CALIFORNIA AIR RESOURCES BOARD

Research Screening Committee Meeting
Cal/EPA Headquarters Building
1001 I Street
Sacramento, California 95814
(916) 445-0753

January 21, 2021
9:00 a.m.

ADVANCE AGENDA

I. Approval of Minutes of Previous Meeting:

September 18, 2020

II. Discussion of Research Proposals:

1. "Estimating the Health Benefits of Reducing Emissions of Toxic Air Contaminants in California," University of California, Davis, $349,857, Proposal No. 2845-297

   One of California's critical air quality goals is to reduce the public's health risk from exposure to airborne toxic chemicals. To achieve the goal, the California Air Resources Board (CARB) is prioritizing the evaluation and reduction of exposure to toxic air contaminants (TACs). The Community Air Protection Act, Assembly Bill (AB) 617, aims to reduce exposure in communities that experience high cumulative exposure to air pollution, including TACs. The Air Toxics Hot Spots Information and Assessment Act, AB 2588, requires commercial facilities to report their air toxics emissions, identifies facilities that pose significant health risks, and reduces the emissions from these facilities. Air pollution control efforts driven by state and federal law require reductions in pollution sources that contribute to criteria pollutants such as particle pollution and ozone, but many of these sources also contribute to toxic emissions. Under AB 2588, CARB performs health risk assessments (HRAs) of TACs. The Air Toxics Hot Spots Program Guidance Manual, established by Office of Environmental Health Hazard Assessment (OEHHA), recommends exposure variates, cancer and non-cancer health values, and air modeling protocols needed to perform these HRAs. These HRAs estimate the incidence of cancer and non-cancer impacts of TACs, but they do not provide a mechanism to estimate the monetary value of these impacts. Developing the methodology to identify specific health outcomes from toxic emissions and estimate the monetary value of these health outcomes, including cancer and non-cancer impacts, will enable CARB to better assess and estimate the value of health benefits generated from existing and proposed rules and regulations affecting TACs.

2. "Impacts of Train and Port Pollution and Air Toxics on Respiratory Symptoms and ED Visits within Vulnerable Communities in Southern California," University of California, Berkeley, $499,650, Proposal No. 2846-297

   Regulations and technological upgrades have resulted in a steady decline in criteria air pollutants and air toxics in California. However, the distribution of goods from their entry ports to the rest of the United States involves diesel-powered vehicles,

locomotives and equipment, creating significant exposures and health impacts in the vulnerable communities along the distribution routes. The vulnerable communities suffer from exposure not only to criteria pollutants like NO_X and PM2.5, but also to air toxics from those mobile sources as well as sources of air toxics from industry processing. In this proposed new contract, UCB and ResMed will study: 1) the respiratory health impacts of NO_X and PM2.5 emissions from locomotive and port craft operations; 2) the respiratory health effects of air toxics from point, area and mobile sources; and 3) the relative significance of individual pollutants when integrated in a single modeling framework, on daily rescue medication use within the vulnerable communities in Southern California for the years 2016-2019. The impacts of air pollution on annual Emergency Department visits within the vulnerable communities will also be investigated and compared with the impacts estimated on daily rescue medication use. Further, the sources contributing to the air pollution from NO_X and PM2.5 and air toxics emissions in the vulnerable communities will be identified. The results of this new project will significantly compliment ongoing work funded by CARB. This study will help CARB quantify the dose-response functions of criteria pollutants and air toxics with health outcomes and identify sources of impact for the vulnerable communities. The study will also provide the information needed to include respiratory disease exacerbations as a new endpoint for CARB's health analysis in regulatory processes. The result will support CARB's regulations and policies to reduce emissions from rail and port operations from goods movement that particularly impact environmental justice communities and will promote health equity in research.

3. "Evaluating the Potential for Housing Development in Transportation-Efficient and Healthy, High-Opportunity Areas in California," University of California, Irvine, $599,975, Proposal No. 2847-297

   In order to address chronic housing shortages, enhance socioeconomic mobility, and reduce GHG emissions, California must prioritize development in transportation-efficient, healthy, high-opportunity areas. This project will collect expert input and data to identify and map locations of high priority development areas across the state, evaluate and estimate the potential for new development therein, identify policy levers to promote development, and assess implications for social and racial equity. The work will culminate in data and tools that state and regional agencies, local governments, and other policy- and decision-makers can use to plan and implement new housing development, transportation investments, and other state policies that help the state achieve its housing, climate, air quality, and social and racial equity goals. In addition to mapping tools and a thorough final report, this project will inform policies related to SB 375 along with other policies and programs at other State agencies (e.g., Department of Housing and Community Development , Strategic Growth Council, Governor's Office of Planning and Research, Caltrans, etc.).

4. "Post-COVID Transportation Scenarios: Evaluating the Impact of Policies," University of California, Davis, $199,936, Proposal No. 2848-297

   The COVID-19 pandemic has thoroughly disrupted every aspect of our society, including the transportation sector. This project will develop a set of transportation and land use scenarios with a focus on possible ongoing impacts of the COVID-19 pandemic. These post-COVID scenarios will include a COVID-induced shift away from transit and shared mobility, potential flattening of travel demand due to telecommuting and other behavioral responses, changes in development patterns

away from cities, and potential transition to lower-emissions modes and options. The research team will also develop a list of possible policies and explore the potential impacts and decision factors associated with key policy options. Lastly, the work will culminate in policy recommendations for how CARB and other policymakers can increase the likelihood of beneficial outcomes for post-COVID transportation, including reducing criteria pollutant and GHG emissions, increasing mobility, and advancing equity. This project will inform policies related to SB 375.

III. Discussion of Draft Final Reports:

1. "Estimating Induced Travel from Capacity Expansions on Congested Corridors," University of California, Berkeley, $249,371, Contract No.18RD022

   In California, roadway expansion has historically been used as a strategy to relieve traffic congestion, but a growing body of research now shows that adding freeway lane capacity can lead to increases in VMT—a phenomenon called "induced travel." Accepting this, more transportation planning agencies are pursuing other strategies to reduce congestion, including non-general purpose lanes or managed lanes, like high-occupancy vehicle and high-occupancy/toll lanes. Little is known, however, about the potential induced travel impacts of these types of projects, and there is no standard method for capturing short- and long-term induced travel impacts in transportation demand and land use models. This study fills some of these knowledge gaps using empirical data and statistical analyses and techniques to estimate the induced travel impacts of non-general purpose lane projects. This project uses data from the Caltrans Performance Measurement System to estimate the impacts of non-general purpose lane capacity expansions on speed and traffic flow (i.e. the number of vehicles per hour that pass a particular location) at four study sites in California; the researchers found statistically significant increases in average speed and traffic flow at all study sites. These results will help CARB refine its review of Sustainable Communities Strategies, as required by SB 375, and it will also help improve state and regional transportation demand and land use planning models. As state funds are increasingly distributed to projects that address "congested corridors," the findings will also be important for informing holistic consideration of project impacts before they are selected for funding.

2. "Characterization of Air Toxics and GHG Emission Sources and Their Impacts On Community-Scale Air Quality Levels in Disadvantaged Communities," Fluxsense, $224,650, Contract 17RD021

   Methane (CH_4) is an important short-lived climate pollutant and contributes roughly 9 percent to California's statewide GHG emissions. California has passed several climate legislations, including AB 1383 (Lara, 2015-16) and AB 1496 (Thurmond, 2015-16), which require CARB to use the best available scientific and technical methods to monitor and measure high-emission CH_4 hotspots within the State, to use the information to update relevant programs and policies, and to implement a climate mitigation program to reduce statewide CH_4 emissions by 40 percent below the 2013 levels. Furthermore, certain industrial emissions sources of CH_4, such as oil and gas facilities, are known to co-emit air toxics that have adverse health effects, and their impacts are more pronounced in communities near those sources than they are regionally. Therefore, it is important to understand these emissions, and conduct enhanced community-scale monitoring for air toxics in near-source communities, many of which may be disadvantaged. Additionally, scientific studies have suggested that national and statewide CH_4 emissions inventories may be

underestimated, and real-world emissions measurements may be useful to evaluate source-level emission estimates and understand emission behaviors.

3. “Off-Road Diesel Low-Emission Demo for Nitrogen (NOx), Particulate Matter (PM), and Toxics,” Southwest Research Institute, $499,999, Contract No. 18RD006

   Today, off-road diesel engines in California contribute 29 percent of statewide diesel PM emissions and 11 percent of statewide NO_X emissions. Because of the quick market growth for off-road diesel engines, and the continuous improvement of emission control for on-road engines and vehicles, off-road diesel engines will become increasingly important sources of engine emission-related air pollution. Current off-road diesel engines with output over 56 kW (75 hp) need to meet Tier 4 final engine standards of 0.40 g/kW-hr for NOx and 0.02 g/kW-hr for PM emissions. Some off-road diesel engines in the range of 56 to 560 kW (75 to 750 hp) use diesel particulate filters (DPF) to control PM emissions and selective catalytic reduction (SCR) systems to control NOx emissions. However, many off-road engines employ only SCR for the compliance with the Tier 4 final standards. It is important to characterize the emission rates of criteria and other toxic pollutants from current technology off-road diesel engines with different aftertreatment configurations, and in particular the effect of having a DPF versus not having a DPF, to understand how different technology options affect programs that are developed to assist the state in meeting ambient air quality standards, reduce exposure to toxic air contaminants, and reducing GHG.

IV. Other Business:

1. Update on Research Planning