



NA Renewable Energy Resource Mapping Meeting

Tuesday, 21 February 2006
Cuernavaca, Morelos, Mexico

PROCEEDINGS

-Translated from Spanish-

Summary of the Mapping Specialists Meeting Held at Cuernavaca, Morelos, Mexico on February 21, 2006, Organized by the Commission for Environmental Cooperation

Prepared by: Ricardo Saldaña and Ubaldo Miranda
Nonconventional Energy Management
Institute for Electrical Research (Instituto de Investigaciones Eléctricas—IIE), Mexico

The purpose for the mapping specialists' meeting focused on reviewing the results obtained from research on the current status and perspectives for renewable resource mapping in the three North American countries and possible future mapping actions to be carried out by the United States, Canada and Mexico. The results of this research were reported in a document prepared by Ted Ferguson of Canada and Ricardo Saldaña and Ubaldo Miranda of Mexico.

The meeting began with an introduction of the different meeting participants (annex A: List of participants) and review of the agenda (annex B). Next, the representatives of the Mexico's National Institute of Statistics, Geography and Information (Instituto Nacional de Estadística, Geografía e Informática—INEGI), Emilia Huerta and Francisco Jiménez, presented the current status of an interoperability project between the three countries in the region, enabling the exchange of digital cartographical information at a 1:10000000 scale. The software used was mentioned, namely ArcIMS in the United States and Map Server in Mexico.

Later, participants from Canada (Chris Boivin) and Mexico (Ricardo Saldaña) presented an outlook of efforts undertaken in the United States, Canada and Mexico with respect to mapping wind, geothermal, minihydraulic, tidal and wave energy resources, emphasizing the importance of information for developing projects to exploit them, as well as such basic aspects as technologies, information required for mapping, available maps, energy potential assessment capacities, and information gaps and some recommendations to fill them.

The main comments offered during the meeting are listed below:

- Wind measurements should continue in areas where modeling indicates the possible presence of usable energy. These measurements should be in accordance with international recommendations. The United States has prepared its national atlas with a resolution of 1 km², Canada has mapped some regions with a resolution of 5 km² and Mexico also has some regions mapped by NREL, Helimax and IIE.
- For geothermal potential, information on areas of "continuous" exploitation should not be sought out, but rather information on key points for placing generation plants should be used. It was also noted that while there is a great potential to use geothermal resources at "mini" and "micro" levels, there has not been sufficient interest in these applications, as efforts have been geared toward electricity generation using large-capacity plants.
- Solar energy resources are the best evaluated. There are various versions of maps based on timely modeling and measurements. The United States and Mexico have map versions for different components of radiation, while Canada only has global radiation maps.

- Until now, bioenergy has been assessed through census information, providing only a general idea of where the resource is available. More detailed information on specific sites is needed to implement productive processes using this resource. The United States and Mexico have nationwide regional maps of the resource, while Canada only has maps for some regions. INEGI releases updated soil use and vegetation information every five years to update biomass maps. In Mexico, the Mexican Bioenergy Network (Red Mexicana de Bioenergía) prepared a white paper describing the technology's potential and other relevant aspects.
- In the case of minihydraulics, the United States and Canada have models to determine potential. Mexico has undertaken some efforts to assess minihydraulic potential in various regions of the country, and INEGI is about to develop 1:20000 cartography to determine the nationwide drainage network. The preparation of a minihydraulics white paper was proposed.
- As regards wave and tidal energy, there are mapping initiatives only in the United States and Canada. It was proposed that Mexico collaborate with the United States to study its potential in areas of interest in Mexico.

It was noted that Mexico has draft laws on the use of bioenergy and the application of renewable energies in general. The bills are being reviewed by the Legislative Branch, and are expected to give a significant push to develop renewable resources.

Future events relating to renewable energies were discussed for the next year, to be held at different North American venues.

Ricardo Saldaña presented the Mexican Renewable Energy Geographical Information System (Sistema de Información Geográfica para las Energías Renovables—SIGER), highlighting the basis for developing the project, the project scope, and the results obtained to date. The system is slated to be the basis for the homologation of methods to represent the potential of renewable resources in Mexico.

Lastly, the meeting outlined the next steps for the three countries' mapping initiatives.

The assessment of wind, solar and bioenergy was set as a priority, bringing methods, scales, data and models into line and using the best international practices.

Participants noted the need to create a report on:

- Homologation of resource assessment techniques
- Best practices, considering the current situation in Mexico, where efforts are being made to determine the potential of renewable resources in state initiatives

Once the report is issued, we recommend that it be posted online for consultation by interested parties in the three countries.

The creation of three working groups responsible coordinating the assessment of wind, solar and biomass energy was proposed. For Mexico, Carlos García was mentioned with respect to wind energy, Agustín Muhlia for solar energy, and Omar Masera for biomass energy. These individuals were proposed by David Morillón, chairman of the National Solar Energy Association (Asociación Nacional de Energía Solar—ANES). The selection of possible U.S. and Canadian candidates remains pending.



Annex A: List of participants



NA Renewable Energy Resource Mapping Meeting
Reunión NA de mapeo de recursos energéticos renovables
Tuesday, 21 February 2006 - Martes 21 de febrero de 2006

List of participants Lista de participantes

Arvizu, José Luis

Jefe de Proyecto
Instituto de Investigaciones Eléctricas
Reforma #113
Col. Palmira
Cuernavaca, Mor. 62490
México
Tel: (52-777) 362-3811 x 7247
jlarvizu@iie.org.mx

Barragán, Rosa Maria

Investigadora
Instituto de Investigaciones Eléctricas
Reforma #113
Col. Palmira
Cuernavaca, Mor. 62490
México
Tel: (52-777) 362-3811 x 7318
rmb@iie.org.mx

Bedard, Roger

EPRI Ocean Energy Leader
Electric Power Research Institute
3412 Hillview Ave.
Palo Alto, CA 94304
United States
Tel: (650) 855-2131
rbedard@epri.com

Boivin, Chris

Energy Analyst
The Delphi Group
428 Gilmour St.
Ottawa, ON K2P 0R8
Canada
Tel: (613) 562-2005
cboivin@delphi.ca

Carpentier, Chantal Line

Head, Environment, Economy and Trade Program
Commission for Environmental Cooperation
393, rue Saint-Jacques, Suite 200
Montréal, QC H2Y 1N9
Canada
Tel: (514) 350-4300
clcarpentier@cec.org

Carrillo Aranguren, Esther Ma.

Assistant, Environment, Economy and Trade
Program
Commission for Environmental Cooperation
393, rue Saint-Jacques, Suite 200
Montréal, QC H2Y 1N9
Canada
Tel: (514) 350-4300
emcarrillo@cec.org

de Buen Rodríguez, Odón Demófilo
Presidente
Energía, Tecnología y Educación, S.C.
Calle Puente Xoco No. 39 Col Xoco
México, D.F. 03330
México
Tel: (52-555) 601-5339
demofilo@prodigy.net.mx

Faucher, Claude (by conference call)
Coordinator, Renewable Energy Technology
Natural Resources Canada / Ressources naturelles
Canada
580 Booth Street, 13th Floor, Room: B5-4
Ottawa, ON K1A 0E4
Canada
Tel: (613) 947-1598
claude.faucher@nrca-nrcan.gc.ca

Huacuz, Jorge
Head, Renewable Energy Research
Electrical Research Institute of Mexico
Av. Reforma 113
Col. Palmira
Cuernavaca, Mor. 62490
México
Tel: (52-777) 362-3806
Jhuacuz@iie.org.mx

Huerta Hernández, Emilia Patricia
Jefe de Departamento de Climatología
Instituto Nacional de Estadística Geografía e
Informática - INEGI
Av. Héroes de Nacozari Sur #2101
Fracc. Jardines del Parque
Aguascalientes, Ags. 20270
México
Tel: (52-449) 910-5300 x 4900
patricia.huerta@inegi.gob.mx

Jiménez Nava, Francisco Javier
Director de Información de Recursos Naturales y
Medio Ambiente
Instituto Nacional de Estadística Geografía e
Informática - INEGI
Av. Héroes de Nacozari Sur #2101
Fracc. Jardines del Parque
Aguascalientes, Ags. 20270
México
Tel: (52-449) 910-5365
francisco.jimenez@inegi.gob.mx

Miranda, Ubaldo
Investigador
Instituto de Investigaciones Eléctricas
Reforma #113
Col. Palmira
Cuernavaca, Mor. 62490
México
Tel: (52-777) 362-3811
umiranda@iie.org.mx

Morillón, David
President - Director
Asociación Nacional de Energía Solar
Programa Universitario de Energí
Edificio 12 , Instituto de Ingeniería, UNAM Ciudad
Universitaria
México, D.F. 04510
México
Tel: (52-55) 5622-5200 x 201
damg@pumas.iingen.unam.mx

Padilla Hernández, Roberto
Profesor-Investigador
Universidad Autónoma de Tamaulipas
Instituto de Investigación en Ingeniería -
Centro Universitario Tampico-Madero
Tampico, Tamps. 893371
México
Tel: (52-833) 241-2051
rpadiilah@uat.edu.mx

Rincón Mejía, Eduardo
Ingeniero Mecánico
Universidad Autónoma de la Ciudad de México
San Lorenzo 290,
Col. Del Valle, Del. Benito Juárez
México, D.F. 03100
México
Tel: (52-555) 488-6661 x 5304
rinconsolar@hotmail.com

Robertson, Leslie-Ann
Policy Advisor
Environment Canada
351 St Joseph Blvd. 20th Floor
Gatineau, QC K1A 0H3
Canada
Tel: (819) 934-3772
leslieann.robertson@ec.gc.ca

Saldaña, Ricardo
Investigador
Instituto de Investigaciones Eléctricas
Reforma #113
Col. Palmira
Cuernavaca, Morelos 62490
México
Tel: (52-777) 362-3806
rsf@iee.org.mx

Sánchez Velasco, Raul Alberto
Subgerente de Desarrollo Tecnológico
Gerencia de Proyectos Geotermoelectricos CFE
Alejandro Volta 655
Col. Electricistas
Morelia, Mich. 58290
México
Tel: (52-443) 322-7033
raul.sanchez@cfе.gob.mx

Swezey, Blair
Principal Policy Advisor
National Renewable Energy Laboratory
4088 Saint Lucia St.
Boulder, CO 80301
United States
Tel: (303) 384-7455
swezeyb@yahoo.com

Valdez Báez, Luis Hector
Director General
Valdez Ingenieros, S.A. de C.V.
Lona Azul 69
Col. Lomas Tetela
Cuernavaca, Mor. 62156
México
Tel: (52-777) 380-0688
vinsa@cableonline.com.mx

Commission for Environmental Cooperation
Comisión para la Cooperación Ambiental
Commission de coopération environnementale



Annex B: Agenda



NA Renewable Energy Resource Mapping Meeting
Tuesday, 21 February 2006
Salon Lirio, Hostería Las Quintas
Blvd. Díaz Ordaz No. 9. Cuernavaca. Morelos. México

Agenda

8:30	Registration and continental breakfast
9:00	Welcome address, background and review of agenda (CEC)
9:15	Round table introduction
9:30	General review of the report on mapping renewable energy resources in North America (The Delphi Group and IIE will introduce each resource and open the floor for discussion)
9:45	Mapping of wind energy Discussion
10:30	Mapping of geothermic energy Discussion
11:15	Sustainable coffee break
11:30	Mapping of solar energy Discussion
12:15	Mapping of bioenergy Discussion
13:00	Mapping of small-scale hydro energy Discussion
13:45	Working lunch
15:00	Mapping of tidal and ocean energy Discussion
15:45	Presentation on Renewable Energies Geographic Information System - REGIS (IIE)
16:05	Sustainable coffee break
16:20	Next Steps for CEC Program Plan for Evaluation and Mapping Renewable Energy
17:30	Summary and conclusions
18:00	Adjournment

