

Crossborder Climate Change Strategies Raising Awareness of Adaptation

Tuesday, June 1, 2010
Caltrans, District 11, 4050 Taylor Street, San Diego, CA 92110
Garcia Conference Room
12:45 – 5:00 p.m.

- 1. REGISTRATION AND NETWORKING TIME 12:45 p.m. (15 min.)
- 2. WELCOME AND INTRODUCTORY REMARKS 1:00 p.m. (20 min.)
(Hon. Patricia McCoy, Chair of the Borders Committee;
Hon. Remedios Gómez-Arnau, Consul General of Mexico in San Diego;
Laurie Berman, Caltrans, District 11; and Luis Duarte, IMPlan, City of
Tijuana)
- 3. SETTING THE STAGE FOR A DISCUSSION ON CROSSBORDER CLIMATE CHANGE STRATEGIES AND REGIONAL TRANSPORTATION PLANS 1:20 p.m. (10 min.)
(Hon. Crystal Crawford, City of Del Mar, Borders Committee)

This presentation will provide an overview of the role of SANDAG and the State of Baja California in the preparation of Climate Change mitigation and adaptation strategies and how collaboration on this issue would benefit our border region.

- 4. OVERVIEW OF CLIMATE CHANGE IMPACTS AND POSSIBLE ADAPTATION STRATEGIES IN CALIFORNIA (Ricardo Martinez, Cal-EPA) 1:30 p.m. (20 min.)

This presentation will brief on potential impacts related to climate change.

- 5. OVERVIEW OF SANDAG CLIMATE ACTION STRATEGY (Andrew Martin, SANDAG) 1:50 p.m. (15 min.)

The Climate Action Strategy (Strategy) serves as a guide to help policymakers address climate change, with a focus on helping SANDAG identify policy measures that will help it reduce greenhouse gas emissions from passenger cars and light-duty trucks and comply with Senate Bill 375. The Strategy identifies available measures to help the region integrate climate change considerations into existing planning processes affecting our transportation system, land use patterns, building stock, and energy infrastructure.

- 6. OVERVIEW OF BAJA CALIFORNIA'S PLANNING EFFORTS ON CLIMATE CHANGE ADAPTATION STRATEGIES 2:05 p.m. (30 min.)
(Efraín Nieblas, Secretariat of Environmental Protection of the State of Baja California)

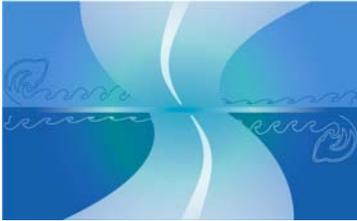
This presentation will provide an update of the Climate Action Plan for the State of Baja California (PEAC-BC, as in Spanish) and potential mitigation and adaptation strategies.

- 7. Q & A 2:35 p.m. (15 min.)



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| ** | BREAK** | 2:50 p.m. (10 min.) |
| 8. | <p>OPPORTUNITIES TO ADDRESS CLIMATE CHANGE ADAPTATION STRATEGIES THROUGH REGIONAL TRANSPORTATION PLANS (Garth Hopkins, Caltrans; and Ron Saenz, SANDAG)</p> <p>Caltrans and SANDAG will share planning activities related to transportation plans that represent opportunities to address regional climate change adaptation strategies, including San Diego's 2050 Regional Transportation Plan (RTP).</p> | 3:00 p.m. (25 min.) |
| 9. | <p>ROUNDTABLE DISCUSSION ON CHALLENGES AND OPPORTUNITIES FOR CROSSBORDER CLIMATE CHANGE ADAPTATION STRATEGIES (Binational Panel) (Moderator Paul Ganster, Chair of the Committee on Binational Regional Opportunities)</p> <p>Experts and stakeholders will share their perspectives on the potential challenges and opportunities for crossborder climate change collaboration.</p> | 3:25 p.m. (30 min.) |
| 10. | <p>OPEN DISCUSSION</p> <p>Participants will have an opportunity to provide input and pose questions to the panelists.</p> | 3:55 p.m. (35 min.) |
| 11. | SEMINAR CONCLUSIONS | 4:30 p.m. (15 min.) |
| 12. | END OF SEMINAR | 4:45 p.m. |





Crossborder Climate Change Strategies Raising Awareness of Adaptation

June 1, 2010

Introduction

Every year since 1997, the Committee on Binational Regional Opportunities (COBRO) has supported the organization of the SANDAG annual binational events. The 2009 Binational Seminar focused on *“Challenges and Opportunities for Crossborder Climate Change Collaboration.”* The Committee on Binational Regional Opportunities (COBRO)ⁱ and the Borders Committeeⁱⁱ discussed the outcomes from the seminar and proposed a set of four recommendations, which were approved by the SANDAG Board of Directors in October 2009.

1. Recognize the importance of encouraging all levels of agencies and stakeholders in our San Diego – Baja California region to mutually agree on priority aspects of climate change collaboration, including mitigation, adaptation, and education strategies.
2. Encourage the inclusion of strategies for collaboration and sharing information on regional climate change action plans in San Diego and Baja California.
3. The 2010 binational event should follow up on topics related to climate change planning.
4. In 2010, produce a progress report on developments and actions taken in climate change planning as a result of the 2009 seminar recommendations.

For the 2010 Binational Seminar, COBRO and the Borders Committee recommended that the event focus on discussing possible strategies to adapt to climate change impacts, as well as on the effects that climate change has on transportation infrastructure. They also recommended that this discussion be incorporated as input into the preparation of the SANDAG 2050 Regional Transportation Plan (RTP).

This report provides an overview on climate change adaptation initiatives occurring in the United States and Mexico. In addition, a more focused White Paper *“Draft Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan”* is included with the seminar materials.

Discussion

The issue of climate change has been in discussions for years, and countries all over the world have been dealing with it in different ways. The United Nations Framework Convention on Climate Change (UNFCCC) was signed in 1992 and was ratified in 1994 by both the United States and Mexico, among many other countries.



Linked to the UNFCCC, the Kyoto Protocol sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. Mexico signed the Kyoto Protocol in 1998, ratified it in 2000, and enacted the legislation in 2005. The United States signed the Protocol in 1998, but has not ratified or enforced it. Negotiations to develop a new protocol took place on December of 2009 at the United Nations Climate Change Conference, Copenhagen 2009, which was hosted by the Government of Denmark. Governments engaged at the highest political level, and the outcome of that engagement was reflected in the Copenhagen Accord. While much attention has focused on the Accord, the Conference in Copenhagen also made good progress in a number of areas including improvements to the clean development mechanism, and draft decisions on adaptation, technology, and capacity-building. Point number 3 of the Copenhagen Accord states:

“Adaptation to the adverse effects of climate change and the potential impacts of response measures is a challenge faced by all countries. Enhanced action and international cooperation on adaptation is urgently required to ensure the implementation of the Convention by enabling and supporting the implementation of adaptation actions aimed at reducing vulnerability and building resilience in developing countries, especially in those that are particularly vulnerable, especially least developed countries, small island developing States and Africa. We agree that developed countries shall provide adequate, predictable and sustainable financial resources, technology and capacity-building to support the implementation of adaptation action in developing countries.”¹

The United States’ Perspective on Climate Change

Federal

In 2009, the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA) initiated the Interagency Climate Change Adaptation Task Force (Task Force), which includes representatives from more than 20 Federal Agencies. When the President signed the Executive Order on Federal Leadership in Environmental, Energy, and Economic Performance, on October 5, 2009, he called on the Task Force to develop, within one year, Federal recommendations for adapting to climate change impacts both domestically and internationally.

On March 16, 2010, the Task Force released an Interim Progress Report which outlines the Task Force’s progress to date and recommends key components to include in a national strategy on climate change adaptation. These six components include:

1. Integration of Science into Adaptation Decisions and Policy
2. Communications and Capacity-Building
3. Coordination and Collaboration

¹ United Nations Framework Convention on Climate Change. [Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009](http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=4). Decision 2/CP.15 Copenhagen Accord. Online: <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf#page=4>



4. Prioritization
5. A Flexible Framework for Agencies
6. Evaluation

The Task Force formed workgroups to consider the capabilities of the Federal Government to respond to the impacts of climate change on various critical sectors, institutions, and agency mission responsibilities. The workgroups are focused on the following topics:

- *Agency Adaptation*: Develop recommendations on how agencies should plan and implement adaptation efforts.
- *Science Inputs to Policy*: Develop recommendations to couple the production of scientific and technical support to adaptation planning, prioritization, and resilience building within the USG, in the US, and internationally.
- *Insurance*: Develop recommendations on opportunities for the United States Government to support insurance and adaptation issues.
- *Water Resources Adaptation*: Develop recommendations on how Federal water management agencies should plan and implement adaptation actions related to climate impacts on water resources.
- *International Resilience*: Develop recommendations on opportunities for the United States Government to support and lead international adaptation efforts.
- *Health*: Develop recommendations focused on educating and communicating with policymakers, public health officials, healthcare professionals, and the public; building early warning systems, identifying vulnerable populations; forecasting, modeling, and predicting the health impacts of climate change; and building capacity to better prepare for and respond to those impacts.
- *Fish, Wildlife, and Plants*: Develop recommendations on how Federal agencies, state, local, and tribal governments should plan and implement adaptation efforts related to climate impacts on wildlife, fish, and plants.
- *Structure for Coordination and Collaboration*: Develop recommendations on the structure for U.S. Government adaptation efforts and on how Federal agencies can coordinate adaptation activities with other Federal agencies, state, local, and tribal governments, and the private sector and civil society.
- *Urban*: Develop recommendations on how Federal agencies in conjunction with state, local, and tribal governments can implement adaptation efforts related to climate impacts on urban environments, communities and infrastructure.
- *Coasts and Oceans*: Develop recommendations to strengthen resiliency of coastal communities and marine and Great Lakes environments and their abilities to adapt to climate change impacts and ocean acidification.
- *Land*: Develop recommendations on how Federal land management agencies in conjunction with state, local, and tribal governments and private landholders can address adaptation related to climate impacts on land.



- *Communications:* Develop recommendations on how the Federal Government can better communicate messages regarding climate change adaptation and resilience within and outside the government.

The Task Force workgroups have hosted 20 listening sessions with key stakeholders and experts. The listening sessions are designed to engage the expertise and recommendations of external organizations into the workgroup deliberations early in this review process. In October 2010, the Task Force will report to the President on the development of domestic and international dimensions of a U.S. approach to climate change adaptation and what Federal Agencies are doing to support this effort. The Task Force also will recommend additional aspects to consider in the development of a comprehensive national strategy.

In addition to the work done by the Task Force, the federal government administers a wide array of public-private partnerships to reduce U.S. GHG emissions. These programs focus on energy efficiency, renewable energy, methane, and other non-carbon dioxide (non-CO₂) gases, agricultural practices and implementation of technologies to achieve GHG reductions. The U.S. Environmental Protection Agency (U.S. EPA) implements several voluntary programs that substantially contribute to the reduction of GHG emissions. The U.S. EPA plays a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors. Some of the U.S. EPA's GHG reduction initiatives include: the Clean Energy-Environment State Partnership, Climate Leaders, Combined Heat and Power Partnership, Energy Star, EPA Office of Transportation and Air Quality Voluntary Programs, Green Power Partnership, High Global Warming Potential (GWP) Gas Voluntary Programs, Methane Voluntary Programs, and WasteWise.

The United States government is investing in a diverse portfolio of energy technologies with the potential to yield substantial reductions in emissions of GHGs. Given the considerable lead times for energy technology development, deployment and commercialization, investment in these technologies must be made today. With the establishment of the Climate Change Technology Program (CCTP) the U.S. continues to be a leader in climate technology research and development. The CCTP vision is to attain - on a global scale in partnership with others - a technological capability that can provide abundant, clean, secure, and affordable energy and related services needed to encourage and sustain economic growth, while simultaneously achieving substantial reductions in emissions of GHGs and mitigating the risks of potential climate change.

The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. The USGCRP began as a presidential initiative in 1989 and was mandated by Congress in the Global Change Research Act of 1990 (P.L. 101-606), which called for "a comprehensive and integrated United States research program which will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change." Thirteen departments and agencies participate in the USGCRP, which was known as the U.S. Climate Change Science Program from 2002 through 2008. The program is steered by the Subcommittee on Global Change Research under the Committee on Environment and Natural Resources, overseen by the Executive Office of the President, and facilitated by an Integration and Coordination Office.



California

Executive Order S-3-05

In an effort to address climate change issues, Governor Arnold Schwarzenegger issued Executive Order S-3-05 in 2005 to advance renewable energy technologies and reduce the emission of GHGs. Executive Order S-3-05 set the following GHG emission reduction targets standards for the state of California:

- Reduce GHG emissions to the 2000 level by 2010;
- Reduce GHG emissions to the 1990 level by 2020; and
- Reduce GHG emissions to 80 percent below the 1990 level by 2050.

California Global Warming Solutions Act of 2006 (AB 32)

Executive Order S-3-05 was followed by the passage of the landmark California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), which established a comprehensive program of regulatory and/or market mechanisms to achieve real, quantifiable, cost-effective reductions of GHG emissions. AB 32 codified into law the goal of Executive Order S-3-05 to achieve the 1990 GHG emissions level by 2020, and authorized the California Air Resources Board (CARB) to monitor and regulate sources of GHG emissions in order to reduce GHG emissions. CARB is required to:

- Establish a statewide GHG emissions cap for 2020, based on the 1990 level of emissions, by January 1, 2008;
- Adopt mandatory reporting and verification rules for significant sources of GHGs by January 1, 2008;
- Adopt a scoping plan by January 1, 2009, for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions; and
- Adopt regulations by January 1, 2011, to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions, to become operative by January 1, 2012.

Climate Change Scoping Plan

The CARB *Climate Change Scoping Plan (Scoping Plan)* outlines the main strategies for meeting the AB 32 GHG reduction target, which include a range of actions including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms like a cap-and-trade system, and a cost-of-implementation fee to fund the program. CARB and other state agencies must adopt these reduction measures by the start of 2011, and already a number of “early action” measures required by the *Scoping Plan* have been adopted, such as the Low Carbon Fuel Standard. In addition, the *Scoping Plan* emphasizes the need to better connect land use and transportation planning to help the state achieve its GHG emissions reduction target for 2020.



Senate Bill 375 (SB 375)

The on-road transportation sector is the largest contributor of GHG emissions in San Diego County, accounting for 46 percent of the total GHG emissions, almost twice as much as the next largest sector. Almost 90 percent of emissions in this sector are from passenger cars and light trucks (e.g., sport utility vehicles, pick-up trucks). The state has enacted several laws that create a framework for reducing GHG emissions from the on-road transportation sector. In general, California employs a three-pronged approach to implement this framework:

- Improve the fuel efficiency and lower GHG emissions from passenger vehicles (e.g., Pavley Standards, zero-emission vehicle [ZEV] program);
- Reduce the carbon intensity of transportation fuels (Low Carbon Fuel Standard); and
- Integrate regional land use and transportation planning to reduce emissions from vehicle travel (SB 375).

To further address the GHG emissions-reduction goals of Executive Order S-3-05 and AB 32, SB 375 was signed into law on September 30, 2008. SB 375 will enable Metropolitan Planning Organizations (MPOs), like SANDAG, to collaborate with local governments, CARB, and a variety of stakeholders to meet California's climate change goals.

SB 375 requires the development of a Sustainable Communities Strategy (SCS) as a new element of the 2050 RTP, along with the traditional policy, action, and financial requirements.

The SCS must demonstrate how the development patterns and the transportation network, policies, and programs can work together to achieve the GHG emission reduction targets for cars and light trucks that will be established by CARB, if there is a feasible way to do so. If targets cannot be met through the SCS, then the region is required to develop an Alternative Planning Strategy that demonstrates how the emission reduction targets could be achieved.

In essence, the SCS includes four building blocks:

1. Land use component that accommodates the Regional Housing Needs Assessment (RHNA) and includes the protection of sensitive resource areas, including areas protected under habitat conservation plans;
2. Transportation networks including highways, transit, and local streets and roads;
3. Transportation demand management strategies; and
4. Transportation system management programs and policies.

California's Preferred Loading Order

The California Public Utilities Commission and California Energy Commission adopted a preferred loading order to meet goals for satisfying the state's growing demand for electricity while reducing GHG emissions. The preferred loading order for new energy



resources places top priority on increasing energy efficiency and demand response, then new generation from renewable and distributed generation resources, and finally with clean, fossil-fueled generation and infrastructure improvements

2009 California Climate Adaptation Strategy

The *2009 California Climate Adaptation Strategy (CAS)* report summarizes the best known science on climate change impacts in the state to assess vulnerability and outlines possible solutions that can be implemented within and across state agencies to promote resiliency.

The California Natural Resources Agency (CNRA) took the lead and developed this adaptation strategy, working through the Climate Action Team (CAT) led by the California Environmental Protection Agency. Seven sector-specific working groups, 12 state agencies, boards and commissions, and numerous stakeholders were convened for this effort. The strategy proposes a comprehensive set of recommendations designed to inform and guide California decision makers as they begin to develop policies that will protect the state, its residents and its resources from a range of climate change impacts.

The strategies included in this report were approved by the CAT Team, which represents all of state government. Now, the CAT will lead in the coordination of measures and push to develop the necessary tools to effect adaptation protocols. California's mitigation (CAT) and adaptation (CAS) processes will be further integrated through extensive information exchange and consolidation of working groups from both efforts.

It is recognized that implementation of the following adaptation strategies will require significant collaboration among multiple stakeholders to ensure they are carried out in a rational, yet progressive manner over the long term. These strategies distinguish between near-term actions that will be completed by the end of 2010 and long-term actions to be developed over time.

Key recommendations include:

1. A Climate Adaptation Advisory Panel (CAAP) will be appointed to assess the greatest risks to California from climate change and recommend strategies to reduce those risks building on California's Climate Adaptation Strategy.
2. California must change its water management and uses because climate change will likely create greater competition for limited water supplies needed by the environment, agriculture, and cities.
3. Consider project alternatives that avoid significant new development in areas that cannot be adequately protected (planning, permitting, development, and building) from flooding, wildfire, and erosion due to climate change.
4. All state agencies responsible for the management and regulation of public health, infrastructure or habitat subject to significant climate change should prepare as appropriate agency-specific adaptation plans, guidance, or criteria by September 2010.
5. To the extent required by CEQA Guidelines Section 15126.2, all significant state projects, including infrastructure projects, must consider the potential impacts of locating such projects in areas susceptible to hazards resulting from climate change.
6. The California Emergency Management Agency (Cal EMA) will collaborate with CNRA, the CAT, the Energy Commission, and the CAAP to assess California's vulnerability to



climate change, identify impacts to state assets, and promote climate adaptation/mitigation awareness through the Hazard Mitigation Web Portal and My Hazards Web site as well as other appropriate sites. The transportation sector CAWG, led by Caltrans, will specifically assess how transportation nodes are vulnerable and the type of information that will be necessary to assist response to district emergencies.

7. Using existing research the state should identify key California land and aquatic habitats that could change significantly during this century due to climate change. Based on this identification, the state should develop a plan for expanding existing protected areas or altering land and water management practices to minimize adverse effects from climate change induced phenomena.
8. The best long-term strategy to avoid increased health impacts associated with climate change is to ensure communities are healthy to build resilience to increased spread of disease and temperature increases. The California Department of Public Health will develop guidance by September 2010 for use by local health departments and other agencies to assess mitigation and adaptation strategies, which include impacts on vulnerable populations and communities and assessment of cumulative health impacts. This includes assessments of land use, housing and transportation proposals that could impact health, GHG emissions, and community resilience for climate change, such as in the 2008 Senate Bill 375 regarding Sustainable Communities.
9. The most effective adaptation strategies relate to short- and long-term decisions. Most of these decisions are the responsibility of local community planning entities. As a result, communities with General Plans and Local Coastal Plans should begin, when possible, to amend their plans to assess climate change impacts, identify areas most vulnerable to these impacts, and develop reasonable and rational risk reduction strategies using the CAS as guidance.
10. State fire fighting agencies should begin immediately to include climate change impact information into fire program planning to inform future planning efforts.
11. State agencies should meet projected population growth and increased energy demand with greater energy conservation and an increased use of renewable energy. Renewable energy supplies should be enhanced through the Desert Renewable Energy Conservation Plan that will protect sensitive habitat that will while helping to reach the state goal of having 33 percent of California's energy supply from renewable sources by 2020.
12. Existing and planned climate change research can and should be used for state planning and public outreach purposes; new climate change impact research should be broadened and funded. By September 2010, the California Energy Commission will develop the CalAdapt Web site that will synthesize existing California climate change scenarios and climate impact research and to encourage its use in a way that is beneficial for local decision-makers. Every effort will be made to increase funding for climate change research, focusing on three areas: linkages with federal funding resources, developing Energy Commission -led vulnerability studies, and synthesizing the latest climate information into useable information for local needs through the CalAdapt tool.



San Diego

San Diego County Greenhouse Gas Inventory

In 2008, the Energy Policy Initiatives Center (EPIC), a research center at the University of San Diego (USD) School of Law, released the "*San Diego County Greenhouse Gas Inventory*." The report calculated the theoretical emissions reductions necessary for San Diego County to reduce emissions to 1990 levels by 2020 - the statewide statutory target under AB 32. The inventory includes historical GHG emissions from 1990 to 2006, and estimates future emissions until 2020 under a business-as-usual scenario. The study is intended to promote understanding of GHG emission sources in the region and to serve as a resource to local and regional policy-makers as they consider strategies to reduce GHG emissions.

Important findings include:

- San Diego County emitted 34 million metric tons of carbon dioxide equivalents² in 2006 – an 18 percent increase over 1990 levels.
- By 2020, under a business-as-usual scenario, regional GHG emissions are expected to be 43 million metric tons of carbon dioxide equivalents, an increase of 26 percent over 2006 levels and 48 percent over 1990 levels.
- To meet AB 32 emission reduction targets, San Diego County would have to produce 33 percent less emissions than the projected business-as-usual levels in 2020.
- In 2006, emissions from on-road vehicles represented 46 percent of total GHG emissions in San Diego County.
- San Diego County likely can reduce its GHG emissions to the 1990 level by 2020 through a combination of reduction strategies from all sectors (reductions from the on-road transportation, electricity, and natural gas sectors would represent 81 percent of total reductions).

The San Diego Foundation's Regional Focus 2050 Study

In 2008, the San Diego Foundation performed an assessment of the impacts of climate change in the San Diego region in the year 2050 if current trends continue. The primary aim of this analysis was to provide a scientific basis for local governments and other public agencies to develop climate-preparedness strategies for mitigating the damage from, as well as adapting to, climate change.

According to the Focus 2050 Study, the population of San Diego County is expected to grow to 4.5 million in 2050, an approximately 50 percent increase from 2007. Substantial population growth will fuel an increase in GHG emissions and further contribute to the global problem unless preventative action is taken.

² Carbon dioxide equivalency is a quantity that describes, for a given mixture and amount of GHG, the amount of CO₂ that would have the same global warming potential, when measured over a specified timescale



Going forward, the San Diego region must develop a plan of action to address and mitigate the expected consequences of climate change for its populace and environment. Some important potential impacts of climate change on the San Diego region as identified by the Focus 2050 Study include:

- Heat Waves – heat waves will increase in frequency, magnitude, and duration.
- Precipitation – the high degree of variability of annual precipitation will prevail, suggesting the region will continue to be highly vulnerable to drought.
- Sea Level Rise – sea levels will rise 12-18 inches resulting in serious flooding in low-lying areas and an increased incidence of extreme high sea level events which occur during high tides.
- Water Supplies and Demand – with 80 percent of imported water coming from the diminishing resources of the Sacramento Delta and the Colorado River – and local supplies being reduced -- the increasing water demand from growing populations and commercial activities will not be met.
- Wildfires – increased drought and potential longer Santa Ana wind conditions will lead to more frequent and severe wildfires.
- Ecosystems – extended drought and increased temperatures can stress individual plants, increase their susceptibility to insect attack, result in widespread forest decline, and the exodus/extinction of plant and animal species.
- Public Health – increases in extreme weather-related illness, rodent- and water-borne disease, pollution, and worsening wildfire conditions will severely affect the region's population.
- Electricity – total electricity demand by 2050 is projected to increase by approximately 60 percent, with peak loads increasing by 70 percent, due to increased cooling demand in the summer and the potential need for water desalination plants to offset reduced water supplies.

Overview of SANDAG Climate Action Strategy

SANDAG has developed a Climate Action Strategy (Strategy), which was approved by SANDAG's Board of Directors in March of 2010. A major purpose of the Strategy is to identify land use and transportation policy measures that could help SANDAG meet or exceed its targets for reducing GHG emissions from passenger cars and light-duty trucks that will be established by CARB per SB 375.

The Strategy identifies goals, objectives, and policy measures in the areas of transportation, land use, buildings, and energy use. Also addressed are measures and resources to help local governments reduce emissions from their operations and in their communities. It serves as a guide to help policymakers address climate change as they make decisions to meet the needs of our growing population, maintain and enhance our quality of life, and promote economic stability. It does so in the context of the significant action on climate change happening in California, and the need for national and international attention to address what is ultimately a global problem.



SANDAG, local governments, and other regional entities have authority and influence over three essential areas that contribute to climate change:

1. Land use patterns, transportation infrastructure, and related public investments
2. Building construction and energy use
3. Government operations

As a result, this Strategy focuses on these areas where regional and local agencies have the authority or opportunity to influence emissions and make our region more resilient to the changing climate. The opportunity and ability to reduce the three largest sources of GHG emissions in our region are in the following areas:

- On-road transportation (i.e., passenger vehicles, light-, medium- and heavy-duty vehicles, and motorcycles);
- Electricity generation; and
- Natural gas end uses (e.g., space heating, cooking, etc.).

When combined, these three sources account for about 80 percent of emissions in the San Diego region, with on-road transportation alone responsible for about 46 percent of the total. Just as important, our transportation and energy infrastructure systems also are threatened by climate change impacts. Responding to climate change will require us to mitigate our GHG emissions and adapt to the changes coming to our region. Regional and local government efforts to reduce our GHG emissions will require a foundation of improved land use and transportation planning, and changes in the amounts and types of energy we use.

The main strategies are:

1. Reduce Total Miles of Vehicle Travel
2. Minimize Greenhouse Gases When Vehicles are Used
3. Promote Use of Low Carbon Alternative Fuels
4. Protect Transportation Infrastructure from Climate Change Impacts
5. Reduce Energy Use in Residential and Commercial Buildings
6. Increase Use of Renewable Energy
7. Reduce Water-Related Energy Use and Greenhouse Gases
8. Protect Energy Infrastructure from Climate Change Impacts
9. SANDAG and Local Governments Lead by Example

Development and implementation of adaptation measures will be critical to protecting the region from the impacts of climate change. This Strategy does not identify adaptation measures for all of the potential wide-ranging impacts. Many agencies with jurisdiction in the San Diego region are likely to have a role in adaptation planning, with SANDAG being just one of several agencies. Due to SANDAG's core function as the regional transportation planning agency and its long involvement in regional energy issues, the Strategy focuses on adaptation measures to consider when addressing impacts to transportation and energy infrastructure.



Decisions on which adaptation measures to pursue, responsible entities, and opportunities for coordination are best debated among regional and local officials and the general public during updates to local government General Plans and other community plans (and related regulatory mechanisms) and during updates to SANDAG plans like as is the case with the Regional Transportation Plan (RTP) which this Seminar hopes to solicit input on.

SANDAG Regional Transportation Plan (RTP)

SANDAG is developing the 2050 RTP, which will rely upon the Regional Comprehensive Plan (RCP) and other planning efforts as the foundation for integrating land uses, transportation systems, infrastructure needs, and public investment strategies within a regional smart growth framework. The RTP focuses both on the movement of people and goods, including marine terminals, air cargo facilities, freight rail, and land ports of entry that link our region with Mexico. In accordance with state and federal guidelines, the 2050 RTP is scheduled for adoption by the Board of Directors in summer 2011.

Per SB 375, the 2050 RTP will incorporate new legislative requirements. The Sustainable Communities Strategy (SCS) will be a new element of the RTP, and will be designed to show how regional GHG emission reduction targets, to be established by the CARB, will be achieved through development patterns, infrastructure investments, and transportation measures or policies that are determined to be feasible.

SANDAG has prepared a draft white paper on climate change adaptation that has three main objectives. They include:

1. Assessing the 2010 California RTP Guidelines regarding best practices for addressing climate adaptation in RTPs.
2. Identifying strategies included in the 2009 California Climate Adaptation Strategy related to transportation infrastructure.
3. Evaluating adaptation efforts by transportation agencies across the country.

Input from this Binational Seminar will be considered in the development of the 2050 RTP.

Mexico's Perspective on Climate Change Adaptation

Federal

In April 2005, the Mexican Congress created the Intersecretariat Commission for Climate Change (or Comisión Intersecretarial de Cambio Climático, CICC) to be the entity in charge of promoting and coordinating the development of programs and strategic actions to implement mandates from the UNFCCC. In May 2007, the CICC presented Mexico's National Strategy for Climate Change (or Estrategia Nacional de Cambio Climático, known as ENACC) that serves as the framework for the preparation of the Special Plan for Climate Change 2008–2012 within Mexico's National Development Plan (PND) 2007–2012.



ENACC identifies measures, specifies possibilities and emission reduction ranges, proposes the necessary studies to define precise mitigation goals, and outlines the needs of the country to move forward in building adaptation capacities.

The issue of climate change was included in Mexico's PND, under the section dedicated to sustainability. With this inclusion, Mexico has recognized the impact of GHG in climate change and acknowledged the consumption of fossil fuels as its principal cause. Two of the objectives of the PND, under Climate Change and Energy Policy of Baja California, are to reduce emissions of GHG, and to promote measures of adaptation to the effects of climate change.

To date, Mexico has presented three progress reports and three updates of its national inventory of GHG (Inventario Nacional de Emisiones de Gases de Efecto Invernadero).

At the state level, the Mexican federal government has established collaboration agreements with state governments for the development of Special Programs for Climate Change (Programas Especiales de Cambio Climático, known as PECC). The following are some of the objectives defined by the PECC 2008-2012 in terms of adaptation strategies:

- To promote the incorporation of preventive adaptation criteria for the effects of climate change in urban development and land use policies and programs that mainly address the most vulnerable sectors of the population.
- To strengthen adaptation capacities for extreme weather and hydro-meteorological phenomena.
- To promote the integration of criteria for disaster prevention and for long-term adaptation to climate change in population policies, to reduce the exposure to risk, mainly from extreme hydro-meteorological events.
- To consolidate public policies at the national level in terms of environmental education, and in terms of capacity building for mitigation and adaptation in key social sectors (academia, private sector, civil organizations) and priority geographic areas for sustainability with the purpose of encouraging responsible and informed public participation

The purpose of PECCs will be to:

- Develop an inventory and report of local GHG emissions;
- Identify potential sources of GHG emission reductions;
- Identify the most vulnerable zones, infrastructure, and population;
- Identify projects for adaptation; and
- Develop response and adaptability capacities.



Baja California

As part of its State Program for Environmental Protection 2008-2013, Baja California's Secretariat of Environmental Protection (SPA), has developed the State Plan for Climate Change Action of Baja California (PEAC-BC, as it is in Spanish), with support from Regional Academic Institutions (IES, as it is in Spanish) such as the Center for Science Research and Superior Education (Centro de Investigación Científica y de Educación Superior, CICESE), The Northern Border College (El Colegio de la Frontera Norte, COLEF), and the Autonomous University of Baja California (Universidad Autónoma de Baja California, UABC).

The main objective of the PEAC-BC is to evaluate the current and future situation of the effects of climate change in different socio-economic sectors at the state level, and propose mitigation and adaptation measures.

To attain the latter, the following specific objectives were proposed: (1) update the GHG inventory, (2) create local and regional climate change scenarios for the 21st century under two scenarios of increased GHG (low emissions and high emissions), (3) estimate increases in sea level in the coasts of Baja California, and (4) evaluate the possible impacts that climate change could have in the water, agricultural and livestock, health, transportation, housing, urban development, tourism, marine ecosystems, and terrestrial biodiversity sectors.

At this time, three workshops addressing this theme have been completed. The first workshop, held on August 25, 2008, at CICESE in Ensenada, was attended by the researchers of the three IESs, where they performed evaluations, and shared impact scenarios such as:

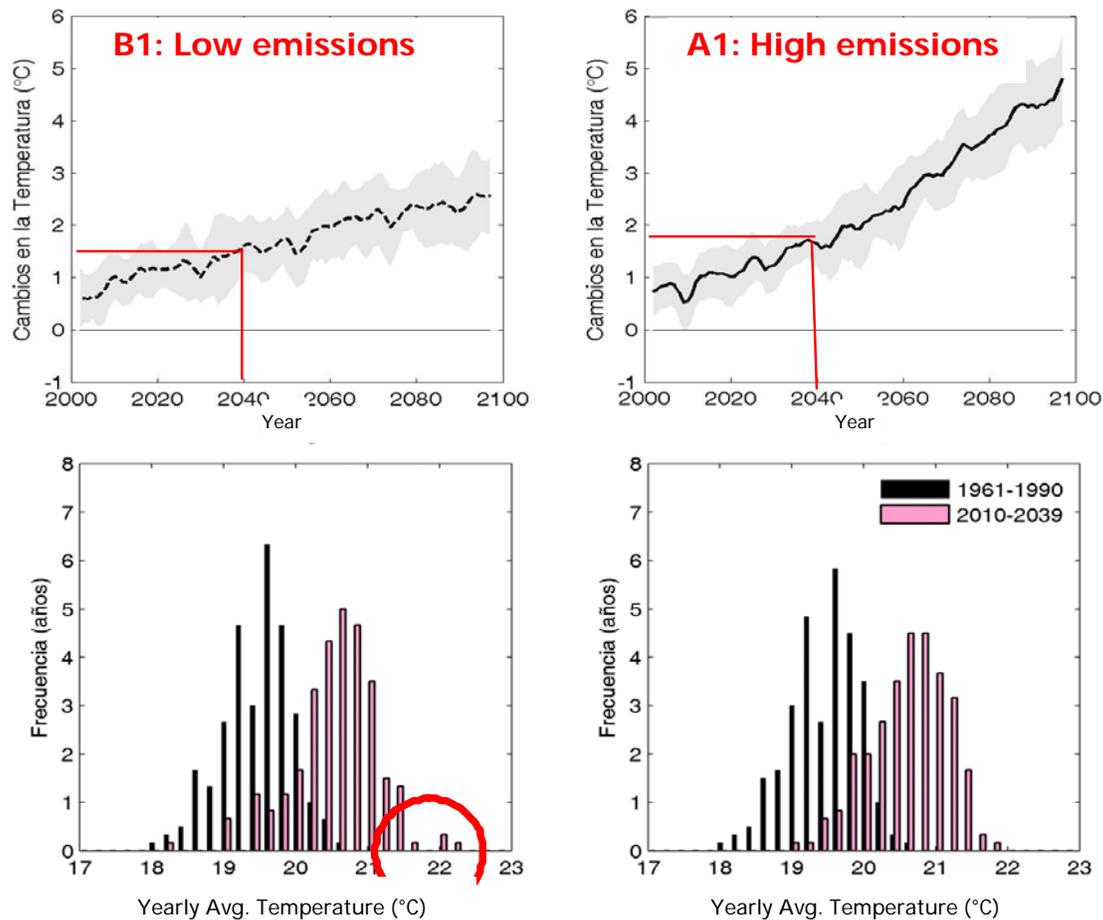
- Climate and Climatic Scenarios
- Ecosystems, Agricultural Sector, and Cattle Farming
- Emissions and the Impact of GHG

The second workshop took place at the COLEF campus in Tijuana on February 18, 2009, with the objective of presenting the results of the regionalized climate scenarios and initiating academic and governmental collaboration. The stakeholders that participated were: the City of Tijuana's Municipal Planning Institute (IMPlan), the State of Baja California's Water Commission (CEA), Energy Commission (CEE), Secretariat for Health (ISESALUD), and the Institute for Real Estate and Housing development (INDIVI). Participants from Mexico's federal government included the Secretariats for Agriculture and Livestock (SEFOA), for Tourism (SECTURE), and for the Environment and Natural Resources (SEMARNAT). Participants formed collaborative work tables to discuss their respective subjects of expertise.

The third workshop of the PEAC-BC took place at UABC on September 24 and 25, 2009, where substantial improvements were presented on the diagnosis of the actual state of the previously mentioned socio-economic sectors, as well as on the first two specific objectives that were planned.



Investigators from UABC and CICESE generated regional climate change scenarios for Baja California with troubling predictions; they determined that, with no action taken to mitigate or reduce the quantity of GHG emissions, there could be an increase of 1° C (1.8° F) in the average temperature in the next 20 years and up to 5° C (9° F) by the end of this century. Although these temperature increases seem small, scientists warn that even these slight changes could irreversibly harm species forever. In addition, if the average temperature increases one degree, extreme temperatures (minimum and maximum temperature) could increase from 1° C to 3° C (1.8° F to 5.4° F) in the affected region, which could affect weather and agricultural cycles.



Furthermore, it was stated that arid and semiarid regions, like Baja California, are particularly vulnerable to climate change because, in addition to the predicted increase in temperature, a 15 percent decrease in annual precipitation is projected in the next 20 years along with high rainfall variation signifying the possibility of many consecutive years of extreme drought followed by extended years of extreme rainfall. The reduction in precipitation would be most severe in winter and spring (10% - 15% less) and, when combined with the projected increase in temperature, could produce a major evaporation/transpiration cycle drying the soil and plants much more rapidly. This could potentially devastate the spring/summer crops that require humidity and cold-weather hours to grow. Moreover, it was identified that these changes could also have other



negative effects such as reduced availability of water and energy for agriculture, cattle farming, and tourism.

By the end of 2009 the goal of the PEAC-BC was to propose to the Governor of Baja California a series of strategies and actions to mitigate climate change and adapt to its effects, which would eventually become public policies for the welfare of the Baja Californian society.

Tijuana

Tijuana's Municipal Planning Institute's Climate Change Adaptation Strategies

As a follow-up to the strategies contained in the Municipal Plan for Urban Development (PMDU) 2008-2030, the City of Tijuana's Municipal Planning Institute (IMPlan) is taking steps to address climate change and to implement adaptation strategies. Through strategies for Smart Growth and Land Use, the Urban Development Plan for Population Growth (PDUPT) considers adopting the implementation, follow-up and focus of the ENACC to address the mitigation of the effects of climate change.

The following programs are being considered with the goal of counting, addressing and mitigating the effects of climate change in the municipality of Tijuana:

- Local Environmental Agenda
- Municipal Program of Ecological Regulation
- Ecological and Land Use Program for the City Coastline
- Development Rights Transfer Program (TDD, for its Spanish acronym)
- Municipal Air Quality Program
- Integrated Municipal Waste Management Program (GIRSM, for its Spanish acronym)

Binational Efforts

The importance of crossborder collaboration on climate change adaptation strategies has been recognized by both federal administrations. On April 2009, U.S. President Barack Obama and Mexican President Felipe Calderón announced plans to strengthen and deepen bilateral cooperation by establishing the U.S. – Mexico Bilateral Framework on Clean Energy and Climate Change. The Bilateral Framework was established after both presidents recognized a need for joint efforts to reach our common goal of achieving a low carbon future and a clean energy economy. This framework, which creates a mechanism for political and technical cooperation, and information exchange, will facilitate common efforts to develop clean energy economies, and will complement and reinforce existing cooperative efforts between the two countries. The Bilateral Framework will focus on renewable energy, energy efficiency, adaptation, market mechanisms, forestry and land use, green jobs, low carbon energy technology development and capacity building, GHG inventories, and climate change mitigation strategies.



With regard to the U.S.-Mexico border, the Bilateral Framework will promote efforts established in the Border 2012 program to reduce GHG emissions, strengthen the reliability and flow of crossborder electricity grids, promote academic and scientific exchanges on renewable energy, and facilitate border states' energy trading mechanisms. Other border activities could include a bilateral border crossing planning group to develop strategies to reduce emissions such as truck stop electrification and anti-idling technology for border vehicles, among other initiatives.

Another important development is the Memorandum of Understanding (MOU) on Environmental Cooperation between the California Environmental Protection Agency, the California Department of Food and Agriculture and the California Resources Agency, and Mexico's Ministry of Environmental Protection and Natural Resources. The MOU was signed in 2008 with the purpose of promoting and carrying out broader cooperative activities regarding environmental issues among the signing parties in the framework of their respective purview, and based on the principles of equality, reciprocity, information exchange, and mutual benefit. Climate change was identified as one of the priority areas of action within the MOU. An Action Plan was developed with the objective of identifying topics of common interest in order to carry out cooperative activities needed to implement the MOU, and there were three topics of common interest identified for climate change:

1. Cooperative exchange of information through experts in the field of research on climate change, including: a) impacts of climate change on natural ecosystems, agriculture and water resources, and infrastructure; and b) options of adaptation to climate change.
2. Development of principles for mutual benefit and opportunities for collaboration in the fields of: a) GHG emissions registry, and b) carbon market, including exploring the possibility of Mexican states joining The Climate Registry and the Western Climate Initiative, prior fulfillment of the needed legal requirements for that purpose.
3. Development, particularly among the U.S. and Mexican Border States, to support the development of comprehensive state plans for climate change.



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<http://www.climatechange.ca.gov/>

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<http://gov.ca.gov/>

San Diego Association of Governments
www.sandag.org

Secretaría de Medio Ambiente y Recursos Naturales
www.semarnat.org

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<http://www.bajacalifornia.gob.mx>

The San Diego Foundation
www.sdfoundation.org

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www.whitehouse.gov



United Nations Framework Convention on Climate Change

<http://unfccc.int>

United States Environmental Protection Agency

www.epa.gov

ⁱ The Committee on Binational Regional Opportunities (COBRO) advises SANDAG's Borders Committee concerning both short and long-term binational related activities, issues and actions; provides recommendations regarding binational border-related planning and development; and identifies ways to assist and coordinate with existing efforts in the binational area. The membership consists of elected officials and staff representatives of academia, business, community organizations, and the Mexican government. "The COBRO will serve as a working group to the SANDAG Borders Committee to facilitate a better understanding of the binational border-related issues and needs of the California-Baja California region."

ⁱⁱ The SANDAG [Borders Committee](#) brings together elected officials and representatives from San Diego, Imperial, Riverside, and Orange Counties, and Mexico with the goal to create a regional community where San Diego, our neighboring counties, tribal governments, and Mexico mutually benefit from our varied resources and international location. The Borders Committee provides policy direction to the SANDAG Board regarding issues or activities related to planning and coordination between the San Diego region and its surrounding neighbors.





2010 Binational Seminar
Crossborder Climate Change Strategies
Raising Awareness of Adaptation
Tuesday, June 1, 2010

PARTICIPANTS' BIOGRAPHIES

1. Hon. Remedios Gómez-Arnau, Consul General of Mexico in San Diego

Hon. Remedios Gomez-Arnau was named Consul General of Mexico in Atlanta by President Vicente Fox, and President Felipe Calderón appointed her on her current position as Consul General of Mexico in San Diego. Previously work experience of Ms. Gomez-Arnau was as Academic Secretary of the Center for Research on North America (CISAN, in Spanish) from the National Autonomous University of Mexico (UNAM, in Spanish). Ms. Gomez-Arnau participated in the Mexico-United States Bi-National Study on Migration, organized by the Technological Autonomous Institute of Mexico (ITAM, in Spanish) and the Carnegie Endowment for International Peace. Ms. Gomez-Arnau is currently the Co-Chair of the Committee on Binational Regional Opportunities (COBRO) at SANDAG. She earned her bachelor's degree in International Relations at El Colegio de Mexico and has her master's and Ph.D. in International Relations from UNAM.

2. Laurie Berman, Caltrans, District 11

Laurie Berman is the Director of Caltrans, District 11, and is the first woman to hold the position. She has worked for Caltrans for over 26 years. Before becoming director, she served as the Director of Project Delivery, overseeing the agency's finances, construction and business design. Her career with Caltrans also includes her work as the Corridor Project Manager for the construction of the State Route 125 South Project, also known as the Southbay Expressway. Laurie Berman earned a Bachelor of Science degree in Civil Engineering from Michigan State University.



3. Crystal Crawford

Crystal Crawford was first elected to the City of Del Mar City Council in November 1998 after having served on the Del Mar Design Review Board from 1994-1998. She was re-elected for City Council in November 2002 and again in November 2006. During her tenure on the City Council, she served as the Mayor three times. She is currently a SANDAG Boardmember and the North County Coastal Representative on the SANDAG Borders Committee. Crystal Crawford is also the regional representative on the California Biodiversity Council. She received her law degree from University of San Diego in 1983.

4. Luis Duarte, IMPlan

Luis Duarte holds a degree in Architecture from the Technological Institute of Tijuana, a masters degree in Environmental Planning and a Property Valuation certificate from the Autonomous University of Baja California (UABC, in Spanish). He is currently the Director of the Municipal Planning Institute of Tijuana (IMPlan, in Spanish). His work experience includes previous positions as the Assistant Director of Urban Planning and Environmental Regional Planning at IMPlan. He has also worked as the Municipal Urban Control Coordinator for Tijuana and the Head of the Department of Urban Administration of SAHOPE (now SIDUE or Secretariat of Infrastructure and Urban Development of Baja, California). Luis Duarte has also participated in various planning projects in Tijuana and has served as the speaker for major national and international planning forums.

5. Bill Figge, Caltrans, District 11

Bill Figge is the Deputy District Director for Planning with the California Department of Transportation, Caltrans, District 11. Bill Figge's educational background includes a Bachelor of Science degree in Urban Planning from California Polytechnic University, Pomona; a Rail Certificate from the University of California, Berkeley; and a master's in City Planning degree from California State University, San Diego. Over the last decade Bill Figge has served as the Chief of three separate branches within the Planning Department, including the Multimodal Planning Branch; Planning Studies and Public Transportation Branch; and Development Review and Public Transportation Branch.

6. Paul Ganster Institute for Regional Studies of the Californias at San Diego State University

Paul Ganster, Ph.D., is Professor of History, Director of the Institute for Regional Studies of the Californias, and Associate Director of the Office of International Programs at San Diego State University. He is chair of the Good Neighbor Environmental Board, a federal panel that advises the President and Congress on U.S.-Mexican border environmental issues. He also chairs the Committee on Binational Regional Opportunities (COBRO) of SANDAG.



He is author of more than fifty articles, book chapters, and edited works on policy questions of the U.S.-Mexican border region, border environmental issues, Latin American social history, and comparative border studies. He has been a Fulbright Lecturer in Costa Rica and consultant on programmatic development for the United States Information Agency at universities in Mexico, Bolivia, Costa Rica, and Ecuador. Paul Ganster also has been a visiting professor at the School of Economics of the Universidad Autónoma de Baja California in Tijuana. He received his Bachelor of Arts from Yale University and his Ph.D. from UCLA.

7. Saúl Guzmán, SEMARNAT

Saúl Guzmán is Chief of the management unit of Mexico's Secretariat of Environment and Natural Resources (SEMARNAT, in Spanish) in Baja California. He has a degree in Biochemistry Engineering from Tijuana's Technological Institute, and holds a master's degree in Comprehensive Environmental Management from El Colegio de la Frontera Norte (COLEF). He has also taught at the Iberoamerican University (UIA, in Spanish) in Tijuana. For the last seven years at SEMARNAT, he has been focused on crossborder movement of hazardous materials and on air quality projects, including climate change.

8. Nicola Hedge

Nicola Hedge has worked with the San Diego Foundation's Climate Initiative as a Tom Murphy Research Fellow since January 2008. During this time she has supported the Initiative with a survey of Californian cities to benchmark progress of San Diego cities' climate change planning; supported the development of the Focus 2050 Study and derivative publications on regional climate impacts, and is currently on the City of Chula Vista's Climate Change Working Group assessing and researching different climate adaptation strategies for the city. Recently, Nicola Hedge completed her master's degree at UCSD's School of International Relations and Pacific Studies, and spent the first half of 2009 in Malawi working to set up a financial assistance program for part of a World Bank research project. Since completing her undergraduate degree in 2004 in business, she has also spent time working with Habitat for Humanity, on a community development project in Baja California, and as part of the production team for a public affairs show for a Los Angeles-based NPR station

9. Garth Hopkins, California Department of Transportation Division of Transportation Planning

Garth Hopkins is currently the Chief of the Office of Regional and Interagency Planning at the California Department of Transportation (Caltrans). As Office Chief at Caltrans headquarters, located in Sacramento, Garth Hopkins and his staff are responsible for a wide range of planning activities including: developing policies for long-range transportation plans; incorporating environmental mitigation activities in those plans; climate change activities; addressing federal air quality regulations; regional blueprint planning, and Senate Bill 375 implementation from a statewide perspective. Garth Hopkins has been at



Caltrans for over 20 years and has prior work experience in transportation system planning; bicycle and pedestrian planning issues; and aeronautics.

10. Patricia McCoy, Councilmember of the City of Imperial Beach and Chair of SANDAG's Borders Committee

Patricia McCoy is a City Councilmember for the City of Imperial Beach. Patricia McCoy is currently the Chair of the SANDAG Borders Committee and was appointed as San Diego County's representative to the California Coastal Commission by the Speaker of the California State Assembly. She attended the University of Southampton, College of Education in the U.K. and subsequently taught during the next 20 years in England, Colombia, Costa Rica, Florida, Georgia, and California.

11. Ricardo Martinez, Deputy Secretary for Border Affairs

Ricardo Martinez is Deputy Secretary for Border Affairs for the California Environmental Protection Agency. Ricardo Martinez serves as chief advisor to the Secretary for Environmental Protection and the Governor on policy and environmental protection matters related to Mexico and the U.S.-Mexico Border Region. He is also the State Representative to the Government Advisory Committee to the Commission for Environmental Cooperation, a position appointed by the USEPA Administrator. Ricardo Martinez holds a Bachelor of Arts in Animal Biology from California State University, Sacramento and is a graduate of the California Leadership Institute.

12. Gabriela Muñoz, COLEF

Gabriela Muñoz is a research professor of climate change, energy and air quality. Her research experience covers both modeling (environmental geochemistry, life cycle assessment, CO2 sequestration) as well as environmental analysis (wastewater, soil and air filters samples). Her main interest is to apply her technical knowledge into social and economical aspects. Currently, she is the coordinator of the research project to develop the Plan of Climate Action for Baja California, Mexico. Ms. Muñoz earned her Ph.D. & DIC in Environmental Sciences from Imperial College London in 2000

13. Efraín Nieblas, State of Baja California Environmental Protection Agency (SPA)

Efraín Nieblas is the Director of Environmental Management for the State of Baja California Environmental Protection Agency. His responsibilities include coordinating air quality programs, managing the state emissions registry, and monitoring the air quality network. He is also the General Coordinator of the State of Baja California's Climate Action Plan, and the Co-President of the Binational Air Quality Work Group for Imperial County and Mexicali for the Border 2012 Program. Mr. Nieblas earned his bachelor's degree in Biology, a master's



degree in Systems Engineering Sciences, and his doctorate in Environmental Sciences from the Universidad Autónoma de Baja California.

14. Patti Krebs

Patti Krebs is the Executive Director of the Industrial Environmental Association (IEA), an organization of manufacturing, high tech, biotech, and research and development companies. IEA works with businesses on a wide variety of issues that affect their operations and facilities, including air, climate change, water, hazardous materials, health, safety, security, and energy. Patti Krebs has closely followed Assembly Bill 32 implementation and served on the Air Resources Board Economic and Technology Advancement Committee.

15. Antonio Rosquillas Navarro, City of Tijuana (Protección Civil)

Antonio Rosquillas has been a resident of Tijuana since 1957. His passion for Civil Protection began at a young age. At age 16 Antonio took his first course in water rescue and in 1970 he joined the Falcons Rescue Group where he performed water, urban and mountain rescue of the animals. His career experience in Civil Protection began in 1993, when he took the responsibility of Chief of the Operations Department of the Municipal Civil Protection unit. In 1995, he was invited to collaborate as Director of Fire and Civil Protection of the City of Tijuana, and he held that position for the two subsequent municipal administrations (1998-2001, and 2001-2004) and again in 2007 under Jorge Ramos Hernández. Antonio Rosquillas has extensive experience and training in Disaster Training, Risk Management, Damage Assessment, Emergency Management, Regional Seismology, Basic Meteorology, and the handling of hazardous material. Additionally, Mr. Rosquillas works closely with academic and governmental institutions, including the Center for Scientific Research and Higher Education (CICESE, in Spanish) the United Nations, the International Federation of the Red Cross and Red Crescent, Mexico's National Center for Disaster Prevention (CENAPRED, in Spanish), and El Colegio de la Frontera Norte (COLEF, in Spanish).

16. Ron Saenz, SANDAG

Ron Saenz has worked as a Regional Planner for the San Diego Association of Governments (SANDAG), since 2004. Ron Saenz has assisted in coordinating several planning studies such as the Draft Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan – White Paper, the Otay Mesa-Mesa de Otay Binational Corridor Strategic Plan, and the San Diego – Imperial County I-8 Corridor Strategic Plan. He also assists with coordinating SANDAG's COBRO and Borders Committee meetings. In the years prior to his work at SANDAG, he has worked as a Research Assistant for the San Diego State University (SDSU) Institute for Regional Studies, an Environmental Planner for California State Parks and Caltrans, and a liaison to Mexico for the Cal-EPA Department of Toxic Substances Control. He has a B.A. in Urban Studies and Planning from UCSD and a masters of City Planning from SDSU.



17. Andrew Martin, SANDAG

Andrew Martin is an Associate Regional Energy Planner for the San Diego Association of Governments (SANDAG). He works in SANDAG's energy and climate change planning program. Andrew Martin's recent projects include updating the San Diego Regional Energy Strategy; preparing the SANDAG Climate Action Strategy; and developing a regional assessment of alternative fuels, vehicles and infrastructure. He also works on the Sustainable Region Program, which develops energy roadmaps for local governments to save energy, reduce greenhouse gas emissions and consider energy within land use and transportation planning. Prior to joining SANDAG, Andrew Martin spent three years with an environmental and urban planning consulting firm where he prepared a variety of urban planning and CEQA documents for public and private sector clients. Andrew Martin holds a master's degree in City Planning from San Diego State University and a BA in Sociology from California State University at Long Beach.



