantage for agriculture, in which crop or pasturelands with appropriate wind conditions can provide an additional source of income through the exploitation of an additional available natural resource. It is possible to supply one's own needs or even sell energy to the electric utility. These small amounts of electricity, which in the future traditional consumers will transfer to electric utilities on a massive scale, will have an aggregate effect by modifying the typical demand pattern that characterizes the region's electricity system.

Recommendations:

- Given the immense wind energy potential in North America, the profitable nature of its use, and the enormous environmental benefits—avoiding the generation of millions of tons of greenhouse gases and other pollutants—as well as economic benefits enjoyed by wind energy facilities, we recommend to the CEC that it encourage the three domestic governments to establish wind energy targets in their respective countries. We would note that the CEC is presently working to determine the wind capacities of each domestic country and suggest that the parties consider this information when setting their targets.
- This will strengthen North America's industrial development and competitiveness in systems that take advantage of renewable energy resources—a competitive position that has been surpassed by countries such as Germany in Europe and China in Asia.

**Approved by the JPAC members
29 November 2006**