

2018

WORKING GROUP DRAFT
**Imperial County – Mexicali Air Quality Work Plan
to Improve Air Quality in the Border Region**



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The Imperial County – Mexicali Air Quality Work Plan would not have been possible without the support, collaboration, involvement, and ideas on strategies from the following agencies and stakeholders:

Working Group Participants

United States Environmental Protection Agency Region 9
California Environmental Protection Agency Border Program
California Air Resources Board
Imperial County Air Pollution Control District
Imperial County Public Health Department
The Coalition of Labor, Agriculture and Business
Calexico Unified School District
Comite Civico del Valle
Imperial Irrigation District
Office of Assemblyman Eduardo Garcia
Imperial Valley Childhood Asthma Program
Imperial County Transportation Commission
Secretariat of Environment for Baja California
The Directorate of Environmental Protection for the City of Mexicali
OBSER BC



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The Imperial-County Mexicali Air Quality Work Plan is a blueprint of priority actions recommended to improve air quality in the border region.

The work plan reflects the input of a broad coalition of government agencies, industry representatives, and environmental groups on both sides of the California-Mexico border. The goal of this document, and the working group that informed its development, is to foster ongoing collaboration and solution building so that one day all residents in this cross-border region can breathe healthy air.

Table of Contents

Introduction and	5
Background	5
Imperial County-Mexicali Border Region	5
Air quality concerns in Imperial County and Mexicali.....	5
Other Border Region Air Quality Programs	6
Background on the Development of the Imperial County – Mexicali Air Quality Work Plan	8
Levels of Air Pollution Authority in California.....	8
Levels of Air Pollution Authority in Mexico.....	8
Working Group	10
Overview of Group.....	10
Non-Governmental Organization Involvement	10
Working Group Meetings and Topics Discussed.....	10
Work Plan Priorities for Imperial County and Mexicali	12
Discussion of Priorities for Work Plan	12
Importance of Increasing Support at the State and Local Level in Mexicali	12
Work Plan Priorities.....	12
<i>Education and Outreach</i>	12
<i>Agricultural and Waste Burning</i>	16
<i>Monitoring</i>	19
<i>Collaboration</i>	20
<i>Off-Highway Vehicles</i>	20
<i>Vehicle Emissions and Border Traffic</i>	21
<i>Unpaved Roads</i>	23
<i>Regulating Mexicali Sources</i>	23
<i>Other Priorities</i>	23
<i>Enforcement</i>	24
Future Updates	27

Introduction and Background

Imperial County-Mexicali Border Region

The Imperial County-Mexicali border region is located in the southeast corner of California and is home to approximately one million people. Imperial County's population is around 180,000 people with most of its population located in the City of El Centro (~44,000 residents). Imperial County has a bustling agriculture industry with close to half a million farmable acres. Cattle, fruits, vegetables, hay, nuts, and seeds produced in Imperial County help feed the nation and the world. Imperial County consistently ranks in the top ten agricultural producing counties in California.

Imperial County shares its southern border with the metropolitan area of Mexicali, Baja California, Mexico (Mexicali). Two major ports of entry (POE) are located at the Calexico-Mexicali border. The Calexico West POE is the third busiest land port in the State processing about 20,000 northbound vehicles and 12,500 pedestrian crossings per day.¹ In contrast, the Calexico East POE, located approximately 7 miles to the east of Calexico West, is the principal gateway for heavy-duty commercial trucks into the Imperial Valley. It is the second busiest commercial POE along the California-Mexico border, processing nearly a thousand heavy-duty trucks each day.² Over the past 20 years, Mexico has become California's top trading partner and the United States' second largest trading partner, which has resulted in a significant increase in traffic and congestion.

Mexicali is the capital of the state of Baja California, Mexico and its main economic industries are agriculture production and industry, mainly assembly plants (*maquiladoras*). The *maquiladoras* are tax-free factories where parts from other countries are imported, assembled, and then exported as finished products. The Mexicali Valley is a very fruitful agricultural region much like the Imperial Valley, with around 150,000 farmable acres (2017). Farmed acreage has increased over the years in

Mexicali, in part due to farmers in the United States moving business into Mexicali to take advantage of the lower labor cost and decreased regulation. As a result of extensive production and industrial activities, as well as the burning of garbage, tires, and agricultural material, Mexicali has some of the worst air quality in Mexico.

Cities in Imperial County are not highly populated. The three largest cities in Imperial County - Brawley, El Centro, and Calexico are similar in size with populations of 26,000, 44,000, and 40,000 people, respectively. Mexicali has more than four times the population of Imperial County and more than 18 times the population of the City of Calexico, located on the Imperial-Mexicali border. Although Imperial County and Mexicali have different populations, they share a common airshed that affects the health and livelihood of people on both sides of the border.

Air quality concerns in Imperial County and Mexicali

Border communities such as Calexico and Mexicali are unique areas where many different people come together and cross-geopolitical boundaries. Residents on both sides of the border share a common environment and have similar exposures to pollutants. While it would seem that the most exposure to air pollution along the Calexico-Mexicali border relates to traffic emissions, particulate matter (PM) emissions are generated from other sources such as agricultural burning, industrial sources, unpaved roads, windblown dust, and cultural practices to name a few. Despite the challenges of geography, climate, and proximity to Mexico, air quality in Imperial County has improved but less improvement has been observed in the border area closest to Mexico.

PM contains a variety of microscopic solid and liquid particles in the air including aerosols, dust, smoke, fumes, ash, and pollen. The size of the particle, PM10 or PM2.5, determines how long the particle typically stays airborne and the different health effects that would be experienced from exposure. PM10 usually originates from natural sources such as windblown dust and human activity such as driving on paved and unpaved roads, off-highway vehicles (OHV), agricultural field preparation and harvest, etc. PM10 emissions do not tend to remain in the air for long periods and usually settle out of the air within a few hours.

PM2.5 is also known as fine PM and is more hazardous than PM10 since it can penetrate deeper into the

¹ U.S. General Services Administration; Fact Sheet: Calexico West Land Port of Entry; August 2016.

² California State Transportation Agency; California Freight Mobility Plan, Appendix B-5-3; December 2014.

respiratory system and can even get into the blood and reach the brain and heart. PM2.5 is made up of sulfate and nitrate particles, elemental and organic carbon, geological dust, and other organic compounds mainly generated from anthropogenic (i.e. manmade) sources. PM2.5 can be formed directly and secondarily through chemical reactions in the atmosphere. PM2.5 can stay in the air for days to weeks and can travel long distances.

Imperial County's air quality ranks as among the worst in the state of California, being nonattainment for the federal 24-hour PM10 standard of 150 ug/m³, the annual PM2.5 standard of 12 ug/m³, and the 8-hour ozone standard of 70 ppb. Cities in Imperial County are not highly populated but the County shares its border with the City of Mexicali, which has more than four times the population of Imperial County. In addition, Mexicali's population is more than 18 times the population of the City of Calexico, which is located on the Imperial-Mexicali border.

The Imperial County PM2.5 nonattainment area is bordered by mountain ranges to the west, east, and southwest. These ranges act as barriers and channel airflow within the Imperial and Mexicali Valleys. Mountain valleys often enhance the formation of temperature inversions, resulting in stagnant air conditions and trapping of air pollution for extended periods, especially in the wintertime. This is common in the Imperial Valley, particularly near the international border on nights with light winds. Inversions often occur over multiple days during the winter months resulting in considerable increases in PM2.5 concentrations. The geography, topography, climate, and similar meteorology throughout the area does not restrict airflow between the Imperial and Mexicali Valleys which results in a shared airshed for the region.

Imperial County contains relatively few major industrial sources, with unpaved road dust and fugitive windblown dust emissions representing the largest emission sources of PM10 and PM2.5. Other significant emission sources of PM emissions include off-road vehicles, farming operations, and agricultural burning. In contrast, the city of Mexicali, with a population of nearly 700,000, has a large number of industrial, mobile, and area sources. These sources are generally subject to less stringent air pollution regulations than similar sources in California. Consequently, emissions from comparable source categories in Mexicali are significantly higher than in Imperial County for PM2.5, nitrogen oxides (NO_x), sulfur oxides (SO_x), reactive organic gases (ROG) and ammonia (NH₃).

Recent analysis of the chemical composition of PM2.5 particles collected at the California Air Resources Board (CARB) air monitoring station at Calexico indicates that combustion, such as produced from motor vehicles or wood and waste burning, are a major source of particulate matter in Imperial County. The analysis of chemical composition data also indicated that elements such as chromium, lead, and zinc, normally measured at very low levels throughout Imperial County and the rest of the state were significantly higher at the Calexico air-monitoring site. The potential sources of these elements include the burning of garbage or other non-biomass materials and industry that does not exist in Imperial County. In addition, correlations between wind direction and these source signatures indicated that the origin of these pollutants was south-southeast of the monitoring site in the direction of the border and Mexicali. Recent PM2.5 monitoring data collected in Mexicali between April of 2016 and April of 2018 showed that PM2.5 concentrations in Mexicali were much higher than concentrations measured in Calexico and that days with high concentrations in Mexicali directly impacted the Calexico monitor. In previous State Implementation Plans³ (SIP) submitted for Imperial County, the evidence supports the international cross-border impact of Mexicali air pollution sources on the residents in Imperial County, and more specifically in Calexico.

Existing Border Region Air Quality Programs and Agreements

La Paz Agreement

Collaboration on environmental issues in the border region has been ongoing between the United States, California, and Mexico for many years. In 1983, the United States and Mexico entered into the United States–Mexico Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area, also known as the La Paz Agreement. The sole purpose of the La Paz agreement is to protect and conserve the environment along the border and the agreement lays out the responsibilities of both parties to prevent and control air, water, and land pollution in the border area.

North American Development Bank/ Border Environment Cooperation Commission

In 1994, the North American Development Bank (NADBANK) and the Border Environment Cooperation Commission (BECC) was created to provide financing, as well as technical and other assistance, to support the development and implementation of infrastructure

³ A SIP is a comprehensive plan that describes how a nonattainment area will attain an air quality standard.

projects that help preserve, protect and enhance the environment of the border region.

North American Free Trade Agreement/Commission for Environmental Cooperation

Also in 1994, the North American Free Trade Agreement (NAFTA) and Commission for Environmental Cooperation (CEC) were formed. The CEC facilitates collaboration and public participation to conserve, protect and enhance the North American environment, by increasing economic, trade, and social links among Canada, Mexico, and the United States.

California-Mexico Border Relations Council

The California-Mexico Border Relations Council (CMBRC) was created in 2006 (AB 3021, Núñez) and coordinates cross-border programs, initiatives, projects and partnerships along the California-Mexico border. The CMBRC serves as a representative body of the State of California whose goal is to continue to develop and enhance cross-border relations between California and Mexico. The CMBRC provides an annual update on California-Mexico activities and programs to the Legislature and has the potential to identify new Border priorities and fundable projects in the areas of infrastructure, trade, environment, health and security while supporting current and ongoing activities.

U.S. EPA/SEMARNAT Bi-National Programs

Since 1996, there have been three programs between U.S. EPA and SEMARNAT to address the bi-national environmental issues (the Border XXI program (1996), the Border 2012 program (2003), and the Border 2020 program (2012)). The Border 2020 program includes efforts to improve air and water quality, reduce waste, strengthen emergency preparation and response, promote environmental stewardship, and address environmental health. The Border 2020 program contains five objectives to reduce air pollution in the border region and achievement of these goals are developed through input from states, local governments, and citizens.

Imperial Valley/Mexicali Air Quality Task Force

As part of the Border 2020 program, the Air Quality Task Force (AQTF) for Imperial Valley/Mexicali was formed to address issues unique to the border region. The AQTF includes representatives from federal, state and local governments from both sides of the border, as well as representatives from academia, environmental organizations, and the public. The AQTF was created to promote regional efforts to improve the air quality monitoring network, emission inventories and air pollution transport modeling development, as well as the creation of programs and strategies to improve air quality.

California and Baja California, Mexico Air Quality Implementation Plans

States on both sides of the border continue to identify measures they can take to improve air quality in their region by developing State Implementation Plans (SIPs) in the U.S. and ProAires in Mexico. SIPs are comprehensive plans that describe how a nonattainment area will attain national ambient air quality standards (NAAQS). SIPs are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations and federal controls.

In the State of Baja California, Mexico, the government develops the Mexico ProAire, which is a program to improve air quality in Baja California. The most recent ProAire for Baja California (2018-2027) includes goals to reduce emissions from vehicles at border crossings, expand dust control, and replace agricultural burning with more sustainable practices. SIPs and the ProAire have a common goal of identifying and implementing measures to improve air quality in a region over time.

California-Mexico 2014 Climate Change and Environment Memorandum of Understanding

In July 2014, California and Mexico signed a Memorandum of Understanding (MOU) to Enhance Cooperation on Climate Change and the Environment. This joint effort aimed to improve and protect the environment while ensuring sustainable use of natural resources to improve quality of life and increase trade and investment opportunities. The MOU was a four-year effort that ended in July of 2018 and contained four priority action areas: climate change, air quality, wildfires and clean vehicles.

The air quality goals in the MOU were to: 1. Coordinate air quality planning efforts for airsheds along the border; 2. Share technical knowledge and information needed to support development of robust air quality planning and mitigation efforts; and 3. Improve the comparability of data collected in Mexico and California.

Although many programs exist to address the air quality problems in the U.S.-Mexico border region, it is necessary to increase the participation and actions from these programs to ensure air quality continues to improve in the border region.

Background on the Development of the Imperial County – Mexicali Air Quality Work Plan

On May 25, 2018, CARB staff presented the 2018 Annual PM_{2.5} SIP for the 12 ug/m³ PM_{2.5} standard to the CARB Board for approval. The SIP demonstrated that the Calexico monitor would be in attainment of the annual PM_{2.5} standard “but for” emissions impacting the site from Mexicali. Although the Board approved the Annual PM_{2.5} SIP for Imperial County, the Board also acknowledged that there are major air quality concerns in the border region and more needs to be done to improve air quality to protect the health of residents on both sides of the border.

The CARB Board directed staff to develop a work plan in coordination with the Imperial County Air Pollution Control District (ICAPCD) and appropriate stakeholders in California and Mexico to explore additional measures that could be taken to improve air quality in the border region. Measures to be considered on the U.S. side of the border include assessing how the ICAPCD’s enforcement protocols might be strengthened and how they compare to other similar local air districts in California. Other measures include assessing the ICAPCD’s fugitive dust regulations and opportunities for improvement. On the Mexican side of the border, the aim of the work plan is to address cross-border air pollution impacts and how to provide assistance within the limits of CARB’s jurisdictional authority to Mexican government agencies in mitigating air emissions that ultimately impact Imperial County.

With this direction, CARB staff began working immediately to assemble a working group of members and agencies to provide feedback on what priorities are most important to include in the work plan. This work plan is an initial assessment of priority areas that the work group members proposes that CARB and other government agencies focus on in both Imperial County and Mexicali to improve air quality in the border region. Priority areas include: increasing the education and awareness of PM air quality and health impacts; improving regulatory authority, enforcement protocols, and rule stringency; enhancing air monitoring; and identifying funding mechanisms to achieve these goals.

This work plan is a living document that will be used to gauge progress over time on implementing priority actions and recommendations as well as to determine where course corrections need to be made based on critical lessons learned.

Levels of Air Pollution Authority in California

The Federal Clean Air Act (CAA) provides the basis for the air pollution control effort in the United States. The CAA includes: national ambient air quality standards (NAAQS) for criteria air pollutants (carbon monoxide, ozone, particulate matter of PM₁₀ and PM_{2.5}, nitrogen dioxide, sulfur dioxide, and lead) and hazardous air pollutants; state attainment plans; motor vehicle emissions standards; stationary source emissions standards and permits; acid rain control measures; stratospheric ozone protection; and enforcement provisions. The United States Environmental Protection Agency (U.S. EPA) sets nationwide air quality and emissions standards and oversees state efforts and enforcement. States can enforce stronger air pollution laws, but they cannot have weaker pollution limits than those set by U.S. EPA.

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the Federal and California Clean Air Act. CARB sets the state’s own stricter emissions standards for a range of statewide pollution sources including vehicles, fuels and consumer products. CARB is also responsible for monitoring the regulatory activity of California’s 35 local air districts. Other CARB duties include but are not limited to monitoring air quality, setting emissions standards for new motor vehicles, and reviewing district input for the SIP.

California’s 35 local air districts are responsible for regulating emissions from businesses and stationary facilities such as oil refineries, auto body shops, and dry cleaners. The ICAPCD is the local air district for Imperial County.

Levels of Air Pollution Authority in Mexico

In Mexico, the federal government has the jurisdiction to regulate all air pollution sources. The General Law of Ecological Balance and Environmental Protection (LGEEPA), states that the Secretariat of Environment and Natural Resources (SEMARNAT) must provide the general guidelines for regulated sources. SEMARNAT is authorized to regulate emissions by establishing emissions limits, monitoring, and setting standards through Official Mexican Standards (NOMs), developing programs with state and local authorities, and imposing penalties. NOMs are technical standards established for products, processes, facilities, systems, activities, services and other methods of production. NOMs establish maximum allowable pollutant limits for contaminants in air, water and soil, and list hazardous waste, substances, and endangered species.

The Office of the Federal Prosecutor for Environmental Protection (PROFEPA) is the enforcement arm of SEMARNAT and it has the authority to carry out inspection visits, prosecute environmental non-compliance, apply sanctions, generally enforce environmental laws and regulations, and perform inspections and sanction the entities and individuals subject to air emissions reports. PROFEPA also oversees the federal voluntary environmental audit program.

Mexican states have jurisdiction to apply their state laws and to prevent and control atmospheric pollution from industries and mobile sources not under federal jurisdiction. For Mexicali, the state authority is the Secretariat for Environmental Protection State of Baja California (SPA BC). SPA BC also develops plans similar to SIPs in California, called the ProAire. The ProAire lays out specific strategies and actions that the state will take to reduce air pollutant emissions in the state. SPA BC has a ProAire Mexicali (2011-2020) and a State ProAire (2018-2027) plan to further reduce emissions. The Directorate of Environmental Protection for the City of Mexicali has jurisdiction to prevent and control emissions by merchant and services point sources, such as restaurants, with the collaboration of state authorities when state law requires it.

Working Group

Overview of Group

To better understand the source impacts and opportunities to improve air quality in the border region, CARB staff included stakeholders in the working group that have a direct relationship with air quality work in Imperial County and Mexicali. The Imperial County-Mexicali Air Quality working group (working group) was comprised of a number of individuals with various concerns and backgrounds to provide a broader context of the air quality issues in the border region.

Working group participants include the: U.S. EPA Region 9, California Environmental Protection Agency Border Program (Cal EPA), CARB, ICAPCD, Imperial County Public Health Department, Coalition of Labor Agriculture and Business (COLAB) Calexico Unified School District, the Directorate of Environmental Protection for the City of Mexicali, the Secretary of Environmental Protection of Baja California (SPABC), Baja California Epidemiology, Comite Civico del Valle, OBSER BC, Office of Assemblyman Eduardo Garcia, Imperial Irrigation District (IID), Imperial County Transportation Commission, the Imperial Valley Childhood Asthma Program, and other community participants.

Beginning with the formation of the working group, participants continually stressed the importance of cooperation and collaboration to address local air quality issues and the need for agencies to approach these issues from a binational perspective rather than one exclusive to Imperial County. Through this working group, the binational cooperation and collaboration needed for a successful work plan was built. It became clear that there is no single solution for improving PM air quality in the border region since Imperial County and Mexicali are unique areas with varying challenges, barriers, and solutions. Thus, the work plan was assembled with acknowledgement of the differing regulations, governments, resources, funding, and legislation between California and Mexico but also opportunities for collaboration and leveraging of resources.

Non-Governmental Organization Involvement

It is important to highlight the role that non-governmental organizations (NGOs) play in helping to tackle environmental issues in the Imperial County-Mexicali border region. NGO involvement for this bi-national work group is key to ensuring greater international cooperation by gaining public support and bringing increased awareness of—local environmental problems in the communities. NGOs can promote environmental legislation, advocate for regulations, and increase education and awareness of existing environmental laws. Overall, the participation of NGOs in the workgroup is important to ensure that citizens and local businesses are involved—in helping Imperial County and Mexicali tackle air quality issues more effectively.

Working Group Meetings and Topics Discussed

From July through October of 2018, the working group met four times in Calexico, California to discuss priorities for the work plan. A general overview of each of the working group meetings is provided below.

First Working Group Kick-Off Meeting – July 9, 2018

On July 9, 2018, CARB held the first working group meeting at the San Diego State University campus in Calexico, California. The purpose of this initial meeting was to introduce the Imperial-Mexicali Air Quality Work Plan concept, agree on common expectations and goals for the working group, and identify an initial set of priorities that the working group thought would be most important to include in the work plan. Also discussed was the tentative schedule for the work plan and the commitment needed from the working group members to participate in meetings on a monthly basis until the final work plan was available for public release and CARB Board consideration.

Second Working Group Meeting – August 9, 2018

CARB held the second working group meeting on August 9, 2018 at the Workforce Center in Calexico, California. This meeting focused on discussing barriers, opportunities, concerns, and recommendations to improve air quality in both Imperial County and Mexicali. The focus of this meeting was on regulation of air pollution sources in Mexicali and collaboration between agencies to ensure a successful work plan and follow through on the priorities identified.

Third Working Group Meeting – September 13, 2018

CARB held the third working group meeting on September 13, 2018 at the Kiki Camarena Library in Calexico,

California. This meeting focused on discussing barriers, concerns, and recommendations specifically regarding vehicle emissions in the border region and the ports of entry, and enforcement in the border region. The timelines for the draft work plan, comment period, and potential town hall meetings were discussed. The working group was also asked to fill out a table listing their priorities, concerns, strategies, and metrics to track progress that they felt were most important to include in the work plan. The input from the group was considered in the final work plan.

Fourth Working Group Meeting – November 7, 2018

CARB held the fourth working group meeting on November 7, 2018 at the Kiki Camarena Library in Calexico, California. The purpose of this meeting was to discuss comments on the draft work plan. Discussion and comments were shared at the meeting regarding: the winter media campaign “Ambientalízate”, the low-cost PM sensor network planned for Mexicali, vehicle emissions at the ports of entry, the Smog Check program in Imperial County, the Vehicle Verification program in Baja California, agricultural burning, unpaved roads, and regulating stationary sources in Mexicali. Working group participants were asked to submit formal comments to CARB by November 16, 2018 to ensure incorporation into the draft final work plan.

Work Plan Priorities for Imperial County and Mexicali

Discussion of Priorities for Work Plan

The main priorities identified by the working group for incorporation into the work plan are listed below. These priorities were discussed with the working group and were considered efforts that would help to achieve the greatest emission reduction benefits for PM_{2.5} and PM₁₀ in the border region. Some priorities identified by the working group only applied in one region so not all actions are addressed in both areas. The priorities below are further broken down into individual sources or focus areas. The actions under each priority are also listed as either short-term or long-term efforts. For purposes of this work plan, short-term actions include those measures that can be completed in the next 12 months while long-term actions are those that will take longer than one year to complete.

The list below summarizes the Imperial County - Mexicali Air Quality Work Plan Priority Areas that were identified as being most important to improving air quality in the border region.

- Education/Outreach
- Monitoring
- Unpaved Roads
- OHV Rules
- Regulating Mexicali Sources
- Agricultural Burning
- Waste Burning
- Collaboration
- Vehicle Emissions and Border Traffic
- Enforcement

CARB worked closely with the ICAPCD, the Directorate of Environmental Protection for the City of Mexicali, and SPA BC to develop actions that can be taken in Imperial County and Mexicali to help improve air quality in the Imperial County – Mexicali border region. Although CARB lacks authority over implementation of suggestions in this work plan that would take place in Mexicali, CARB believes it is important to report on the recommendations developed by the working group and hopes to continue collaborating with Mexicali to see them through.

Importance of Increasing Support at the State and Local Level in Mexicali

For the majority of the actions identified in this work plan to come into fruition in Mexicali, it is essential that funding and support of the implementation of the air quality regulations be provided from Mexico's national government to the state of Baja California and city authorities in Mexicali. Building up the administrative and regulatory environmental capacity at the state and city level in Mexico is an essential component to ensuring the actions are possible, with the lower levels of government being able to achieve greater financial independence for managing the air pollution in Mexicali. The working group recommends an expansion of environmental education programs and an increase in the level of environmental investment in order to achieve these actions. State and city authorities in Mexico would also need increased staffing and financial resources from Mexico's federal government for the permitting and inspection of facilities.

Work Plan Priorities

Education and Outreach

Short Term Actions - Imperial County

Improved Winter Media Campaign

Mexico is known for its varied customs and traditions. As part of Mexico's traditions, the use of fireworks and the burning of tires and wood during festivities is commonplace. To educate the public on the health hazards associated with the burning of these materials, the media campaign "Ambientalízate" was created in 2011 with funding from U.S. EPA. The main objective of this campaign is to educate the public, especially the sensitive groups such as the elderly and children, of the hazardous health and environmental impacts these sources cause in the Mexicali region as well as the border town of Calexico, California. U.S. EPA continues to provide funding to ICAPCD in support of this important outreach campaign to reduce sources of PM impacting communities in the border region.

The campaign provides education and awareness in Calexico and Mexicali by airing four separate public service advertisements that all have different focus topics for air quality. The campaign is also broadcasted on nine high frequency radio stations and six television stations approximately 1,500 times from November through January. The public service advertisements illustrate the impacts fire, wood, and tire burning have on our health and the environment with hope to develop a "no burn" mentality and ultimately break these traditions.

The good news about this campaign is that awareness is growing regarding the air quality in the Imperial-Mexicali border region. In the beginning of the media campaign in 2011, there were only 48 subscribers to the Imperial Valley air quality alerts and forecast website www.imperialvalleyair.org. As of 2018, the number of email subscribers has increased to 1,500, with 3,500 subscribers of the mobile application.

Currently the ICAPCD, the Directorate of Environmental Protection for the City of Mexicali and SPA BC are working on revising the public service advertisements as they are outdated and need a new, modern, more captivating message that resonates with communities. The thought is to have a message that engages the community on the consequences of open burning. In the past, the message has been focused on making the public more aware of mainly the health consequences. However, the new message will also bring increased awareness of the consequences such as new sanctions implemented in 2018 that are being enforced for the first time should people continue to burn fireworks, tires, trash, or wood. Over 700 police officers were trained on how to enforce this new ordinance. Penalties can reach 16,000 pesos (or roughly \$850 U.S. dollars).

Regulation VIII Fugitive Dust Rules Evaluation

The ICAPCD has adopted and implemented a set of rules to regulate sources of fugitive dust within its jurisdiction. These rules address agricultural operations, unpaved and paved road travel, OHV recreational vehicle activities, construction activities, and open areas, among others. Enforcement of these rules is important for the protection of public health as Imperial County periodically experiences exceedances of federal and state PM10 air quality standards. In Imperial County, more than 80 percent of the PM10 and PM2.5 emissions are from open area windblown dust, with the main sources areas being unpaved roads, agricultural lands, pasturelands, and desert lands. Imperial County experiences the highest rates of pediatric asthma hospitalization and emergency room visits in the state, making it even more important that the ICAPCD does all that it can to control dust emissions.

Essential to any control program is the accurate quantification source emissions, including spatial and temporal variability. For this reason, CARB staff submitted a research proposal that would quantify the windblown dust emissions in Imperial County on a more accurate level by plotting soil types, measuring soil emissivity, quantifying the control benefits of vegetation and soil moisture, and refining emission-wind speed

relationships. This research, if approved, would be very valuable to the ICAPCD's understanding of source contributions to windblown dust emissions in the County.

Staff has provided initial comments to the ICAPCD on the adequacy of their Regulation VIII fugitive dust rules and continues to investigate opportunities for rule strengthening. CARB staff will continue to work with the ICAPCD to evaluate the District's dust control rules. Some potential areas for improvement include, but are not limited to: requiring the stabilization of OHV disturbed surfaces during periods of inactivity when high wind conditions can entrain loose soil particles and produce significant plumes of windblown dust; amending Rule 800 applicability to coincide with the OHV activity season, which runs from late-October to mid-April of each year; and requiring submittal and approval of dust control plans for construction and earthmoving projects together with conservation management plans for agricultural operations. Additionally, we suggest the ICAPCD map the emissivity of soil types within the Imperial Valley and tailor the number and/or effectiveness of Conservation Management Practices to the uncontrolled emissivity levels of soils on which agricultural operations are conducted.

Salton Sea Dust Mitigation

Imperial County residents have raised concerns about future air quality in Imperial County as Salton Sea water levels decline due to the cessation of mitigation water flows. As the surface level of the Salton Sea drops over the next three decades, the lakebed – or playa – will become exposed and become a potential new source of PM2.5 in the northern portion of Imperial County. Unless prevented or controlled, windblown PM2.5 could reverse some of the air quality gains proposed in the 2018 PM2.5 SIP. To address this, CARB has been collaborating with other state, as well as federal and local, agencies since 2003 in the monitoring, planning, and control of PM emissions at the Salton Sea. CARB staff were instrumental in the design and construction of a six-station network of shoreline PM and meteorological monitoring stations at the Salton Sea in 2009. These stations collect baseline air quality data and serve as an early warning system for changes in exposed playa dust emissivity. The continuous hourly data collected since February 2010 provide a rich database for assessment of air quality impacts and development of mitigation measures by researchers and regulatory agencies alike.

By requirement of the 2003 water transfer agreement, the IID has been the principal agency involved in Salton Sea windblown dust research and control measure testing for

the past 15 years. Using funds pooled by the water agencies involved in the transfer, IID has retained a team of air quality consultants who participate in dust control research and testing at Owens Lake to conduct similar activities at the Salton Sea. CARB staff is closely coordinating with this team of air quality consultants on technical aspects of windblown dust research at the Salton Sea.

In the past two years, new dust plume visualization systems have been adapted to ongoing analyses of playa emissions. These new systems include 360-degree images recorded during daylight hours at elevated locations at Red Hill Bay and Anza Borrego Desert State Park, as well as images captured by new GOES-R geostationary satellites. These systems are useful in identifying windblown dust source areas and dust plume density and trajectory. IID's team of air quality consultants has been researching the design, control effectiveness, and costs of alternative playa dust control measures since 2013. Early findings from this research include discovery of a three-year lag between the playa first becoming exposed and the onset of windblown dust generation. Dust control research has also found that deep tilling is an effective short-term control measure that does not require the use of water.

In 2016 and 2017, U.S. EPA granted funds to CARB for the assessment of toxic constituents in windblown Salton Sea playa dust and the measurement of soil emissivity during high wind events, respectively. The grant for toxic constituent assessment was channeled under a subaward agreement to the IID to complement playa dust monitoring being conducted by their air quality consultant team. A final report of this assessment is due to be released by December 31, 2018. The grant for soil emissivity testing was passed through to the ICAPCD and requires the acquisition, training use, and application of a PI-SWERL portable wind tunnel by District staff to measure the emissivity of disturbed and undisturbed desert soils, agricultural lands, vacant parcels, and Salton Sea shoreline areas to inform future refinement of District windblown dust emission control rules. Grant-funded activities related to soil emissivity testing are scheduled to be completed by September 30, 2019.

CARB staff will continue collaborating with U.S. EPA, ICAPCD, South Coast Air Quality Management District, IID, and the Torres Martinez Desert Cahuilla Indians in playa dust control research and testing activities. Staff will also continue to communicate the findings and implications of these research activities to the affected air quality agencies and the many community groups concerned about future Salton Sea emissions. These research activities will help establish the most cost-effective controls to mitigate playa dust that affects Imperial County.

Increased Outreach and Support for Border, Environmental Justice, and Salton Sea Issues

ICAPCD has added two special project managers with dedicated staff to work specifically on border, the Salton Sea, and related environmental justice involvement. Additionally, a staff person at ICAPCD will focus on social media and a webpage for the Salton Sea, border activities, and all related environmental justice matters valley-wide to further educate and bring awareness to the public on these important air quality matters.

Short Term Actions - Mexicali

PM2.5, PM10, and Ozone Air Quality Alerts and Forecasts for Mexicali

It is very important for the residents in Mexicali to be able to have continuous and readily available access to the air quality data in the region. The Imperial County air quality website has been able to provide local air quality information, alerts, and forecasts to residents in Imperial County over the years and we think providing this same type of information to Mexicali would be very beneficial for residents in the border region.

As a result of this work plan, the City of Mexicali will be added to the next air quality alert and forecast contract that will include air alerts, a mobile application, and forecasting services. These alerts and forecasts will be available to residents in Mexicali starting in the winter of 2018/2019. The website will utilize the monitoring information currently provided by SPA BC but will later be able to include other stations as they are added to the network. Future monitoring sites will need to have reliable, accurate, and permanent locations to ensure that accurate forecasting of air quality can be provided. The website is available in Spanish and English and will provide users with forecasts by 9:30 a.m. each day of ambient ozone levels during the ozone season and particulate matter (PM10 and PM2.5) levels year-round for Mexicali and Imperial County. As a direct result of this work plan, this work is expected to be completed as part of the next website and forecasting contract with CARB and the ICAPCD, which already includes website development (www.imperialvalleyair.org) and forecasting services for Imperial County.

The public may register to receive notifications via email or text when the air quality is expected to reach unhealthy levels. The contract will also ensure that both Mexicali and Imperial County residents have access to the "Imperial Valley Air Quality" mobile app to further enhance public access to air quality information in the border region. This

mobile application will also have Global Positioning System (GPS) capability that will allow residents to see the air quality nearest to where they are located. This free app will provide the current Air Quality Index (AQI) levels, current AQI forecasts, and the forecast discussion (in English) for Mexicali.

Once the contract is finalized, CARB will coordinate with the ICAPCD, SPA BC, and the website developer to evaluate accessibility and air quality forecasts in Imperial County and Mexicali to ensure that timely air quality information is provided to the public. Since Imperial County and Mexicali share the same airshed it is important that this air quality information is available to residents on both sides of the border.

This capability will also prove helpful for establishing burn days in Mexicali if an agricultural burn program is instituted in the future. The forecasts will allow authorities in Mexicali to establish which days should be considered burn or no-burn days and will help to educate the farmers on the meteorological criteria that is best to burn under to ensure proper dispersion of the air pollution. This information can also help prevent sensitive groups (such as children and the elderly) from being overly exposed to air pollution on bad air quality days, by limiting the time spent outdoors when the air quality is unhealthy. Overall, this capability for Mexicali can prove helpful in many other instances and can be used in schools and for the public to bring more awareness to the serious health issue going on in Mexicali with air pollution.

Northern Baja California Emission Inventory Improvements

Accurate emission inventories are needed to help determine significant sources of air pollution in an area and to target regulatory actions to reduce that pollution. Emissions inventories are also essential for air quality modeling to estimate an area's air quality in the future and which reductions will have the greatest benefit to air quality. Inventories also can be used to raise the public's awareness regarding sources of pollution nearby. CARB has not been able to accurately model Mexico's air quality, and specifically Mexico's impact on U.S. border cities, due to reliability issues with Mexico's air quality data and emissions inventory. In response to the needs described above, in 2018, U.S. EPA Region 9 provided grant funding to CARB to contract for improvements to the emission inventory for Northern Baja California.

This inventory effort will result in an updated 2014, 2020, and 2025 emissions inventory for the Baja California municipalities (i.e., Mexicali, Tecate, Tijuana, Playas de Rosarito, and Ensenada) located within the Northern Baja

California (CARB modeling domain). Emissions estimates will be prepared for point, area, mobile, and nonroad sources for NOx, Sulfur dioxide (SO2), Volatile organic compounds (VOC) Carbon monoxide (CO), PM10, PM2.5, and NH3. The contractor will make the following improvements to the latest inventory generated for Baja California (2014 MNED):

- Revise the point source and area source emissions.
- Estimate emissions from missing criteria pollutants.
- Estimate on-road motor vehicle emissions at the six U.S.-Mexico border crossings (Calexico West, Calexico East, Andrade, Tecate, San Ysidro and Otay Mesa).
- Estimate agricultural burning emissions in Mexicali (both field and orchard pruning).
- Estimate brick kiln emissions in Mexicali
- Estimate windblown dust from agricultural lands for Mexicali and Tecate.

The contract will end on September 30, 2019 and will provide beneficial information to CARB, agencies in Mexico, and the public by providing updated and new emission estimates for sources in the Northern Baja California modeling domain region. This inventory effort will be used by CARB in future air quality models and nonattainment area planning.

Short Term Recommendations - Mexicali

Increase Education and Awareness of Air Quality

Because many of the harmful air pollution activities occurring in Mexicali are considered traditional cultural practices, it is even more important to ensure that increased education and awareness is provided to the public. Recognizing the meteorological conditions in the region and the public health impacts, it should no longer be culturally acceptable to burn wood to cook food in the yard, to burn tires to stay warm, and to use firecrackers for Independence Day, Christmas, and New Year's celebrations. By increasing education and awareness of the air quality in Mexicali, and with the recent City of Mexicali Ordinance to apply sanctions for such burning practices, progress in reducing the air pollution in Mexicali will occur.

However, in order to have an effective education and awareness program, the city, state, and federal governments in Mexico must work together to ensure an impactful program. The agencies need to look at the needs of the community in terms of the air quality and gain a better understanding of what sources are producing the

most pollution in different areas of Mexicali. A communication campaign in addition to the one discussed above should also be developed such as advertising information and air quality on a Facebook page or other media avenues. It is also important to ensure that education and awareness of air quality and air pollution is brought into the schools in Mexicali. It is important for children to know about air quality and pollution because when they are familiar with what it is, knowledgeable about its consequences, and informed about how they can reduce or eliminate their own (or families) actions that produce emissions, they can help prevent it. A school flag program would be great to implement in Mexicali, as it would involve the children, schools, teachers, and community in learning about air quality and being aware of the air quality in their city.

In addition, the working group recommends that Mexicali work with the mass media's community representatives to dedicate a short segment of the news to discuss the region's air quality for that day. This would bring even more awareness on air quality to those watching television in addition to the media campaign discussed above. Increasing the public's awareness of the Imperial-Mexicali Air Quality Task Force meetings to ensure that participation forums are available to the public to discuss air quality in the border region would also be very beneficial. In addition, the governments in Mexico should increase the support for University research that is devoted exclusively to environmental health associated with air pollution and disease prevention.

Long-Term Actions - Imperial County

Further Evaluation of Dust Emissions

In 2017, U.S. EPA issued a grant to CARB, which was sub-awarded to the ICAPCD, to procure and operate one miniature portable wind tunnel (PI-SWERL) to assess soil emissivity levels on lands in and around central Imperial Valley communities impacted by windblown dust. As a part of this grant, the ICAPCD will receive training for up to 10 staff at a two-day session on the use and maintenance of the PI-SWERL from the manufacturer, and then will receive additional training from IID air quality consultants in soil type characterization, surface stability, PI-SWERL data management, and soil emissivity data uploading to an IID database designed for public access.

Under the contract, Formation Environmental LLC, IID's lead air quality consultant, will provide this latter training at five test sites in or near populated areas impacted by windblown dust from areas that may include the Salton Sea. The primary goal of this grant is to build capacity within the ICAPCD to develop and implement protocols for

the use of the PI-SWERL as a fugitive dust regulatory compliance tool and to inform future revisions to the ICAPCD's fugitive dust regulations applicable to windblown dust.

Agricultural and Waste Burning

Short Term Actions - Imperial County

In Imperial County, after vegetative material is harvested, the fields and stubble are burned to prepare for the next planting. This burning helps prevent the spread of plant diseases and controls weeds and other pests. Title 17 of the California Code of Regulations provides agricultural and prescribed burning guidelines for each area in California. Title 17 specifically requires the ICAPCD to have rules in place that minimize smoke from agricultural burning. ICAPCD Rule 701 prohibits agricultural burning on any day declared to be a no-burn day by CARB, a fire control agency, or the ICAPCD's Air Pollution Control Officer.

On a daily basis, the ICAPCD reviews meteorological reports from various airport operators, the National Weather Service, state fire agencies, and CARB to help determine whether the day is a burn day. Burn/no burn days are declared for the entire county. The ICAPCD uses a detailed map of Imperial County to ensure that burns are allocated correctly to ensure minimal-to-no smoke impacts on the public. Daily burn authorizations specify the amount, timing, and location of each burn event. ICAPCD also considers local air quality as part of the daily burn determination and can decide it is not a burn day even if CARB authorized that day as a burn day.

The ICAPCD submits an annual agricultural burn report to CARB in January of each year. The report includes the amount of acres and the type of crops that were burned during the previous calendar year. The most recent report for 2017 indicates significant reductions in burning since 2003 in Imperial County. Open burning in Imperial County has been reduced in quantity as well as the types of crops burned. Emphasizing public health and safety, Imperial County has successfully reduced burning from a total of 40,221 acres of all crops in 2003 to 10,220 acres in 2017, primarily consisting of grass crops (e.g., alfalfa, klein, bermuda). This represents a 75 percent reduction since 2003. Due to fluctuations in agricultural production, there have been increases and decreases in agricultural burning between years. However, agricultural burning on average has been declining.

To estimate the impact of agricultural and open/miscellaneous burning on ambient concentrations on an annual basis, the average PM_{2.5} concentrations in Calexico, El Centro, and Brawley were compared on burn

days to those recorded on no-burn days. As shown in Table 1 below, on no-burn days, the average PM2.5 concentrations at Calexico, El Centro, and Brawley for 2015 through 2017 were 13.3 µg/m³, 8.7 µg/m³, and 11.0 µg/m³, respectively. On burn days, the averages were 11.4 µg/m³ at Calexico, 7.8 µg/m³ at El Centro, and 8.1 µg/m³ at Brawley.

Table 1. PM2.5 Average Comparison on Burn and No Burn Days at Calexico

	Calexico	El Centro	Brawley
Burn Day	11.4	7.8	8.1
No Burn Day	13.3	8.7	11.0

For all PM2.5 sites, the average PM2.5 concentrations were lower on burn days, which suggests that when burning did occur, meteorological conditions allowed pollutants to disperse. Days with PM2.5 concentrations over 12.0 µg/m³ did occur on agricultural burn days, but occurred more frequently on days when burning is prohibited in Imperial County. Between 2015 and 2017, there were a total of 715 days (2/3 days) where either agricultural or miscellaneous burns took place in Imperial County. Of these days, there were five days at the Calexico monitoring station where the PM2.5 concentration was over 35 ug/m³ but none of the burns occurred in Calexico. These concentrations also occurred in the winter (1/2/15, 1/14/16, 1/18/16, 12/11/16, and 12/3/17) when stagnation and PM2.5 emissions are highest in Imperial and Mexicali. Under stagnant meteorological conditions when winds are low, pollutants within Calexico and Mexicali tend to accumulate and increased PM2.5 concentrations occur with greater frequency.

Difficulties on declaring a burn or no burn day may arise such as times when early air quality forecasts and parameters call for a burn day but winds increase a couple of hours later. In this case, the increased winds would affect the burns and smoke direction negatively and during those occasions the ICAPCD attempts to contact those that were given permission to burn (agricultural fields and/or residential burns) and request that they do not burn. Although the ICAPCD's program has not been perfect in preventing all burning from occurring on high PM2.5 days in Calexico, overall, the ICAPCD's agricultural burn program effectively limits burning on forecasted high PM2.5 days.

To further protect the public from the health impacts associated with agricultural burning, ICAPCD commits to amend the Agricultural Burn Procedures (Policy 34) by expanding the special burn buffer from 1.5 miles to 2 miles. This will require that an inspector be present when burning occurs within 2 miles of a residential area, rural school, or near heavily traveled roads. ICAPCD will also

look at revising Policy 34 to prioritize smaller acreage burns of wheat to reduce potential for, and duration of, smoke impacts. This would allow growers to choose to cut a field in half or in quarters in order to move up on the priority list to burn. ICAPCD has also started providing daily burn determinations on their website to increase transparency and awareness to the residents and farmers in Imperial County.

Short Term Actions - Mexicali

Recent City Ordinance to Deter Burning

In August of 2018, a city ordinance reform began that allowed the agents of the Municipal Public Security Bureau (DSPM) of Mexicali to issue fines when residents were caught throwing garbage on public roads, contaminating water, drains, and vacant lots and burning garbage, tires or any other waste or scrap in public places, vacant lots, or any third-party properties or buildings. Over 700 officers received training on how to enforce this ordinance.

The main idea of the implementation of these fines is to raise awareness of the damage to the environment that residents are causing when they litter or pollute the air, water, and land. Penalties can range from 40-200 days of Unit of Measurement and Update (UMA), reaching 16 thousand pesos (or roughly \$850 U.S. dollars). Every two months DSPM will send the Directorate of Environmental Protection for the City of Mexicali information that includes how many citations were issued, the reason for the citation. The city intends to track the progress by monitoring the air quality and by analyzing the complaints of the citizens. If fewer complaints are received by the city, it could mean that the enforcement of the new ordinance is helping to decrease the number of people burning, littering and using fireworks in Mexicali.

The City of Mexicali has also been working to get waste tires and wood off the streets to prevent further burning emissions in the City. The "Clean Air for Mexicali 2018" Program was coordinated by the Secretary of the City Council, and involved the Fire Department, Public Security Directorate, Directorate of Civil Protection, Street Commerce and the Directorate of Environmental Protection with the aim of preventing bad practices such as open burning of garbage, tires, wood, firewood and other fuels that have generated very high levels of air pollution in Mexicali. As part of this effort, the city was able to confiscate over 40,000 pounds of wood and over 500 pounds of pyrotechnic material. This effort involved 106 public servants from different agencies in Mexicali. In addition, the city collected over 58,000 waste tires and took them to tire disposal centers. The sale of fireworks was also banned

in Mexicali in the winter of 2016. Although the ban of selling fireworks within the city limits of Mexicali is not permanent, it will apply during the current Administration, which ends in 2019. The local police department enforces the fireworks ban.

This effort was reinforced by the Environmental Protection Directorate with more environmental dissemination (consisting of nine media tours to both radio and television stations) to call the general public to join the "Clean Air Program for Mexicali" by avoiding purchasing and burning pyrotechnic material, as well as conducting open burning. Positive steps are being taken to reduce the amount of waste burning that occurs in Mexicali. However, more needs to be done to reduce sources of waste burning in the city. The progress made on the new environmental ordinance will be trackable and is expected to show a reduction in burning in Mexicali from these efforts. In addition, increasing education and awareness of the areas air quality and the health impacts from different types of burning will help to make people think twice before burning waste in the city.

Short Term Recommendations - Mexicali

Agricultural Burning

The practice of agricultural burning generates air pollutants such as carbon monoxide, NO_x, VOC, and PM. Mexicali does not restrict or have a permitting program for agricultural burning. Agricultural material is often burned in Mexicali at night to avoid being "seen." Although these emissions are less visible, the impact to air quality the following morning is much worse and causes serious health affects due to the typical inversion in the morning in Mexicali that traps pollutants to the ground. Another issue with agricultural burning in Mexicali is that approximately 85% of the acres farmed are rented, therefore owners and renters show little interest to invest in any kind of initiative to reduce agricultural burning for other practices, such as no-till, or using the agricultural material to mitigate dust impacts at nearby feedlots. These agricultural burns sometimes contain more than just biomass material, including tires and trash, further increasing the air pollution in the region.

One sustainable method to deal with the biomass, without having to burn it, is no-till, which is a tillage system that sows on the surface of the soil, still covered with the residues from the previous crop, which retain moisture and reduce soil loss caused by rain or wind and risk of erosion. This system also helps to reduce fugitive windblown dust emission levels from these lands. This technique helps soil conservation and reduces emissions of air pollutants.

Recently, the Municipality of Mexicali with the support of the Secretary of Agricultural Development (SEDAGRO) and the Secretary of Environmental Protection (SPA), both of the State of Baja California, developed educational posters on the health impacts from agricultural burning along with a discussion on the cleaner ways to burn by taking into consideration the appropriate time of day to burn (10:00 am to 3:00 pm) and meteorological conditions like wind speed (10-15 km/hr), temperature (less than or equal to 40c), and relative humidity (not greater than 40 percent). The posters also discuss the importance of watching the fire until it is completely extinguished, having fire breaks to prevent fire spreading, and how agricultural waste should be free from other types of waste such as plastic, tires, paper, and rope, and should not contain soil or moisture. It is also important that farmers consider the air quality in the region before burning. If farmers are going to burn, they need to look around for existing smoke or haze first. If the visibility is degraded, farmers should not burn until the particulates clear.

Recently, ICAPCD has requested to expand the scope of their CAA 103 grant without additional cost to add a media campaign focusing on the months with the highest agricultural burning in Mexicali to increase education about the health effects from agricultural burning and alternative methods to agricultural burning that could be used. The City Council of Mexicali, the SPA, and SEDAGRO will work with the Directorate of Environmental Protection to establish a rule to control and permit agricultural burning. Currently, the authority to regulate agricultural burning in Mexicali lies at the State level. The regulation should require that farmers looking to burn agricultural material must obtain an agricultural burn permit from the city or state prior to initiating any burns. The Directorate of Environmental Protection for the City of Mexicali will participate with the State in the development of the actions that are approved in the Plan for agricultural burning. Agricultural burning should also utilize the air quality data and forecasts issued by the contractor for the Imperial Valley Air Quality website to determine which days should be authorized burn or no-burn days. The ICAPCD and CARB could also work with authorities in Mexicali to disseminate the daily burn call authorizations based on air quality forecasts for the day.

It is also important to search for alternatives for management of agricultural waste and avoid burning by placing new value on the waste (ex: biomass to control dust from feedlots). If possible, another idea would be to create an incentive program for farmers to choose to not burn their residue in return for a monetary incentive. City and state authorities should concentrate their initial efforts to reduce agricultural burning near "ejidos" in Mexicali (small towns in Mexicali surrounded by agricultural fields that are burned) as these towns are most

affected by the pollution affects from agricultural burning.

Monitoring

Short Term Actions - Mexicali

Continuation of PM2.5 monitoring in Mexicali

On January 15, 2015, the Calexico monitor, located within one mile of the international border with Mexicali and was designated nonattainment for the 2012 PM2.5 annual standard. Due to its proximity to Mexicali, Calexico is impacted daily by emissions from Mexicali. The Clean Air Act includes special provisions for areas located next to an international border which allows states to take into consideration the impacts of cross border transport of pollutants. Consistent and reliable air quality data are needed on both sides of the border in order to analyze the degree to which the transport of pollutants from Mexico affects the PM2.5 concentrations at the Calexico monitor.

In June 2015, CARB entered into a contract with SCS Tracer Environmental to install and operate PM2.5 monitors at two sites in Mexicali. PM2.5 data was collected from April 2016 - April 2018. With funding support from U.S. EPA, CARB is working to develop a contract that would continue the monitoring efforts at the University Autónoma de Benito Juárez (UABC) and Colegio de Bachilleres (COBACH) monitoring stations in Mexicali. This would provide reliable PM2.5 mass and speciation data for residents in Mexicali and would have a dual benefit by linking the data to the alerts/forecasting mobile application and website already in place for the Imperial Valley. This monitoring contract would run for two additional years pending available funding. In addition, the contractor has agreed to provide SPA monitoring staff on the maintenance and operation of the monitors to cross-train so in the future SPA would be able to take over these sites when the next contract ends.

In addition, the SPA BC is currently seeking funding to refurbish existing Mexicali monitors. SPA BC applied for a \$500k grant from the Council of Science and Technological Innovation (COCIT) of Baja California and is awaiting approval. Effective monitoring is very important to have in Mexicali to allow research to look into the causes of the air pollution in the region, how the pollution is transported through the atmosphere, and the health and environmental effects. Monitoring can also be useful to support the strengthening of regulatory standards and NAAQS and to be able to monitor the results of new or increased stringency regulations. Most importantly, the monitoring data will be provided to the public so they know the level of air pollution that they are breathing, and can

take precautions to prevent going outside when pollution is unhealthy.

Enhanced PM2.5 Monitoring in Mexicali

In recent years, increased attention has been brought to various environmental problems in Mexicali, especially related to air quality. Air pollution in Mexicali can be easily perceived, especially in more populated communities or cities, due to the decreasing visibility and the fact that air pollution causes serious health problems.

Faced with this situation, the environmental and health authorities in Mexicali agree that it is necessary to quantitatively assess air quality further, by measuring the concentrations of the contaminants that are present in the environment, and likewise, by keeping a record of the measurements of pollutants present in the air Mexicali residents breathe. Knowing the air quality throughout the city of Mexicali will be very useful since this will allow the public and government agencies to gain an increased understanding on the sources that could be generating the PM2.5 pollution in the area, which would ultimately lead to further regulation, increased enforcement, and protection of the health of the population.

As a result of this work plan, the Directorate of Environmental Protection for the City of Mexicali and CARB have been working together on a project to establish a more robust PM2.5 monitoring network in Mexicali. This project includes adding 50 instantaneous PM2.5 sensors throughout various locations in Mexicali. Having a better idea of the air quality throughout different areas of Mexicali will be very useful since this will allow the public and government agencies to gain an increased understanding of the sources that are generating the PM2.5 pollution in the area. This monitoring will also provide the environmental and health authorities with a historical record of air quality in Mexicali, by region and at different times of the year. Perhaps the most important benefit of having instantaneous PM2.5 air quality information available to authorities in Mexicali, is that this data will allow authorities to investigate sources of high PM2.5 and increase enforcement where needed.

The PM2.5 sensors will be loaned to the City from CARB with a commitment to involve government agencies and Universities to assume the tasks of guarding and maintaining the monitoring equipment. The majority of sensors will be placed in police stations, fire stations, and City buildings. The rest of the sensors will be used to monitor the air quality in the Valley of Mexicali, which is seriously affected by emissions from agricultural burning. CARB staff will transfer their knowledge of sensor

installation, operation, and the retrieval of data by providing a training to the City and University staff after the signing of the Memorandum of Cooperation.

This government agreement will allow enhanced PM2.5 monitoring to occur in Mexicali. CARB will loan the sensor equipment to the City in two phases to ensure that the first set of sensors will operate correctly in the conditions present in Mexicali. As part of this agreement, the Directorate of Environmental Protection for the City of Mexicali will send CARB quarterly reports on the inspections that were performed from the monitoring of the air quality data. This will ensure that actions are being taken to investigate and enforce the air quality regulations in Mexicali and that the sensors are benefiting the City and its residents.

Short Term Recommendations - Mexicali

Training on Monitoring, Maintenance, and Submittal of Air Quality Data

To monitor, maintain, and submit air quality data is a complex job that requires full time staff to make sure data is accurate and reliable. All monitoring instruments must also be calibrated to ensure the data is accurate and can be used to identify future air quality trends. In addition, the massive amount of information produced by the monitoring network must be received, decoded, organized, and stored in a retrievable database for agencies and the public to access.

For these reasons, running and maintaining a monitoring network is no simple task. In Mexicali specifically, an insufficient budget and lack of staff to keep up with the maintenance of the air quality equipment is the biggest roadblock to providing an effective and accurate monitoring network. In addition, there is not a proper independent environmental fund to support the functioning of the monitoring system in Mexico. If local and state environmental agencies in Mexicali and Baja California were to receive more funding and staff for specifically this purpose, the state and city could have a much more robust system.

CARB as well as the Contractor for the Mexicali PM2.5 monitoring project commit to helping the City of Mexicali and SPA BC further to educate site operators on the operation, maintenance, and submittal of air quality data when needed. Training could include how to keep the monitoring stations in optimal operation including maintenance and submittal of data. It would also be advantageous for the City of Mexicali and SPA BC to apply for grants to get financing for new equipment, accessories,

and parts needed to ensure reliable and effective monitoring data are being recorded for public consumption.

Collaboration

Short Term Actions - Mexicali MOU with Mexico

In July 2014, California's Governor Edmund G. Brown Jr. and Mexico's Ministry of Environment and Natural Resources Undersecretary Rodolfo Lacy and National Forestry Commission General Director Jorge Rescala Pérez signed the *Memorandum of Understanding (MOU) to Enhance Cooperation on Climate Change and the Environment*. The purpose of this four-year agreement was to promote and carry out cooperative activities related to environmental issues. The working groups (Climate Change, Air Quality, Clean Vehicles, and Wildfires) each made substantial progress, with leads from California and Mexico working together on a regular basis. CalEPA and SEMARNAT coordinated working group efforts. With the MOU expiring in 2018, and new administrations taking office in 2019, a new MOU would be advantageous to continue cooperative efforts to improve air quality in the California-Mexico border region.

Off-Highway Vehicles

Long Term Actions – Imperial County

OHV Rules

The ICAPCD has been in discussions with the Bureau of Land Management (BLM) and the California State Department of Parks and Recreation (DPR) on how to best address and further mitigate windblown dust emissions from OHV parks in Imperial County. In addition, the ICAPCD has been working closely with the Sheriff's Department to address issues with trespassing of OHV's into Salton Sea Shoreline, surrounding areas not designated for OHV riding, and open areas in general that need enforcement per Rule 804. The ICAPCD in conjunction with the County Council has been working on two County Ordinances to facilitate enforcement related to OHV trespassing. To meet this goal, the ICAPCD in conjunction with multiple agencies, has been working on budget augmentation for the Imperial County Sheriff's Office to ensure implementation of enforcement on this source. The County will continue discussions with BLM and DPR into the future to come up with strategies to reduce fugitive dust emissions generated and increased by OHV usage in Imperial County, specifically on the west side of the Valley.

Vehicle Emissions and Border Traffic

Long-Term Recommendations – Imperial County

Evaluating Vehicle Emissions at the Ports of Entry

It is very well understood that vehicles are not necessarily operating where they are registered. Currently, CARB's on-road mobile source emissions inventory tool (EMFAC) utilizes data from the Department of Motor Vehicle (DMV) registration addresses with some spatial adjustments using data from past studies to estimate emissions and activity at the county level. However, no data currently exists to spatially allocate at a more localized level. Automated license plate readers (ALPRs) are high-speed, computer-controlled camera systems that can be setup on highway overpasses, street poles, streetlights, or mobile trailers, and can capture all license plate numbers that come into their view. License plate data acquired using ALPR cameras will provide the necessary information to establish fleet characteristics and activity at the localized level through registration databases (DMV and International Registration Plan (IRP)). These data will also improve CARB's ability to assess and track the compliance of in-use diesel regulations (e.g., Truck and Bus Regulation) and support agency's efforts to enforce existing and future mobile source regulations such as heavy duty Inspection and Maintenance (I/M) program.

Given the issues with the data sources described above, new sources of data are crucial for developing mobile source inventories at the local scale. A large, representative sample of license plates from vehicles operating within different regions, communities, and passing through border weigh stations in California will provide the necessary linkage to fleet characteristics through registration databases (DMV and IRP). These data will also improve CARB's ability to assess and track vehicle and fleet compliance with our in-use diesel regulations, hence supporting CARB's efforts to enforce existing mobile source regulations, such as the Truck and Bus regulation and Periodic Smoke Inspection Program, and potential future regulations, such as a comprehensive Heavy-Duty Vehicle Inspection and Maintenance program. The solicitation is out for this contract now and to provide two camera systems at the Calexico-East port of entry to evaluate northbound truck traffic.

To build upon the ALPR system to get a better idea of the fleet and vehicle emissions at the Calexico East port of entry, a study is needed to utilize CARB's recently developed Portable Emissions Acquisition System (PEAQs). This study would include the ALPR technology discussed above, and PEAQS would be used to measure the

emissions of black carbon and oxides of nitrogen of individual heavy-duty vehicles entering California from Mexico. The study should begin with an initial deployment of PEAQS at the Calexico-East port of entry to obtain baseline information on the age, emissions profile, and origin of heavy-duty vehicles crossing into the United States. The study should also involve an informational outreach program for heavy-duty vehicles, followed by focused enforcement activities on the highest emitting vehicles and characterize fleet emissions after the implementation of mitigation measures. Collecting heavy-duty vehicle emission information before, during, and after intervention and mitigation activities will allow regulators to assess the effectiveness of focused outreach and enforcement in reducing heavy-duty vehicle emissions and help develop new approaches to reducing emissions from mobile sources. ALPR and PEAQS technologies should be utilized at the POE's in Calexico to determine a more accurate estimate of emissions generated at the border.

Smog Check Program

Currently, Imperial County residents only have to smog their vehicles when there is a change in ownership. Although the area is nonattainment for ozone, the original designations of the Smog Check Program were based on population data from 1990. If an area had a population of less than 200,000, the area did not have to implement a basic or enhanced Smog Check Program, which ensures that cars are checked for emissions every 1-2 years.

With the population of Imperial County approaching 200,000, Imperial County should consider volunteering to increase their Smog Check Program to the basic program, which would require that all cars that operate in the County would have to pass emissions inspections every other year. It is important that Imperial County does what it can to reduce vehicle emissions, particularly those at the POE's which impact the PM2.5 levels at the Calexico monitor.

Long-Term Recommendations – Mexicali

Enhanced Vehicle Verification Program

In 2017, the Secretary of Planning and Finance reported that 1.1 million vehicles were registered in Baja California, of which ~378,000 of those are registered in Mexicali, Mexico. Roughly, 30% of the vehicles in Mexicali that are registered went through the vehicle verification program in 2017. The vehicle verification program in Mexico is to be completed every year. Although the environmental law in Mexico establishes that all vehicles must be smogged, since 2012 when the program was implemented, there has been no enforcement of the requirement because there are no

penalties associated with non-compliance. Because the vehicle verification program in Mexico is sticker and not registration based, it is important that inspection and surveillance be done and complemented with fines to ensure more people comply with the requirement. The main reason that participation in the vehicle verification program is so low in Mexico is because vehicle owners are not penalized in any way when they fail to comply with the verification requirement. To increase participation in the vehicle verification program, fines for noncompliance should be added to the program.

In addition, many vehicles enter Mexico without going through the proper importation process. Vehicles that are more than 10 years old are not supposed to be imported into Mexico. However, many vehicles are driven over the border without registration and legal documentation but are able to cross the border and are used in Mexico. “Chocolate vehicles” are vehicles that come from outside Mexico without any registration and to which probably did not pass smog in the State from which they came. There is a problem of vehicles crossing the border without proper importation and a lack of authority in Mexico to enforce the regulations against these polluting vehicles.

California should also share information on the California registered vehicles with Mexico to allow SPA to check if those vehicles are now operating in Mexico and if those vehicles had a valid smog check in California before moving across the border. CARB and the Bureau of Automotive Repair (BAR) can also provide Mexicali vehicle verification program officials with training and recommendations on how to make better use of the onboard diagnostic (OBD) data that they collect for a greater level of inspection stringency. Overall, the main recommendation is for Mexico’s vehicle verification program to add fines to the program to increase participation.

Vehicle Idling Emissions

The Baja California emissions inventory shows that motor vehicles are the principal source of NO_x, VOC, and carbon monoxide emissions. From 1980 to 2015, the number of vehicles operating in Baja California rose from 347 thousand to 1.1 million (Figure 1). One of the main contributors for increased motor vehicle emissions in the border region is the continuous starting and stopping in traffic and at the POE’s. This vehicle traffic occurs at the POE checkpoints that control the passage of motor vehicles between Baja California and California. While cars are waiting to go through the checkpoint, they keep the engine running as the line slowly advances. This results in increased gas consumption and air pollutant emissions.

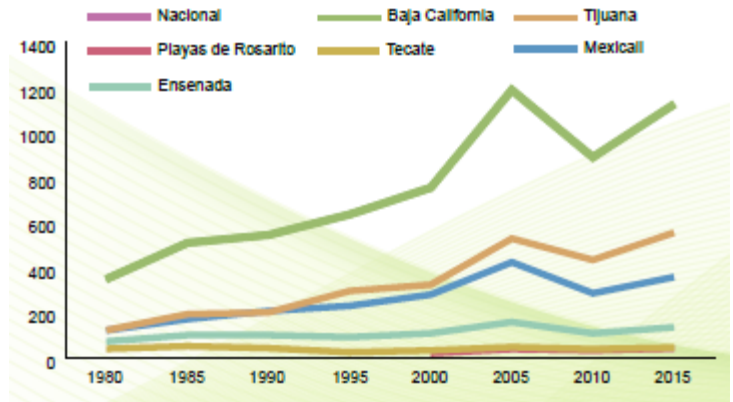


Figure 1. Growth trend of the vehicle fleet in the State of Baja California (1980 - 2015).

It is very important to understand the magnitude of the emissions coming from the vehicles at the POE’s. For this reason, the license plate capture system (ALCP) discussed previously to understand the age distribution of the vehicle fleet at the border is critical to tracking emissions at the POEs. In addition, the recent emission inventory improvement contract will focus on border area emissions by using wait time and volume statistics. Once emissions are quantified, it is important that environmental and transportation agencies in California and Mexico work together to create emissions reductions scenarios that will benefit both countries by reducing vehicle wait times at the crossings.

Concerning the emissions generated from the commercial truck POE (Calexico-East) in the border region, additional projects should be considered to reduce the times for cargo inspection by authorities. Currently, U.S. EPA is funding the North American Research Partnership (NARP) through a Border 2020 grant awarded through the North American Development Bank to quantify emissions reduction benefits from the Nogales Unified Cargo Processing Facility. The project will analyze the emission reduction benefits resulting from unified cargo inspections and help to improve our understanding of the relationship between wait-times, and emissions at the Mariposa Land POE. This project will also help to educate border agencies on the additional infrastructure investments that could be made to mitigate wait-time and emissions at the border. If this project is successful and wait times are reduced for commercial trucks, the working group recommends that a similar program be implemented at the Calexico-East POE.

In recent years, some actions have been taken to reduce the wait times at the POE’s, including increasing the number of checkpoints, reducing the number of administrative procedures, having preferential faster lanes for certain vehicles etc. However, given the constant increase in the flow of vehicular traffic and border crossings, it is

necessary to evaluate new alternatives for more efficient vehicle border crossing.

Unpaved Roads

Long-Term Recommendations – Mexicali

Reduce Emissions from Unpaved Roads

Mexicali is an arid desert region with lots of open natural areas. Dust emissions from paved and unpaved roads in Mexicali are intensified due to winds passing over exposed areas. These emissions are transported to other areas of Mexicali including areas where the majority of the population resides. With the increase in population and transportation comes an increase in windblown dust emissions. Windblown dust emissions negatively affects the residents in Mexicali by exacerbating respiratory ailments due to high PM levels.

Baja California's emissions inventory for anthropogenic sources shows that unpaved roads are the principal source of PM10 emissions in the region. If natural emissions are considered in addition to anthropogenic emissions, wind erosion contributes to 80% of PM10 in Mexicali. Only Tijuana and Tecate mention eroded soils in their environmental protection rules, so it is important that the rest of the municipalities update their rules to regulate this land type. The working group recommends that Mexicali update its environmental protection rules to include regulation of unpaved and open areas.

The working group recommends that the City of Mexicali and SPA BC work to reduce PM emissions from unpaved roads in Mexicali. The agencies should work to oversee compliance with residential and commercial development permits with regard to dust control, train on construction techniques and practices that support reducing PM emissions, emphasize the importance of the impact of PM generated by construction and demolition, develop a program for collection of construction waste, develop an inventory of eroded areas and unpaved roads inside urban areas in Baja California, evaluate surface coating techniques to reduce uncovered land areas and unpaved roads, and apply surface coating techniques to reduce uncovered land areas and unpaved roads.

The city and SPA BC should also seek additional funding mechanisms to pave additional unpaved roads into the future. NADBANK loans and consulting with the Economic Development Council in Mexicali are viable options to seeking additional funding to pave unpaved roads in the future. Although paving would be the best long-term option to combating windblown dust emissions

from unpaved roads, the city and state should also look into other alternatives to stabilizing roadways such as watering and soil stabilization on heavily traveled roadways. To most effectively reduce the number of unpaved roads in Mexicali, it is primarily important to prioritize where the paving should take place to ensure that the highest emitting roadways are paved first.

Regulating Mexicali Sources

Long-Term Recommendations – Mexicali

Improve Emissions Inventory Data, Increase Inspection, Surveillance, and Regulation on Industry

In the most recent emissions inventory for Baja California, the commerce and services source category contributes mainly to VOC, CO and PM2.5 emissions based on the use of products such as solvents, burning of biomass like wood and carbon for food processing, and water heating used in activities of the sector.

It is important for the city to update the municipal environmental regulation on commerce and services. The list of commerce and service businesses should be updated on an annual basis to ensure that business permits are up to date and that an inspection and surveillance system exists. The commerce and service businesses should also be trained on the guidelines to which they are held to reduce their impact on the air pollution in the region. The emissions from these service industries should also be accurately reflected in the emissions inventory for Mexicali. Dust control plans should be required for construction sites to build in Mexicali. There are many agreements that need to be made in Mexicali between the local, state, and federal governments to ensure that an effective enforcement and permitting process is occurring on regulating sources in Mexicali. A realistic timeline that also incorporates the change in state and federal government will also be needed.

Other Priorities

Long-Term Recommendations - Mexicali

Program to Control Emissions from Livestock Farming

Both PM and NH3 emissions from livestock in feedlots is a definite air pollution concern in Mexicali. There is currently no dust control on large feedlots in Mexicali. An inventory of PM and NH3 emissions from livestock farming in Mexicali should be generated to gain a better understanding of the magnitude of emissions generated by feedlots. The city and SPA BC should meet with the

feedlots to see if they would be agreeable to controlling dust and NH₃ from their feedlots since these feedlots are not regulated to control these emissions. Previously, a program was administered by SPA BC with agricultural owners and a large feedlot in Mexico where wheat stubble from agricultural fields was used by the feedlots to incorporate the stubble into animal pens with manure and was sold. This effort had a dual benefit of reducing agricultural burning and feedlot dust emissions. When the SPA BC went through a change in government, this program ended.

The working group recommends that SPA BC look at reinstating this program, promote the use of better practices for animal waste management, provide training to the livestock companies in the use of new practices of handling the livestock waste, and most importantly, for SPA BC or SEMARNAT to establish and enforce a regulation on livestock farming to control emissions of PM and NH₃.

Enforcement

Long-Term Action – Imperial County

Strengthening Enforcement

Rules are only effective when there is compliance with requirements, and enforcement often becomes necessary when industry, or the public, do not meet those requirements. The ICAPCD is the regulatory agency that has the primary responsibility for controlling air pollution from stationary and area sources within Imperial County, but also enforces state and federal rules. CARB has the responsibility for controlling air pollution from mobile sources and for reviewing district enforcement practices. As such, both agencies share a role in ensuring the enforcement of air pollution regulations in the County. To ensure effective enforcement, CARB and ICAPCD staff will evaluate enforcement programs, protocols, and results to strengthen enforcement programs and maximize compliance with existing requirements.

ICAPCD has an extensive program designed to control emissions from stationary sources within the County. For example, ICAPCD has adopted more than 100 rules that set emission limits and operational restrictions on stationary sources, and sets a high priority on permitting and enforcement. Nearly half of the air district staff works on permitting and enforcement at the district, issuing, maintaining, and enforcing 800 operating permits issued to more than 350 businesses and facilities subject to air pollution rules in Imperial County. The district also issues more than 200 agricultural burning permits each year. The ICAPCD's goal is to inspect each permitted source at least one time each year to verify compliance; some

businesses, such as geothermal power plants, are inspected multiple times each year. When a violation has been found, the ICAPCD requires the business to return to compliance, and may assess penalties or pursue legal actions, if necessary, to deter future violators.

CARB has an extensive mobile source enforcement program, with efforts focused on trucks in the border region and particularly at the border crossing at Calexico. CARB also enforces programs focused on diesel-fueled off-road equipment, such as construction equipment and Transportation Refrigeration Units (TRU). Diesel enforcement is conducted through investigations / audits, administrative actions, and field inspections. CARB's goal is to achieve compliance through effective implementation and enforcement of regulatory requirements. The diesel rules, with a large number of regulated entities across the state, are challenging to enforce.

Working together, CARB and the ICAPCD will collect and evaluate permitting, enforcement, and complaint policies and procedures that describe how staff conducts inspections, investigates complaints, and resolves violations and statistics for key stationary and mobile source programs that can measure the effectiveness of these programs. Results from this evaluation will be compared to similar statistics in other similar regions and the South Coast Air Quality Management District.

Using the findings from the evaluation described above, and the comparison of statistics in ICAPCD to other Districts, CARB and ICAPCD staff will work together to develop a work plan that will strengthen permitting and enforcement efforts within the ICAPCD boundaries. This may include updating policies and procedures, developing and implementing innovative methods for enforcement, and/or conducting more frequent enforcement on sources that have been non-compliant in the past in order to identify and deter future non-compliance.

Recommendations and Actions for Imperial County

ICAPCD:

- Continue to work with agencies in Mexicali on media campaigns that relate to the border region.
- Continue to investigate opportunities for Regulation VIII rule strengthening.
- Map the emissivity of soil types within the Imperial Valley and tailor the number and/or effectiveness of Conservation Management Practices to the uncontrolled emissivity levels of soils on which agricultural operations are conducted.
- Continue collaboration with IID and CARB in playa dust control research and testing activities at the Salton Sea to help establish the most cost-effective controls to mitigate playa dust that affects Imperial County.
- Develop and implement protocols for the use of the portable wind tunnel as a fugitive dust regulatory compliance tool and to inform future revisions to the ICAPCD's fugitive dust regulations applicable to windblown dust.
- Amend Policy 34 (Agricultural Burn Procedures) to increase the buffer zone for special burns from 1.5 to 2 miles, and prioritize smaller acreage burns of wheat to reduce potential for, and duration of, smoke impacts.
- Continue discussions with BLM and DPR to come up with strategies to reduce fugitive dust emissions generated and increased by OHV usage in Imperial County, specifically on the west side of the Valley.
- Continue working closely with the Sheriff's Department to address issues with trespassing of OHV's into Salton Sea Shoreline.
- Continue working on County Ordinances to facilitate enforcement related to OHV trespassing.

CARB and Imperial County:

- The ALPR and PEAQS technologies should be utilized at the POE's in Calexico to determine a more accurate estimate of emissions generated at the border.
- Volunteer to increase the Smog Check Program in Imperial County to a basic program, which would require that all cars that operate in the County would have to pass emissions inspections every other year.
- Working together, CARB and the ICAPCD will collect and evaluate permitting, enforcement, and complaint policies and procedures that describe how staff conducts inspections, investigates complaints, and resolves violations. CARB and ICAPCD staff will work together to develop a work plan that will strengthen permitting and enforcement efforts within the ICAPCD boundaries.

Recommendations and Actions for Mexicali, Baja California

SPA BC:

- Once the Mexicali PM2.5 monitoring stations are added to the alert/forecasting website contract for Imperial Valley, SPA BC should work with CARB, ICAPCD, and the website developer to warrant that air quality data is maintained and made available to ensure forecasts in Mexicali can be provided to the public.
- Work with CARB to educate site operators on the operation, maintenance, and submittal of air quality data when needed.
- Work with California to check if vehicles that were previously operated in California, but are now operating in Mexico, had a valid smog check in California before moving across the border.
- Seek training and recommendations from CARB and BAR for how to make better use of the onboard diagnostic (OBD) data that is collected for a greater level of inspection stringency for the smog check program.
- Look at reinstating the wheat stubble to feedlots program, promote the use of better practices for animal waste management, provide training to the livestock companies in the use of new practices of handling the livestock waste, and establish and enforce a regulation on livestock farming to control emissions of PM and NH3.

The Directorate of Environmental Protection for the City of Mexicali:

- On agreement to receive PM2.5 monitors from CARB, send quarterly reports to CARB on the inspections that were performed from the monitoring of the air quality data and the associated enforcement actions that were taken.
- Update the municipal environmental regulation on commerce and services, ensure an inspection and surveillance system exists, and update the list of commerce and service businesses on an annual basis.

The Directorate of Environmental Protection for the City of Mexicali and SPA BC:

- Continue to work with ICAPCD and CARB to improve the winter and summer media campaigns.
- Gain a better understanding of what sources are producing the most pollution in different areas of Mexicali.
- Establish a communication campaign such as advertising information and air quality on a Facebook page or other media avenues.
- Bring education and awareness of air quality and air pollution into the schools in Mexicali.
- Work with the mass media's community representatives to dedicate a short segment of the news to discuss the region's air quality for that day.
- Increase support for University research that is devoted exclusively to environmental health associated with air pollution and disease prevention.
- Apply for grants to get financing for new equipment, accessories, and parts needed to ensure reliable and effective monitoring data.
- Establish a rule to control and permit agricultural burning. Sign an agreement with the federal government to allow enforcement of the regulation. Create an incentive program for farmers to choose to not burn their residue in return for a monetary incentive.
- Reduce PM emissions from unpaved roads in Mexicali.
- Develop an inventory of eroded areas and unpaved roads inside urban areas in Baja California
- Evaluate stabilization techniques to reduce emissions from uncovered land areas and unpaved roads.
- Seek additional funding mechanisms to pave additional unpaved roads into the future.
- Prioritize where the paving should take place to ensure that the highest emitting roadways are paved first.
- Require dust control plans for construction sites to build in Mexicali.
- To increase participation and compliance with the vehicle verification program, fines should be added to the program.

Future Updates

This work plan was developed by CARB in collaboration with the various Imperial County and Mexicali stakeholders and reflects the input and expertise of a range of state and local government and community organizations. The set of actions from this work plan will be presented to the CARB board on December 13, 2018. The actions identified in this work plan will help to move the Imperial County – Mexicali border region towards cleaner air quality.

Many of these actions are new and ambitious while others are more recent and already underway. Collectively, these actions are evidence of California and Mexico's ability to show that it is possible to tackle air pollution in the border region by working together and continue operating to see these actions come to fruition. Some of the actions are short-term, while others are focused on longer-term efforts that will provide major benefits well into the future.

Success of this work plan will require the creation of new policies and regulations in some areas, and expanding and refining existing policies and regulations in others. Staff envisions that this work plan will continue to have quarterly in person working group meetings, with conference calls occurring more frequently to ensure that these actions are followed through on. Staff also recommends that this work plan be brought to the Board as a yearly update until all actions have been completed. The metrics to track progress table on next page provides more details as to how CARB and the working group will track the success of these actions and who will be accountable for which actions.

Metrics to Track Progress

Short Term (<12 months) Work Plan Actions and Recommendations			
Priority Area	Work Plan Actions and Recommendations	Agencies Involved	Proposed Timeline
Actions - Education and Outreach - Imperial County			
Improved Winter Media Campaign	Continue to work with agencies in Mexicali on the "Ambientalízate" media campaigns in the border region.	SPA BC Municipality ICAPCD CARB	Winter 2018 - new media campaign will be completed.
Regulation VIII Fugitive Dust Rules Evaluation	Continue to investigate opportunities for Regulation VIII rule strengthening.	ICAPCD CARB	Ongoing. This evaluation is already underway.
Salton Sea Dust Mitigation	Continue collaboration with IID and CARB in playa dust control research and testing activities at the Salton Sea to help establish the most cost-effective controls to mitigate playa dust that affects Imperial County.	ICAPCD IID CARB	Ongoing. IID, CARB, and ICAPCD have already been working together on playa dust control research.
Recommendations - Education and Outreach - Mexicali			
PM2.5, PM10, and Ozone Air Quality Alerts and Forecasts for Mexicali	Once the Mexicali PM2.5 monitoring stations are added to the alert/forecasting website contract for Imperial Valley, SPA BC should work with CARB, ICAPCD, and the website developer to guarantee that air quality data is maintained and made available to ensure forecasts in Mexicali can be provided to the public.	SPA BC CARB ICAPCD Contractor	Winter 2018/2019. Contract is expected to begin around Jan/Feb of 2019.
Increase Education and Awareness of Air Quality	Gain a better understanding of what sources are producing the most pollution in different areas of Mexicali.	CARB SPA BC Municipality	Ongoing but certain sources will be estimated in 2019 through CARB contract. SPA BC and Municipality should seek additional inventory improvements.
	Establish a communication campaign such as advertising information and air quality on a Facebook page or other media avenues.	SPA BC Municipality	Summer of 2019.
	Bring education and awareness of air quality and air pollution into the schools in Mexicali.	SPA BC Municipality	Start to develop educational material for schools in Q1 of 2019.
	Work with the mass media's community representatives to dedicate a short segment of the news to discuss the region's air quality for that day.	SPA BC Municipality	Work with media to see if segment is possible by Q2 of 2019.
	Increase support for University research that is devoted exclusively to environmental health associated with air pollution and disease prevention.	SEMARNAT SPA BC Municipality	Ongoing. Negotiations with SEMARNAT to see if additional funding can be allocated for this effort.

Actions - Agricultural Burning - Imperial County			
Agricultural Burn Program Effectiveness	ICAPCD will amend the Agricultural Burn Procedures to increase the special burn buffer zone from 1.5 to 2 miles and prioritize smaller acreage burns of wheat to reduce potential for, and duration of, smoke impacts.	ICAPCD	Winter of 2018/2019.
Recommendations - Agricultural and Waste Burning - Mexicali			
Agricultural Burning	Establish a rule to control and permit agricultural burning. Sign an agreement with the federal government to allow enforcement of the regulation.	SEMARNAT SPA BC Municipality	2019.
	Create an incentive program for farmers to choose to not burn agricultural residue in return for a monetary incentive.	SPA BC Municipality	2019. If regulation above is successful, see if incentive money would also be available to reduce burning further.
Waste Burning	The City of Mexicali should develop metrics to track progress of the city ordinance on burning to see if the ordinance is causing a change in the air quality of Mexicali.	Municipality	Start November 2018. City could analyze data quarterly after reports are received.
Recommendations - Monitoring - Mexicali			
Enhanced PM2.5 Monitoring in Mexicali	On agreement to receive PM2.5 monitors from CARB, send quarterly reports to CARB on the inspections that were performed from the monitoring of the air quality data and the associated enforcement actions that were taken.	Municipality	Begin Summer 2019.
Training on Monitoring, Maintenance, and Submittal of Air Quality Data	Work with CARB to educate site operators on the operation, maintenance, and submittal of air quality data when needed.	SPA BC Municipality	Ongoing. Support is available when requested.
	Apply for grants to get financing for new equipment, accessories, and parts needed to ensure reliable and effective monitoring data.	SPA BC	SPA BC is seeking funding now. If funding is not provided, SPA BC should continue to seek grants.

Long Term (>12 months) Work Plan Actions and Recommendations			
Priority Area	Work Plan Actions and Recommendations	Agencies Involved	Proposed Timeline
Actions - Education and Outreach - Imperial County			
Further Evaluation of Dust Emissions	Map the emissivity of soil types within the Imperial Valley and tailor the number and/or effectiveness of Conservation Management Practices to the uncontrolled emissivity levels of soils on which agricultural operations are conducted.	ICAPCD	2019/2020.
	Develop and implement protocols for the use of the portable wind tunnel as a fugitive dust regulatory compliance tool and to inform future revisions to the ICAPCD's fugitive dust regulations applicable to windblown dust.	ICAPCD	
Actions - Off-Highway Vehicles – Imperial County			
OHV Rules	Continue discussions with BLM and DPR to come up with strategies to reduce fugitive dust emissions generated and increased by OHV usage in Imperial County, specifically on the west side of the Valley.	ICAPCD CARB BLM DPR	2019/2020.
	Continue working closely with the Sheriff's Department to address issues with trespassing of OHV's into Salton Sea Shoreline.	ICAPCD IC Sheriff's Dept.	
	Continue working on County Ordinances to facilitate enforcement related to OHV trespassing.	ICAPCD IC	
Recommendations - Vehicle Emissions and Border Traffic – Imperial County			
Evaluating Vehicle Emissions at the Ports of Entry	Utilize the ALPR and PEAQS technologies at the POE's in Calexico to determine a more accurate estimate of emissions generated at the border.	CARB ICAPCD CBP ICTC	2019/2020. CARB should work with CBP and ICTC to establish stations at the POE's in Calexico.
Smog Check Program	Increase Smog Check Program to the basic program to require that all cars that operate in the County would have to pass emissions inspections every other year.	ICAPCD IC	2019/2020.
Recommendations - Vehicle Emissions and Border Traffic - Mexicali			
Enhanced Vehicle Verification Program	California could share information on the California registered vehicles with Mexico to allow SPA to check if those vehicles are now operating in Mexico and if those vehicles had a valid smog check in California before moving across the border.	SPA BC CARB	Work could begin in 2019.
	Fines should be added to the vehicle verification program for non-compliance.	SPA BC Municipality	Work could begin in 2019.
	Seek training and recommendations from CARB and BAR for how to make better use of the onboard diagnostic (OBD) data that is collected for a greater level of inspection stringency for the vehicle verification program.	SPA BC CARB BAR	Ongoing but CARB and BAR are available to train and offer recommendations now.

Actions - Enforcement – Imperial County			
Strengthening Enforcement	CARB and the ICAPCD will collect and evaluate permitting, enforcement, and complaint policies and procedures that describe how staff conducts inspections, investigates complaints, and resolves violations, and statistics for key stationary and mobile source programs that can measure the effectiveness of these programs.	CARB ICAPCD	2019/2020.
	CARB and ICAPCD staff will work together to develop a work plan that will strengthen permitting and enforcement efforts within the ICAPCD boundaries.	CARB ICAPCD	2019/2020.
Recommendations - Unpaved Roads - Mexicali			
Reduce Emissions from Unpaved Roads	Reduce PM emissions from unpaved roads in Mexicali.	SPA BC Municipality Mexicali Public Works	Ongoing after prioritization of most emissive unpaved roads is established.
	Develop an inventory of eroded areas and unpaved roads inside urban areas in Baja California.	SPA BC Municipality	2019/2020.
	Evaluate stabilization techniques to reduce emissions from uncovered land areas and unpaved roads.	SPA BC	2019/2020.
	Seek additional funding mechanisms to pave additional unpaved roads into the future.	SPA BC Municipality	2019/2020.
	Prioritize where the paving should take place to ensure that the highest emitting roadways are paved first.	SPA BC Municipality	2019/2020.
Recommendations - Regulating Mexicali Sources - Mexicali			
Regulating Mexicali Sources	Update the municipal environmental regulation on commerce and services.	Municipality	2019/2020.
	Ensure an inspection and surveillance system exists	Municipality	2019/2020
	Update the list of commerce and service businesses on an annual or bi-annual basis.	Municipality	2019/2020.
Recommendations - Other Priorities - Mexicali			
Program to Control Emissions from Livestock Farming	Look at reinstating the wheat stubble to feedlots program.	SPA BC	2019/2020.
	Promote the use of better practices for animal waste management.	SPA BC	2019/2020.
	Provide training to the livestock companies in the use of new practices of handling the livestock waste.	SPA BC	2019/2020/
	Establish and enforce a regulation on livestock farming to control emissions of PM and NH3.	SPA BC	2019/2020.