

TRADE, ENERGY,
AND THE ENVIRONMENT:
CHALLENGES AND OPPORTUNITIES
FOR THE BORDER REGION,
NOW AND IN 2021

CONCLUSIONS AND RECOMMENDATIONS OF BORDER INSTITUTE III

HELD IN RIO RICO, ARIZONA, MAY 2001



BORDER INSTITUTE III AND PARTICIPANTS

Border Institute III convened in Rio Rico, Arizona, April 30 to May 2, 2001, to address issues related to energy and the environment in the U.S.-Mexican border region. The purpose of the meetings was to assemble stakeholders from both sides of the border to consider a set of critical issues, as well as the long-term implications of those issues. Border Institute conveners—the Southwest Center for Environmental Research and Policy (SCERP), the U.S. Environmental Protection Agency, the Border Trade Alliance (BTA), and the U.S.-Mexico Chamber of Commerce—firmly believe that border communities must be part of solutions and that local, regional, tribal, and federal decision makers need to understand the long-term implications of contemporary problems in order to improve the quality of life and support the sustainability of the border region.

The vision of the border derived from Border Institute I held in 1998 is:

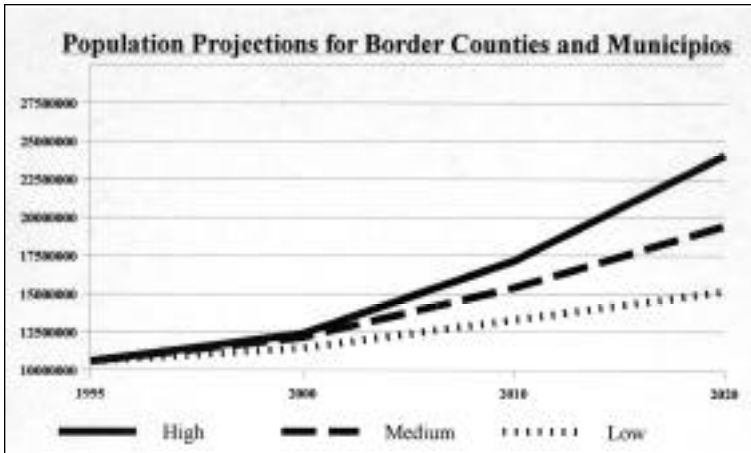
A sustainable and responsible border economy, involved binational community, healthy natural environment, and proper resource management that provides all its residents a satisfactory and secure quality of life through enhanced employment, education, and business opportunities.



Alan Sweedler, Director of the Center for Energy Studies, San Diego State University.

THE CONTEXT

Figure 1.



Source: Peach 1999

The counties and municipalities of the border region currently have a population of 12.5 million, a figure that will nearly double to 24.0 million by the year 2020 (Figure 1). The region is among the fastest growing of North America, as has been the case for the past half-century. The growth is largely concentrated in U.S. and Mexican urban areas located across the international boundary from each other in sister city pairs. The border region is arid, with fragile ecosystems and limited natural resources, and is not capable of sustaining the current high rates of population growth and urbanization.

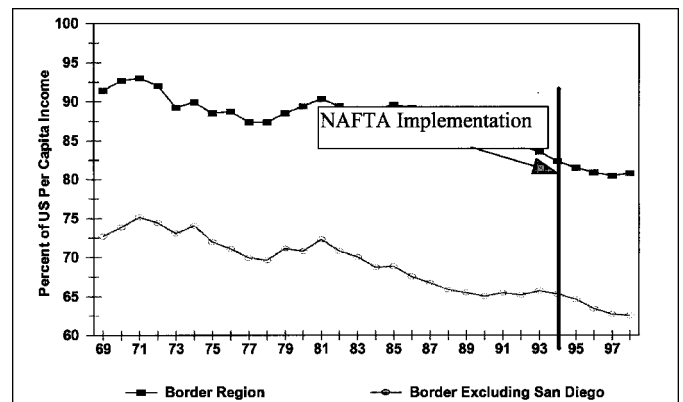
The U. S. Southwestern border region is the poorest region of the United States, even when including relatively well off San Diego County, and continues to fall further behind the national average in per capita income (Figure 2). The Mexican border region is prosperous by Mexican national indicators, but the asymmetries with the adjacent areas in the United States are remarkable.

Both regions have lacked local financial resources and federal support to provide infrastructure and public services required by the growing population. The huge increase in bilateral trade stimulated by NAFTA brought greater economic expansion to the border region, but not prosperity and development. The border region has absorbed a disproportionate share of negative impacts of the trade that has benefitted both nations as a whole.

The border region has been marginalized by both nations from comprehensive planning, funding, and improvements.

Natural resource constraints, poverty, and rapid growth have combined to produce a range of environmental problems in border communities. A notable lack of infrastructure has produced deterioration of surface and underground water quality due to untreated waste water or renegade sewage flows. Every border community faces an impending crisis in providing water for urban, industrial, and agricultural purposes. Natural resources, endangered species, and important ecosystems are threatened by rapid urbanization and industrialization. Many border communities cannot meet U.S. or Mexican air quality standards, and corresponding human health impacts are on the increase.

Figure 2. Border Region Per Capita Income as percent of U.S. Per Capita Income



Source: Peach and Williams, 2001

Natural resources, endangered species, and important ecosystems are threatened by rapid urbanization and industrialization. Many border communities cannot meet U.S. or Mexican air quality standards, and corresponding human health impacts are on the increase.

ENERGY ISSUES

The most recent infrastructure and environmental crisis to impact the border region relates to energy. The crisis is the result of poor long-term planning by power generating and producing firms, flawed public policy decisions like energy deregulation in California, and lack of long-term planning mechanisms in the binational border region. While it is clear that the days of cheap energy are over, extreme price volatility and doubtful future sources threaten the security of all sectors of the economy and the quality of life of most residents.

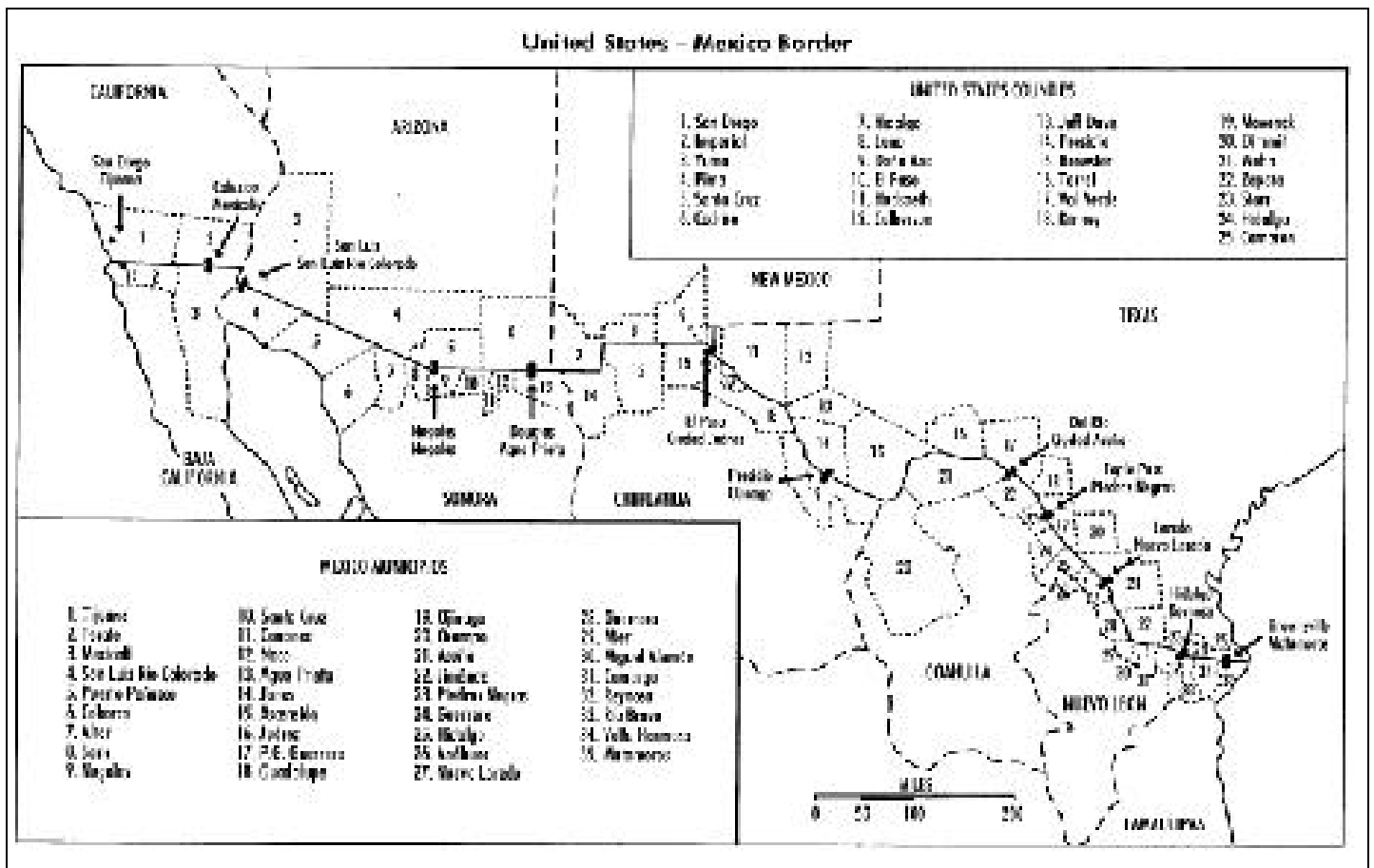
Mexican electricity demand is increasing nationally at 6.6 percent annually for a population that grew at an annual rate of 1.58 percent from 1995–2000. Much faster population growth in the border region (about 5.1 percent annually), coupled with an expanding middle class and a strong dependence in the region on energy-intensive (maquiladora) assembly industry translates into an even faster growth rate of electricity demand in the border region, probably closer to 15 percent per year. The capital requirements to meet Mexico's medium and long-term electricity needs are enormous (currently estimated at about US\$49 billion) and cannot be met solely with domestic sources of financing.

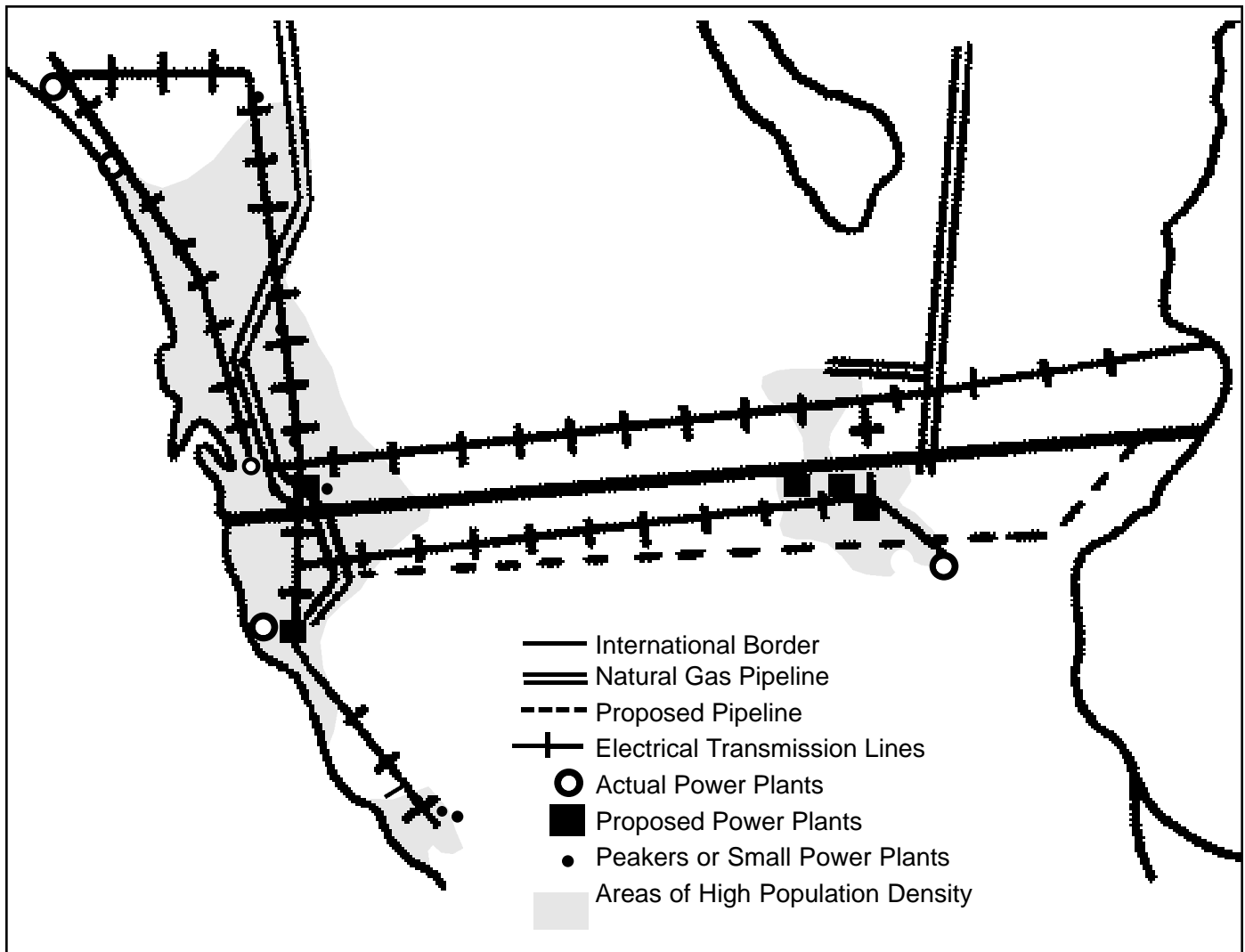
The cost just to meet Mexico's internal demand for natural gas by developing untapped natural gas reserves and building pipelines is estimated at between US\$30 billion and US\$50 billion over the next ten years. The cost to develop the infrastructure to export gas is estimated at US\$50 to US\$60 billion. These are enormous sums, given that Mexico's annual federal budget is about US\$150 billion. This translates into the need for major private sector investment. However, the current legal and regulatory framework in Mexico, the historic importance of energy as a domestic political issue, and the exemption of energy under the NAFTA process are all bottlenecks to the flow of private investment toward the Mexican energy sector. Improving the private sector investment environment in energy is a significant challenge for the Mexican administration and congress.

The response to the energy crisis is a rush to the border region to provide new capacity to supply regional or statewide needs. The Mexican border zone is considered desirable for siting new energy plants due to adjacent markets in the United States, an easier permitting process, and lower environmental standards on the Mexican side of the binational air basins. The Mexican Energy Secretary, Ernesto Martens, speaking at the 10th Annual Conference on Energy in Latin America at the Institute of the Americas, indicated in May 2001 that Mexico would approve any number of Baja California plants to serve consumers in the United States (San Diego Union Tribune, May 22, 2001). Due to the energy crisis in California, the permitting process for new plants has been streamlined, allowing for the building of so-called "peaker plants" with a capacity of under 50 megawatts. They do not have to meet the same requirements for emissions control and impact mitigation as larger plants. These peaker plants are ostensibly designed to supply power during daily peak demand periods, but technically are capable of operating up to eight thousand hours per year. Due to the lower emission controls, dirtier fuels, and

lowered level of anticipated maintenance, these peakers emit significantly more air pollutants than the fully regulated base load plants. The plant permitting and locating process does not include regional, or binational, planning and coordination. California and Baja California are examples of this inadequate coordination, but other U.S. and Mexican border states are apparently beginning to experience similar problems, if not worse. In Arizona, where the permitting process is easier and less complicated than in California, there is a significant number of new generating facilities in the works, most destined to export power to California.

The current situation in the California-Baja California binational region with respect to electricity generating facilities serves as an example of the issues appearing everywhere along the U.S.-Mexican border. Almost half of the border population lives in the California-Baja California border region, so regional power generating concerns in this region are relevant to the entire border region.





Location of existing and proposed peaker plants in the California-Baja California region

- The southern part of San Diego County is the location for a flurry of energy-related projects and plans:
- The South Bay Power Plant (706 megawatts) is an older, dual fuel facility that has been operating at full capacity through most of the 1990s. Local authorities had planned to demolish this facility since it is sited in a sensitive wetlands area. There is now interest in repowering and upgrading the facility to 1,000 megawatts.
- The just approved Otay Mesa Power Plant, is to be located on Otay Mesa near the international border. A base load plant of 510 megawatts, it has an application pending to increase capacity to 1,000 megawatts. The plant will use gas turbine combined cycle technology and will be air cooled, even though a plentiful source of reclaimed water will soon be available from the South Bay Water Reclamation Plant. This means that the plant will not use the most efficient, and least polluting, technology available. Although meeting California air standards, this plant will have negative impacts on the air quality of Tijuana, its closest neighbor.
- Ramco has a new peaker power plant in Chula Vista with a capacity of 44 megawatts. An application is pending to add an additional 57.6 megawatts under the emergency permitting process.
- Wildflower Energy's Larkspur Facility on Otay Mesa has been permitted under the California Energy Commission's emergency process. This will be a 90 megawatt peaker plant.
- CalPeak Power's Lonestar No.4 Power Plant, is a 49.3 megawatt peaker plant to be located one mile from the Larkspur facility. It has received preliminary approval by the Air Pollution Control District.

Thus, within a short time, the southern part of San Diego County could be the location of 1,400 megawatts of existing and new power production, with the possibility of increasing to 2,241 megawatts within a few years. There are a number of concerns with this situation:

- The synergies of locating so many plants in the same region apparently have not been adequately considered.
- The peaker plants avoid the stringent emissions and mitigation requirements that base load plants have to meet, and in some cases are able to burn much dirtier fuels including diesel, a source of carcinogenic fine particulate matter.
- The population in the area surrounding these facilities is heavily Hispanic and among the lowest incomes of San Diego County, raising serious concerns about environmental justice.
- Although there is transport of air pollution in both directions across the international border, the predominant direction of the air flow in most seasons is north to south. These plants will have significant impacts on Tijuana's air shed, but there was inadequate discussion and consultation with agencies and the citizens of Tijuana.

In the Imperial Valley-Mexicali region of the Baja California-California border region, there are also serious concerns about poorly coordinated increases in electrical generating capacity in the area. Imperial Valley, with hydropower, natural gas, and geothermal facilities is well supplied with electrical power for regional use. Mexicali, with significant increases in population and industry for the past decades, is facing potential electric power shortages, both locally and for the Baja California electric grid. Currently, a number of generating projects are planned for Mexicali.

- InterGen is constructing a combined cycle gas fired plant that will provide 750 megawatts when completed in 2003; 250 megawatts of this output is slated for export to Southern California. The InterGen plant is designed to use less than state of the art pollution control technology.
- Sempra Energy is moving forward with a 500 megawatt gas burning, combined cycle, plant that is scheduled to go on line in 2005. All of Sempra's production will be sold to the United States.
- American Electric Power has discussed a 269 megawatt plant to be online by 2005.

If all of these plants were put in operation, they would add significant amounts of pollutants to the Imperial Valley-Mexicali air shed. Imperial Valley currently is not in compliance with U.S. standards for particulates (PM₁₀) and ozone.

While these new projects will help meet the energy demands in the border and elsewhere, they also pose the risk that the border region will suffer a disproportionate share of environmental impacts due to the location of a large number of new facilities in the region without proper evaluation of regional and transborder air quality impacts. The border faces the threat of becoming a pollution haven for energy production, absorbing significant environmental costs for other regions.

These plants will also place a severe strain on natural gas supplies, none of which are indigenous. Since most of the plants are dual fuel, if natural gas supplies are restricted, there will be a natural tendency, especially by PEMEX, to use fuel oil that contains sulfur, exacerbating already polluted air basins. While the specific cases discussed here are for the California-Baja California border region, similar issues and concerns are present and emerging elsewhere along the U.S.-Mexican border.

CONCLUSIONS AND RECOMMENDATIONS

The discussions at Border Institute III produced a number of specific and general recommendations. These were developed in the discussions in topical panels throughout the meetings and also at break-out roundtables designed to summarize and focus the content of the meetings. The recommendations dealt with three main themes for the U.S.-Mexican border region: increasing cooperation and participation, changing environmental policy, and building a sustainable economy.

I. INCREASING COOPERATION AND PARTICIPATION AT A BINATIONAL, REGIONAL LEVEL

- **The United States should create a cabinet-level position of border coordinator to facilitate the involvement of all federal agencies in addressing border energy and other issues.** This position would be the counterpart to the position recently established by President Fox.
- **Policymakers and other stakeholders should build on existing institutions and arrangements rather than create new administrative mechanisms when developing solutions to coordinate energy and environment in the transborder region.** Public participation, involvement of all sectors, and transparency should be central to all such efforts.



Panelists: (L to R) Robert Laurie, California Energy Commissioner (speaking); Eduardo Arriola, Comisión Federal de Electricidad; Denise Moreno Ducheny, Presidential Fellow, San Diego State University; Vanessa Ortega, Secretaría de Medio Ambiente y Recursos Naturales; L.H. Hamilton, Sierra Southwest Cooperative Services; George Baker, Baker & Assoc.

- **The Border XXI process must be reinvigorated, with increased local and state participation.** Under previous presidential administrations, United States and Mexico made considerable progress in addressing border environmental problems through Border XXI, but the process has been on hold under the Bush and Fox presidencies.
- **A transborder environmental impact assessment process needs to be established to protect border communities from potentially harmful transborder environmental impacts.** Local and state participation is key in this process. Under previous presidential administrations, some progress has been made on the establishment of a transboundary environmental impact process. This process needs to be accelerated to protect border communities from transborder environmental impacts.
- **Binational pilot programs should be initiated to address energy and environmental issues in the border region.** These programs should include extensive participation from stakeholders in many sectors, including private industry, NGOs, government agencies, and communities.

II. CHANGING ENVIRONMENTAL POLICY

- **An energy working group should be added to the Border XXI working groups.** Border environmental work groups should also be added to Petróleos Mexicanos (PEMEX), Federal Energy Regulatory Commission (FERC), Comisión Federal de Electricidad (CFE), the U.S. Department of Energy, and the Secretaría de Energía.

■ **When coordinating and planning for future energy facilities, the resulting future energy needs for water should be taken into account.** This water-energy connection is increasingly important in the arid border region. A holistic approach will result in more efficient use of water, energy, and other utilities.

■ **Regulations for power plants should be harmonized for the border region to decrease air quality impacts and transboundary effects.** If regulations are harmonized for the border region there is less likelihood that companies will locate there to escape stricter regulations elsewhere.

■ **A binational energy database should be developed for adequate planning and coordination purposes in the region and for both nations.** This database will require the availability of harmonized and easily accessible data for the border zone. Currently, no energy balances (identification and quantification of energysources and uses) are available for Mexican states.



Alan Hecht, Deputy Assistant Administrator, U.S. EPA's Office of International Affairs.

■ **A process should be established to require that the most advanced, and cleanest technology be used for plants located in the binational border region.** Mexico should designate the border region a “critical zone” as it has for Mexico City. Accordingly, it should direct PEMEX to reformulate fuels for use in the border region.

III. BUILDING A SUSTAINABLE ECONOMY

■ **More demand side management and energy efficiency measures should be utilized in the border region.** A regional, binational approach needs to be developed to prohibit the export of used energy-wasting appliances, such as refrigerators and air conditioners. Additionally, a regional, binational program for retiring and scrapping old electrical appliances is needed. Electricity bills should include tiered rates and electricity meters should show rates by time of use so that consumers understand true costs of their electricity usage patterns.

■ **Stakeholders in the border region should capitalize on the renewable energy sources available in order to meet part of the demand for energy.** For example, large new housing developments in U.S. and Mexican border communities could easily employ inexpensive and proven technologies for solar water heating.

■ **The private sector must be included as a major part of the solution to the border energy and air pollution problems.** Clear and consistent regulations, emissions trading programs, binationally harmonized incentive programs, and market based approaches will facilitate private sector action.

The current energy crisis in the border region should be taken as a signal of the dangers of thinking only with a short term view, resolving immediate problems at the expense of the health and well being of border communities. Stakeholders in both countries need to accept the challenge of putting content and meaning into the word “sustainable.” The futures of the two nations are laced together through multiple ties. Energy is a key challenge to create a realistic and equitable framework in which the well being of those living on the border is central. Resolving the energy crisis provides an opportunity for stakeholders to engage in long term binational coordination and planning to create innovative solutions. It is up to all stakeholders to develop appropriate environmental policies and build a sustainable economy to promote future well being.

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CHALLENGES AND OPPORTUNITIES FOR THE BORDER REGION, NOW AND IN 2020
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THE SCERP MISSION

The Southwest Center for Environmental Research and Policy (SCERP) was established by the U.S. Congress in October 1990 to “initiate a comprehensive analysis of possible solutions to the acute air, water quality, and hazardous waste problems that plague the United States-Mexico border region.” SCERP is a consortium of five U.S. universities (Arizona State University, New Mexico State University, San Diego State University, University of Texas at El Paso, and the University of Utah) and five Mexican universities (El Colegio de la Frontera Norte, Instituto Tecnológico y de Estudios Superiores de Monterrey, Universidad Autónoma de Baja California, and Universidad Autónoma de Ciudad Juárez). SCERP carries out its mission through a cooperative agreement with the U.S. Environmental Protection Agency. A permanent administrative office is maintained by the consortium in San Diego.

ENVIRONMENTAL PROBLEMS OF THE U.S.-MEXICAN BORDER REGION

The border region lies 100 kilometers/60 miles on each side of the U.S.-Mexican international boundary and encompasses parts of four states in the United States (Texas, New Mexico, Arizona, and California) and six Mexican states of Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas. Approximately 12.5 million people live in the U.S. counties and Mexican municipalities on the border. The high density of people and increased industrialization since the passage of NAFTA have placed an even greater burden on the inadequate infrastructure and environmental resources of the region. Exacerbating the problem is the fact that many U.S. counties along the border are categorized as “economically distressed,” and few communities possess the resources needed to address environmental concerns. Some of the critical border environmental issues include, but are not limited to:

- Rapid urbanization and lack of adequate infrastructure
- Air pollution from open burning, vehicle emissions, and industrial operations
- Contamination of surface and ground water from open sewers and industrial waste
- Over-utilization of aquifers and surface streams
- Transportation and illegal dumping of hazardous wastes
- Destruction of natural resources

THE SCERP SOLUTION

SCERP utilizes a broad, integrated, and multidisciplinary approach to address the issues of the border region. SCERP’s researchers collaborate with the U.S. Environmental Protection Agency and Mexico’s Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), as well as local and state governments, business and industry, non-governmental organizations, and communities of the border region. SCERP organizes research, outreach, and training programs devoted to improving environmental conditions and to building capacity in the border region for resolving critical environmental problems. SCERP is pioneering a model of binational cooperation that brings U.S. and Mexican researchers together and introduces new skills and perspectives in binational environmental problem solving.

