



Annotated Bibliography
Commission for Environmental Cooperation
Publications and Work on
Environment and Energy in North America

Trade and Environment, January 2006

Introduction

This bibliography includes documents commissioned or produced by the CEC on electricity, energy and the environment in North America. Documents are listed according to three categories: an overview of the electricity and environment web page that includes papers presented at a 2001 “Environmental Challenges and Opportunities of the North American Electricity Market” symposium, a short description of the CEC database on the electricity market, and a link to the 2004 “Building the Renewable Energy Market in North America” conference. A section on tools links to a document displaying the “Electricity and Environment Database.”

Electricity and the Environment

http://www.cec.org/programs_projects/other_initiatives/electricity/index.cfm?varlan=english

The work on electricity and the environment undertaken by the CEC ensues from an Article 13 Report: “Environmental Challenges and Opportunities of the Evolving North American Electricity Market”. The web page developed by the CEC provides an overview of the initiative and links to the papers, presentations, tools and to government comments on the report. Among other things, this background material was intended to stimulate discussion and elicit comments from the public and the “Electricity and Environment Advisory Board.” All documents can be downloaded from CEC’s web site. Some are available in French and Spanish.

1. **A Retrospective Review of FERC's Environmental Impact Statement on Open Transmission Access**, Tim Woolf, Geoff Keith and David White (Synapse Energy Economics) and Frank Ackerman (The Global Development and Environment Institute, Tufts University), June 2002.
2. **A Review: Environmental Challenges and Opportunities of the North American Electricity Market Symposium**, Joseph M. Dukert, June 2002.
3. **Assessing Barriers and Opportunities for Renewable Energy in North America**, William R. Moomaw (Fletcher School, Tufts University), June 2002.
4. **Design and Legal Consideration for North American Emissions Trading**, Douglas Russell (Global Change Strategies International), June 2002.
5. **Environmental Challenges and Opportunities of the Evolving North American Electricity Market**, Scott Vaughan, Zachary Patterson, Paul Miller and Greg Block (CEC), June 2002.
6. **Estimating Future Air Pollution from New Electric Power Generation**, Paul Miller, Zachary Patterson and Scott Vaughan (CEC), June 2002.
7. **European Electricity Generating Facilities: An Overview of European Regulatory Requirements and Standardization Efforts**, Lisa Nichols, June 2002.
8. **Modelling Techniques and Estimating Environmental Outcomes**, Zachary Patterson (CEC), June 2002.
9. **NAFTA Provisions and the Electricity Sector**, Gary Horlick, Christiane Schuchhardt (O'Melveny & Myers LLP) and Howard Mann (International Institute for Sustainable Development), June 2002.

Electricity and Environment Database

<http://www.cec.org/databases/certifications/Cecdata/index.cfm?websiteID=3>

The Electricity and Environment Database is part of the CEC's effort to provide online information relating to the "Environmental Challenges and Opportunities of the Evolving Continental Electricity Market" and the green goods and services certification projects. The database is searchable by keyword or text, and contains the following information on government and non-government initiatives from Canada, Mexico and the United States:

1) Measures targeting electricity production:

- Legislation governing electricity generation in Canada and the US, including renewable portfolio standards from electricity restructuring legislation both at the state/provincial and federal levels in Canada and the US
- Consumer-driven environmental marketing strategies and guidelines for electricity;
- Electricity producers certification programs and their criteria; and
- Definitions of "green" energy.

2) Measures targeting electricity consumption:

- Legislation requiring information on electrical efficiency;
- Legislation on electrical efficiency labelling systems; and
- Third-party mandatory certification product efficiency standards.

The database allows users and stakeholders to compare and contrast current programs and legislation with the objective of fostering increased communication and cooperation among the

parties involved. It is hoped that this resource will facilitate the establishment of mutual recognition programs and agreements among power producers, policy makers and certifiers.

Building a Renewable Energy Market

<http://www.cec.org/calendar/details/index.cfm?varlan=english&ID=1924>

In October 2004, the CEC hosted a two-day meeting to bring industry, government officials, international investors and NGOs together to recommend how best to meet the challenges faced by the renewable energy market and to help develop partnerships among the participants. The “Building the Renewable Energy Market in North America” web site provides links to the agenda, the list of participants, the proceedings and to all the presentations (in their original language). A selection of related web resources is presented. The outcomes of this meeting were to help develop market-based mechanisms to improve demand for renewable energy, increase public awareness and document the environmental impacts of new low-impact, renewable energy technology across North America.

Tools

North American Renewable Energy Database: NARED. Partick Henn, Helios Centre. November, 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1482

Also available in French and Spanish

The North American Renewable Energy Database is a technical project report presenting a summary data on a state, province or territory level, disaggregated by type of renewable energy source and technology, and by development status. The database alone is also available at http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1477

Reports and Other CEC Publications

Wind Energy Potential of the Yucatán Peninsula, Mexico: Mesoscale Wind Mapping, Energy Potential and Benefits. Helimax Energy Inc. February 2005.

Available upon request (English only)

A wind mapping was performed on a study area covering 64,000 km² in the province of Yucatán and parts of Campeche and Quintana Roo using a state of the art, dynamic atmospheric meso-scale model coupled with a high resolution micro-scale model. Taking into account a set of exclusion zones (towns and villages, roads, important bird areas and proximity to electricity grid), the study results show that the Yucatán Peninsula seems to offer a good potential, but not an extraordinary one that would imply concentrating wind energy development efforts only in one area which harbors good wind speeds (7 m/s and above). Two distinct scenarios for the future development of wind energy in Mexico are proposed: extension of meso-scale wind energy assessment to other Mexican regions, and development of a 500 MW wind deployment strategy in Yucatán (microscale assessment).

Identifying Environmentally Preferable Uses for Biomass Resources; Stage 2 Report: Life-Cycle GHG Emission Reduction Benefits of Selected Feedstock-to-Product Threads. Martin

Tampier, Doug Smith, Eric Bibeau, Paul A. Beauchemin, EnviroChem Services Inc. January, 2005.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1557
English only

This study examined the greenhouse gas emission reduction effects of several of the biomass feedstock-to-product threads that were identified in the Stage 1 report. Based on lifecycle GHG emission analysis, the emissions from growing, collecting, and processing biomass were assessed and weighed against the displaced emissions from fossil fuels. The overall results are presented on a per tonne (metric, dry weight) of biomass input basis and also per hectare of land used for producing energy crops. Additional analysis was carried out on the technological readiness and cost of various biomass technologies. The amount of fossil fuel that could be displaced by each option was determined. Findings from this additional analysis were considered in the final recommendations.

Discussion Paper on North American and International Initiatives to Quantify Emission Reductions from On-Grid Renewable Electricity Facilities: An Overview of Developments Relevant to the CEC Working Group. Martin Tampier, Envirochem Services Inc. November 2004.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1722
Also available in Spanish and French

The CEC Working Group on the Quantification of Environmental Benefits from Renewable Energy Operations convened in Washington, DC, at the end of September 2004. Since its last meeting in July 2003, numerous initiatives have emerged, or have become relevant to the working group's task. This document provides an overview of these initiatives, and describes possible implications for the working group, in preparation of the November 2004 workshop.

Evaluating Simplified Methods of Estimating Displaced Emissions in Electric Power Systems: What Works and What Doesn't. Geoffrey Keith, Bruce Biewald and David White (Synapse Energy Economics). November 2004.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1696
Also available in French and Spanish

This paper expands on a paper written for the Commission on Environmental Cooperation in 2003, titled "Estimating the Emission Reduction Benefits of Renewable Electricity and Energy Efficiency in North America: Experience and Methods." That paper explored the important methodological issues related to estimating the net air impacts of new resources in electric power systems. The paper also reviewed a number of projects in which net emission benefits have been estimated, including projects using power system simulation models and projects not using such models. Over the past year, there has been growing interest in further evaluation of the non-modeling-based methods. The goal of this paper is to lay the groundwork for determining which non-modeling-based method can provide the best estimates of displaced emissions and under what circumstances use of that method would be appropriate.

Atmospheric Mercury Deposition Impacts of Future Electric Power Generation. Mark D. Cohen and Paul J. Miller. December 2003.

Available upon request (English only)

To effectively address mercury issues in the Great Lakes (or any other receptor), it is important to know the relative importance of sources of the contamination. The study extends this earlier work in three significant ways. First, a number of additional receptors are analyzed, in addition to the Great Lakes. Second, emissions estimates for major point sources in Canada have updated based on 2000 data submitted to Environment Canada's National Pollutant Release Inventory (NPRI). Finally, a number of scenarios for future emissions from coal-fired electricity generation plants in the United States and Canada were examined.

Market-based Mechanisms for Carbon Sequestration, Energy Efficiency and Renewable Energy in North America: What are the Options? Zachary Patterson and Chantal Line Carpentier, CEC. December 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1439

Also available in French and Spanish

This paper examines the different market-based mechanisms that could be used to encourage the sequestration of carbon, increase energy efficiency, and support the development and use of renewable energy sources. Market-based mechanisms in this paper refer to all mechanisms, voluntary or mandatory, that affects demand for, or supply of, energy and/or carbon sequestration—either through prices, regulation or information.

The Current Status of Renewable Energy Tracking System Certificates in North America. Meredith Wingate & Matthew Lehman. (Center for Resource Solutions). December 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1488

Also available in French and Spanish

This paper discusses and compares current or proposed systems for tracking renewable electricity certificates (REC) in North America. It also introduces the North American Association of Issuing Bodies (NAAIB)—an institution being created that will serve as a central bank for accounting and tracking RECS in North America.

Tracking systems are important because they ensure that: 1) RECs represent renewable generation; 2) certificate ownership is transferred between account holders; 3) certificates are retired when used to make state or regional regulatory requirements; and 4) certificates are not double-counted.

In 2003, there were three operational systems in the United States for issuing and tracking renewable generational certificates: the Texas REC Program, the New England GIS and the Wisconsin RRC Program. Other renewable certificate-tracking systems are under consideration in various states and the province of Ontario; none are now foreseen in Mexico.

Estimating the Environmental Benefits of Renewable Energy and Energy Efficiency in North America: Experience and Methods, Geoffrey Keith, Bruce Biewald and Anna Sommer (Synapse Energy Economics), Patrick Henn (Helios Center) and Miguel Breceda (Energy Matters). September 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1214

English only

This paper explores important methodological issues related to estimating the net atmospheric impacts of specific resources in electric systems. In addition, it describes a number of projects undertaken across North America in which the emissions benefits of new resources—both renewable projects and efficiency programs—have been estimated. Finally, it briefly explores

different views of the principles that should underlie this kind of work and several important policy issues that this work raises.

The Potential for Using a Renewable Certificate System to Encourage Renewable Energy Development in Mexico. Jan Hamrin, Meredith Wingate (Center for Resource Solutions) and Laura Campbell (Climate Change Legal Foundation). Report to the North American Fund for Environmental Cooperation. June 2003.

<http://www.resource-solutions.org/lib/librarypdfs/IntPolicy-NAFEC.pdf>

English only

This paper examines the technical, legal and economic issues involved in developing a North American market for tradable renewable energy certificates (TRCs) for Mexico. The paper assesses both the feasibility of using TRCs to encourage the development of renewable energy in Mexico, and the challenges and opportunities associated with building a North American certificate-trading scheme.

Follow-up Survey on Renewable Electricity of Large Mexican Electricity Consumers. Presentation. CEC. February 2003.

http://www.cec.org/files/PDF/ECONOMY/Follow-up-Survey-Renewable-Electricity-Mex_en.pdf

English only

This survey, commissioned by the CEC in collaboration with the National Commission for Energy Conservation (*Comisión Nacional para el Ahorro de Energía—Conae*), is from Gallup Mexico. Surveyors queried a hundred of the largest electricity consumers in Mexico, such as large iron, steel, cement, paper or mining industries. The goal of the survey was to find out about the companies' awareness of renewable electricity, and whether they would be interested in purchasing renewable electricity even if it were more expensive. It also explores, for instance, barriers to purchasing renewable energies, or the interest in, and barriers to, producing renewable electricity.

Energy Use in the Cement Industry in North America: Emissions, Waste Generation and Pollution Control, 1990–2001. Marisa Jacott (Fronteras Comunes), Cyrus Reed (Texas Center for Policy Study), Amy Taylor and Mark Winfield (The Pembina Institute for Appropriate Development). February 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1047

English only

This paper examines issues related to the use of energy inputs in the manufacture of cement clinker and cement in Mexico, Canada and the US since implementation of NAFTA in 1994. Cement manufacturing is a key industry in all three countries, and a major user of energy. In recent years, trade and investment between the three NAFTA countries has increased in this sector of the economy. As part of this increased production, trade and investment in cement manufacturing, decisions have been made about the type of energy used to fuel the kilns where the cement clinker is produced.

The Conflicting Economic and Environmental Logics of North American Governance: NAFTA, Energy Subsidies and Climate Change, Robin Jane Roff, Anita Krajnc and Stephen Clarkson. February 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1044

English only

The authors of this paper believe that provisions against downward harmonization, the respect for state autonomy in environmental regulation and the creation of the CEC gave hope to North Americans that an environmentally sustainable trade regime was possible. Despite good environmental intentions, the agreement inhibits the achievement of cleaner energy trade by allowing and encouraging the subsidization of fossil fuel development, by preventing governments from regulating the rate of resource depletion, and by entrenching neo-conservative, deregulatory values favouring the priorities of trans-national corporations over those of conservation and environmental protection.

The paper recommends a combination of environmentally sensitive policy changes, including the elimination of perverse subsidies, the subsidization of environmentally friendly energy sources, and the imposition of carbon taxes and demand-side management initiatives. Subsidy reform is not on the continental or international agendas, and this constitutes the most important barrier to progress in this area.

What is Renewable? A Summary of Eligibility Criteria Across 27 Renewable Portfolio Standards. CEC. 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1392

Also available in French and Spanish

There are, in 2003, 25 US states, as well as the United States Federal Legislature and the province of Quebec, which have either passed or proposed legislation requiring (or setting as a goal) a certain proportion of electricity production from particular fuel sources considered to be environmentally preferable to conventional sources. These pieces of legislation are most commonly referred to as renewable portfolio standards. Each of these standards delimits which resources and technologies will qualify as “renewable” in this context. This paper examines the range of definitions that have been proposed and/or passed across the 27 pieces of legislation, and considers where there is the most convergence in these criteria across North America.

Summary of the “Technical Meeting on Approaches to Estimating Environmental Benefits of Renewable Energy and Energy Efficiency.” 17–18 July 2003, Washington DC. CEC. 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1364

Available only in English and Spanish

This meeting brought together experts from across North America working on the development of approaches to estimating the environmental benefits of renewable energy and energy efficiency. The purpose of the meeting was to share information and to discuss the necessary steps to producing credible and agreed-upon estimates of the environmental benefits of renewable energy and energy efficiency. The meeting was organized by the CEC with the help of the collaborating organizations of Mexico’s National Commission for Energy Conservation (Conae) and its Ministry of Energy, Environment Canada and the US EPA.

Overcoming Obstacles to Renewable Energy Sources in Mexico: Lessons from the NAFTA Partners. Proceedings, 7 February 2003, Mexico City. CEC. 2003.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1167

Also available in French and Spanish

Renewable energy, including large hydro, currently represents only nine percent of total production and 15 percent of total consumption of primary energy in Mexico. However, due to its geographical location and climatic conditions, Mexico has abundant renewable energy sources

practically throughout its territory. As a result, renewable sources of electricity show great potential to complement and replace fossil fuels.

To explore ways of taking advantage of renewable energy potential in Mexico, the CEC, the Center for Private-Sector Studies on Sustainable Development (*Sector Privado para el Desarrollo Sostenible*—Cespedes) and the National Commission for Energy Conservation (*Comisión Nacional para el Ahorro de Energía*—Conae) held this meeting jointly.

Private Investment in Mexico's Electricity Sector (Technology and Energy Selection).

Miguel G. Breceda-Lapeyre. November 2002.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1193

In English and Spanish only

This paper supplements a report produced recently for the CEC on private-sector investment in Mexico's electricity sector. Based on official information provided by the Mexican power sector authorities and, in particular, the register of permits issued by the Energy Regulatory Commission for electricity production, an overview is given of the characteristics and status of permits issued to generation facilities, the amounts and sources of the corresponding investments, and the primary technologies and energy sources used in power generation by the private sector.

Private Investment in Mexico's Electricity Sector. Miguel G. Breceda-Lapeyre. November 2002. (Background paper)

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1192

Also available in Spanish

This report contains an update on Mexico's electricity sector, especially on its current and projected installed capacity and generation requirements including capital, the market share of private capital in the national generating pool and the rate of investment flows into the country's power industry. International trade patterns in electricity are discussed, as well as the relationship between private investments in the planned exports of electricity.

North American Public Opinion on Buying Renewable Energy with Taxpayer Money.

Environics International. March 2002.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1772

English Only

This report analyzes the results of an omnibus question fielded by Environics International for the CEC. The results of this survey are based on telephone interviews conducted in Canada, Mexico and the United States. Strong majorities of respondents in Canada, the United States, and Mexico support the use of taxpayer money by governments to buy renewable energy. One-third of respondents in each country show strong support. In all three countries, support for the purchase of renewable energy tends to increase with degree of education. Strong support for the initiative is lower among those with low household incomes in Canada and the United States. Young Mexicans are more likely to show strong support for purchasing renewable energy with taxpayer money compared to their American and Canadian counterparts.

Mexico and Emerging Carbon Markets. Investment Opportunities for Small and Medium-size Companies and the Global Climate Agenda. CEC. 2001.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=429

Also available in French and Spanish

The purpose of this report is to identify potential financing opportunities in Mexico related to the climate agenda. By engaging the private sector in the environmental agenda and in defining cooperative approaches that combine regulatory measures with incentive-based and market-led approaches, innovative and cost-effective solutions will be found that meet the shared demand for high levels of environmental quality.

This report explores whether high levels of environmental standards would place countries at a competitive disadvantage, and refers to this ongoing debate. It explains that a strong body of empirical evidence, suggesting that such a dichotomy between either a strong economy or a strong level of environmental protection, is not valid. It also reveals that more and more companies are adopting different kinds of environmental targets and benchmarks within their operations.

Environment and Trade Series, #6. Issue Study 3. Electricity in North America: Some Environmental Implications of the North American Free Trade Agreement. CEC. 1999.

http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=305

Also available in French and Spanish

Issue Study 3 focuses on the generation of electricity by private and publicly owned entities in Canada, Mexico and the United States. It includes the upstream industries that provide the major fuel sources from which electricity is generated in North America—notably, coal, natural gas and hydroelectricity. It also considers downstream processes of consumption for industrial, commercial and residential purposes, and some relevant industries.

Opportunities for North American Cooperation on Energy Efficiency: a Scoping Study, International Institute for Energy Conservation, Marbek Resource Consultants, Odón de Buen. January 1997.

Available upon request

Energy efficiency is an important component of North American efforts to reduce the environmental degradation associated with energy use. In this report, the authors examine:

- the link between energy efficiency and the environment;
- energy consumption in the industrial, commercial, residential and transport sectors of each of the three NAFTA countries;
- the cost-effective potential for energy use in the NAFTA market; and
- key opportunities to promote energy efficiency in North America.

The report reveals that there are a number of areas where increased cooperation among Canada, Mexico and the US could improve markets for energy-efficient technologies and services as well as the availability of financing for energy upgrades. It is important to note that while the report thoroughly covers the electricity sector, it touches only briefly on transportation

North American Cooperation on Voluntary Energy Efficiency Programs: A Case Study. International Institute for Energy Conservation, Marbek Resource Consultants, Rafael Friedmann. December 1996.

Available upon request

This case study of voluntary energy efficiency programs is a companion document to the recently completed energy efficiency “scoping study” undertaken for the CEC. It is meant to develop further information, insights and recommendations relevant to specific opportunities identified by

the scoping study for the CEC to promote voluntary approaches to energy efficiency on a tri-national basis in North America. Most of the experience to date with voluntary energy efficiency programs has been gained in Canada and the US. Hence, the purpose of this case study has been to identify ways of enabling this experience to be applied throughout the NAFTA region.

Renewable Energy Mini-Grid Project: Pre-Feasibility Study. Michael Bergey. May 1995.
Available upon request

The study is an account of the “APS / CFE Renewable Energy Mini-Grid Project.” The project is a sustainable rural electrification project (in the Mexican states of Baja California and Sonora) that seeks to demonstrate commercial wind and solar hybrid systems as a more cost-effective and environmentally benign alternative to the conventional village electrification approaches of grid-extension or autonomous diesel generators. Environmental impacts of the projects are discussed, and detailed analyses of the CO₂ reduction potentials are provided.

A complete list of CEC publications is available online at:
<http://www.cec.org/bibliographies>

Should you require any other information on the electricity sector in North America, or on renewable energy, please contact: <info@cec.org>.