

JOINT MEETING OF THE ADVISORY COUNCIL AND THE SCIENTIFIC, TECHNICAL, AND MODELING PEER REVIEW ADVISORY GROUP

Wednesday, October 5, 2022 ■ 10:00 a.m.

Pursuant to Assembly Bill 361, the South Coast Air Quality Management District (South Coast AQMD) Joint Meeting of the Advisory Council and the Scientific, Technical, and Modeling Peer Review Advisory Group will only be conducted via video conferencing and by telephone. Please follow the instructions below to join the meeting remotely.

TELECONFERENCE LOCATION

Pursuant to Assembly Bill 361, teleconference locations do not need to be disclosed nor open to the public.

INSTRUCTIONS FOR ELECTRONIC PARTICIPATION

Zoom Meeting Link: https://scaqmd.zoom.us/j/97797636939

Teleconference Dial In +1 669 900 6833 Zoom Meeting ID: 977 9763 6939

Audience will be able to provide public comments through telephone or Zoom connection.

The public may provide comments during the meeting following the directions below. **Once you raise your** hand to provide a comment, you will be added to the speaker list and your name will be called when it is your turn to comment. The host will then unmute your line.

Directions for Video ZOOM on a DESKTOP/LAPTOP or a SMARTPHONE:

- If you would like to make a comment, please click on the "**Participants**" button on the bottom of the screen.
- On a **DESKTOP/LAPTOP**: A list of participants will appear on the right side of the screen. At the bottom of the list, please click on the grey "**Raise Hand**" button.
- On a **SMARTPHONE**: A new screen will pop up with the list of participants. Look for the "**Raise Hand**" button on the screen and click the button.
- This will signal to the host that you would like to provide a comment and you will be added to the list.

Directions for TELEPHONE line only:

• If you would like to make a comment, please dial ***9** on your keypad to signal that you would like to comment.

In addition, a webcast is available for viewing and listening at: http://www.aqmd.gov/home/news-events/webcast

AGENDA

Members of the public may address this body concerning any agenda item before or during consideration of that item (Gov't. Code Section 54854.3(a)). Please notify South Coast AQMD staff of your desire to speak. All agendas for regular meetings are posted at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, at least 72 hours in advance of the regular meeting. Speakers may be limited to three (3) minutes each.

1. Welcome, Introductions, and Roll Calls

- 2. Comply with AB 361 Requirements to Allow the Joint Meeting of the Advisory Council and the Scientific, Technical, and Modeling Peer Review Advisory Group to Meet Remotely
- **3.** Approval of Minutes for Advisory Council Members will vote on the minutes from the Advisory Council Meeting held on August 10, 2022.

4. Approval of Minutes for Scientific, Technical, and Modeling Peer Review Advisory Group

Members will vote on the minutes from the Scientific, Technical, and Modeling Peer Review Advisory Group Meeting held on May 31, 2022.

5. Advisory Council's Comments on the 2022 AQMP Health Effect Analysis

Staff will provide a brief summary of the first Advisory Council Meeting and comments received on the health effect analysis.

6. Updated Health Benefits and Incremental Costs Based on the Revised Draft 2022 AQMP

IEc and South Coast staff will provide an overview of the updated health benefits and incremental costs of the Revised Draft 2022 AQMP, including a follow-up discussion regarding costs of zero-emission infrastructure.

7. Environmental Justice Analysis of Implementing the Revised Draft 2022 AQMP

IEc staff will present an analysis on how health risk is projected to change in environmental justice (EJ) versus non-EJ communities as a result of implementing the Revises Draft 2022 AQMP.

Assistant Deputy Executive Officer, Planning, Rule Development, and Implementation

> Barbara Baird Chief Deputy Counsel Legal

Ian MacMillan

Ian MacMillan

Eric Praske, Ph.D.

Acting Program Supervisor, Planning, Rule Development, and Implementation

Henry Roman

Principal Industrial Economics, Incorporated (IEc)

I. Elaine Shen, Ph.D.

Planning and Rules Manager, Planning, Rule Development, and Implementation

Stefani Penn, Ph.D.

Senior Associate IEc

Ian MacMillan

8. Job Impacts of Implementing the Revised Draft 2022 AQMP

Staff will present an overview of the estimated job impacts associated with the updated costs and benefits of implementing the Revised Draft 2022 AQMP and how the impacts would be distributed across the region.

9. Cost-Effectiveness

Staff will discuss the newly proposed cost-effectiveness thresholds in the Revised Draft 2022 AQMP.

10. Other Business

Any member of the Advisory Council, the Scientific, Technical, and Modeling Peer Review Advisory Group, or their alternates, may discuss an item not appearing on the posted agenda on his or her own initiative or in response to questions posed by the public. A member may ask a question for clarification, may make a brief announcement or report on his or her own activities, provide a reference to staff regarding factual information, request staff to report back at a subsequent meeting concerning any matter, or may take action to direct staff to place a matter of business on a future agenda (Govt. Code Section 54954.2).

11. Public Comment

Members of the public may address the Advisory Council or Scientific, Technical, and Modeling Peer Review Advisory Group concerning any agenda item before or during consideration of that item (Govt. Code Section 54954.3). All agendas for regular meetings are posted at South Coast AQMD Headquarters, 21865 Copley Drive, Diamond Bar, California, at least 72 hours in advance of a regular meeting. At the end of the regular meeting agenda, an opportunity is also provided for the public to speak on any subject within the Advisory Council's or Scientific, Technical, and Modeling Peer Review Advisory Group's authority. Speakers may be limited to three (3) minutes each.

12. Next Meeting – To Be Determined

Document Availability

All documents (i) constituting non-exempt public records, (ii) relating to an item on an agenda for a regular meeting, and (iii) having been distributed to at least a majority of the Advisory Council and the Scientific, Technical, and Modeling Peer Review Group after the agenda is posted, are available at Advisorv Advisory Council webpage: https://www.aqmd.gov/nav/about/groups-committees/aqmp-advisory-group/advisory-council---aqmp, the Scientific, Technical, and Modeling Peer Review Advisory Group webpage: https://www.aqmd.gov/nav/about/groups-committees/stmpradvisory-group, and/or Meeting Agendas and Minutes webpage: http://www.aqmd.gov/home/news-events/meeting-agendasminutes.

Americans with Disabilities Act and Language Accessibility

Disability and language-related accommodations can be requested to allow participation in the Joint Meeting of the Advisory Council and the Scientific, Technical, and Modeling Peer Review Advisory Group. The agenda will be made available, upon request, in appropriate alternative formats to assist persons with a disability (Gov't Code Section 54954.2(a)). In addition, other documents may be requested in alternative formats and languages. Any disability or language-related accommodation must be requested as soon as practicable. Requests will be accommodated unless providing the accommodation would result in a fundamental alteration or undue burden to the District. Requests can be sent to I. Elaine Shen, Ph.D., Planning and Rules Manager, at (909) 396-2715 from 7:30 a.m. to 6:00 p.m., Tuesday through Friday, or to <u>SocioEcon@aqmd.gov</u>.

I. Elaine Shen, Ph.D.

Peter Evangelakis, Ph.D.

Senior Vice President, Economics & Consulting Regional Economic Models, Inc. (REMI)

Ian MacMillan

Advisory Council or Scientific, Technical, and Modeling Peer Review Advisory Group Members

Members of the Public

RESOLUTION 22-1

A RESOLUTION OF THE ADVISORY COUNCIL AND SCIENTIFIC, TECHNICAL AND MODELING PEER REVIEW ADVISORY GROUP (STMPRAG) OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RECOGNIZING THE PROCLAMATION OF A STATE OF EMERGENCY BY GOVERNOR NEWSOM ON MARCH 4, 2020 AND THAT LOCAL OFFICALS CONTINUE TO RECOMMEND MEASURES TO PROMOTE SOCIAL DISTANCING; AND AUTHORIZING FULLY OR PARTIALLY REMOTE TELECONFERENCE MEETINGS OF THE ADVISORY COUNCIL AND STMPRAG OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT, FOR THE PERIOD OF OCTOBER 5, 2022 THROUGH OCTOBER 6, 2022 PURSUANT TO PROVISIONS OF THE BROWN ACT.

WHEREAS, the Advisory Council and STMPRAG are committed to preserving and nurturing public access and participation in all meetings subject to the provisions of the Ralph M. Brown Act (Cal. Gov. Code §§54950-54963, hereafter Brown Act); and

WHEREAS, pursuant to the provisions of the Brown Act, all meetings of legislative bodies of the South Coast AQMD, which include the South Coast AQMD Governing Board, all Brown Act standing committees ultimately reporting to the South Coast AQMD Governing Board, and all advisory committees and groups subject to the Brown act, (collectively, hereinafter, "legislative bodies"), are required to be open and public so that any member of the public may attend, participate, and watch the South Coast AQMD's legislative bodies conduct their business; and

WHEREAS, the Brown Act Government Code §54953(e), makes provisions for remote teleconferencing participation in meetings by members of a legislative body, without compliance with the requirements of Government Code §54953(b)(3), subject to the existence of certain conditions; and

WHEREAS, a required condition is that a state of emergency has been declared by the Governor pursuant to Government Code §8625, proclaiming the existence of conditions of disaster or of extreme peril to the safety of persons and property within the state caused by conditions as described in Government Code §8558; and

WHEREAS, on March 4, 2020 the Governor proclaimed a State of Emergency to exist in California as a result of the threat of the novel coronavirus (COVID-19); and

WHEREAS, the jurisdiction of the South Coast AQMD includes portions of the Counties of Los Angeles, Orange, Riverside, and San Bernardino areas as set forth in Health & Safety Code §40410 and South Coast AQMD Rule 103; and WHEREAS, the South Coast AQMD headquarters is located in the County of Los Angeles; and

WHEREAS, it is further required that state or local officials have imposed or recommended measures to promote social distancing, or, the legislative body meeting would present imminent risks to the health and safety of attendees; and

WHEREAS, local officials still recommend measures promoting social distancing; and

WHEREAS, the spread of COVID-19 poses a continued risk to the health and safety of members of the South Coast AQMD legislative bodies, South Coast AQMD staff, and members of the general public who attend such meetings in that unvaccinated or partially vaccinated persons are at a high risk of contracting COVID-19 and even fully vaccinated persons can contract and potentially unknowingly spread COVID-19; and

WHEREAS, the Advisory Council and STMPRAG of the South Coast AQMD do hereby find that they shall conduct their meetings without compliance with paragraph (3) of subdivision (b) of Government Code §54953, as authorized by subdivision (e) of §54953, and that they shall comply with the requirements to provide the public with access to the meetings as prescribed in paragraph (2) of subdivision (e) of §54953; and

WHEREAS, the Advisory Council and STMPRAG -- of the South Coast AQMD will continue to ensure access to their meetings by making them available telephonically and via virtual access for both members of the legislative bodies and the general public; and

WHEREAS, a notice of meetings along with information regarding all methods which may be used for public participation in such meetings will continue to be posted at the South Coast AQMD's headquarters, posted on the South Coast AQMD's website, provided to anyone who requests such information, and clearly printed on any agendas produced for such meetings.

NOW, THEREFORE, BE IT RESOLVED, that the Advisory Council and STMPRAG hereby find that the highly contagious nature of COVID-19 poses an imminent risk to large numbers of persons meeting indoors in a single location; and

BE IT FURTHER RESOLVED, that the Advisory Council and STMPRAG hereby find that the Governor of California issued a Proclamation of Emergency on March 4, 2020; and

BE IT FURTHER RESOLVED, that the Advisory Council and STMPRAG hereby find that local officials continue to impose or recommend measures to promote social distancing in the South Coast AQMD's jurisdiction and where the South Coast AQMD's headquarters is located; and

BE IT FURTHER RESOLVED, that the Advisory Council and STMPRAG requests staff to take all actions necessary to carry out the intent and purpose of this Resolution, including, conducting open and public meetings in accordance with Government Code section 54953(e) and other applicable provisions of the Brown Act; and

BE IT FURTHER RESOLVED, that this resolution shall take effect immediately upon adoption and remain in effect until October 6, 2022.

DATE:_____

ADVISORY COUNCIL AND STMPRAG SECRETARY



ADVISORY COUNIL MEETING MINUTES

Wednesday, August 10, 2022 2:00 p.m.

1. Welcome and Introductions

Dr. Sarah Rees, Deputy Executive Officer of South Coast AQMD's Planning, Rule Development, and Implementation Division, called the virtual meeting to order at 2:02 p.m.

2. Draft Health Effects Analysis

Dr. Rees presented the draft analysis of the health effects associated with criteria pollutants, described in detail in Appendix I of the Draft 2022 Air Quality Management Plan (AQMP). She also presented the USEPA's recent review on PM and ozone National Ambient Air Quality Standards (NAAQS) as well as the Advisory Council mechanics and objectives.

Comments from Advisory Council and Staff Responses:

Ana Gonzalez requested clarification on the purpose of the Advisory Council. Staff explained the function of the Advisory Council is established in the California Health and Safety Code and is focused on advising staff on health effects as staff evaluates and incorporates them into the Draft 2022 AQMP. The control strategy and other AQMP related inquiries are discussed through separate public processes such as Working Groups and AQMP and STMPR Advisory Groups.

Ken Chawkins asked about the comparative air quality impacts on race, ethnicity, and geographic location. Staff responded that ozone is a secondary pollutant which takes time to form and primarily affects locations downwind from emission source areas. Thus, impacts are usually not disproportionate for residents who live adjacent to highways and large industrial facilities. Nevertheless, staff will evaluate any disproportionate health impacts and health benefits as part of the socioeconomic analysis for the 2022 AQMP. Health effects on environmental justice communities and sensitive groups are also addressed in Chapter 8 and Appendix I of the 2022 AQMP, respectively.

Natalie Hernandez asked for more information on the health impacts associated with extreme heat events and how they are addressed in this analysis. Staff acknowledged that heat events can degrade air quality and that there could be synergistic health effects associated with high temperatures and air pollution, especially for sensitive groups. Staff will further investigate these impacts.

Yassi Kavezade inquired regarding the socioeconomic analysis, including health cost savings and health benefits, as well as how the health benefits from this AQMP influence control measures/rulemaking. Staff responded that the 2016 AQMP socioeconomic analysis evaluated health cost savings and health benefits in attaining federal air quality standards. The 2022 AQMP socioeconomic analysis is under development and will be released for public review this fall. Staff concurred that conducting a health benefit analysis for rules, especially those that achieve significant reductions, is an important exercise and will be considered.

Yassi Kavezade asked if staff could clarify how this plan will achieve interim emission reductions while ensuring that control measures are as specific as possible. Staff responded that South Coast AQMD has an obligation under California law to take all feasible measures to reduce emissions as expeditiously as practicable. Staff further strives to ensure that control measures are defined and as specific as possible, while recognizing that some measures cannot be very specific (e.g., black box measures).

Bonnie Holmes-Gen suggested to refer to a joint comment letter by CARB and OEHHA to USEPA regarding the need to strengthen the ozone NAAQS, and more recent (2019 to present) studies/research on health effects, especially in disadvantaged communities. Staff welcomed the suggestion to include more literature in the analysis and offered to cite the referenced letter in the appendix.

Jennifer Bullard requested clarification regarding the release of the socioeconomic analysis and the Advisory Council's role in reviewing the analysis. Staff responded that the Advisory Council's role is to focus on the health effects, while the socioeconomic analysis will follow a separate process to accommodate public review and comment.

Dr. Xiangmei (May) Wu asked if research published subsequent to USEPA's 2019 Integrated Science Assessment (ISA) was considered. She also asked about cumulative health impacts of multiple air pollutants. Staff responded that recent research was included in the review, but welcomed the inclusion of additional publications that may have been missed. Regarding cumulative, multipollutant health effects, staff responded that there are indeed cumulative effects, but the difficulty lies in the quantification and evaluation of those effects. Any suggestions on approaches were welcomed.

Adonis Galarza inquired regarding how toxics and criteria air pollutants have affected sensitive age groups and the impact of a dried lakebed on air quality and exposure. Staff responded that the South Coast AQMD operates a comprehensive air pollutant monitoring network that includes the Salton Sea. However, this AQMP focuses on man-made emissions and reducing those emissions. The impacts associated with the Salton Sea are analyzed separately. Staff offered to share studies investigating health impacts on sensitive populations.

Ana Gonzalez asked about the exposure to diesel emissions and the increasing diesel VMTs associated with warehouse proliferation. Staff responded that PM levels, including diesel PM, will decrease over time due to various regulations and programs on fleets, even if VMT from heavy-duty trucks increases. The Multiple Air Toxics Exposure Study provides more details on the diesel PM related health effects.

Jo Kay Ghosh asked if the growth in VMT is accounted for in emissions projection and control measures. Staff confirmed that detailed VMT growth projections by vehicle type are included in the 2022 AQMP.

David Rothbart expressed a need to discuss the limitations of South Coast AQMD's regulatory authority and the influence of certain sources on the mortality rate. Staff responded that this topic would be better suited for discussion in the context of the socioeconomic analysis results. Staff may consider reconvening the Advisory Council once the analysis is published. Jo Kay Ghosh requested clarification on the reason why wildfire health impacts and COVID health outcomes are carved out in their own section. Staff responded that those topics were separated because they are emerging issues of interest.

Ana Gonzalez asked when the next AQMP Advisory Group meeting would be scheduled. Staff responded that an AQMP Advisory Group meeting has not been scheduled yet, but the next AQMP-related events are the regional public hearings in October.

Ken Chawkins asked what South Coast AQMD staff considers to be the overarching feedback and critical items to take away from this Advisory Council meeting. He also emphasized the importance of race and ethnicity in the socioeconomic analysis. Staff responded that there is a tremendous amount of interest in the socioeconomic analysis to see the connection between what the health impacts are, how they manifest in the area, and what the benefits are. There were also some comments on synergistic effects, particularly effects between the overlap of higher temperatures and the associated effects on air pollution. Staff confirmed that race and ethnicity will be considered.

Bonnie Holmes-Gen reiterated that there is missing information in the USEPA's ISAs which needs to be reflected in this health effects analysis to provide a more comprehensive picture of the health impacts. She also requested to confirm if there is an additional meeting that discusses how the health appendix information was used in the socioeconomic analysis. Staff responded that results from other literature that was published after the most recent ISA supplements would be incorporated into Appendix I. Staff also confirmed that there will be an additional meeting regarding the socioeconomic analysis.

Jennifer Bullard requested to see the health effects of pollutants by agency jurisdiction (e.g., federal, state, regional). Staff noted the comment.

Irene Burga requested clarification regarding the sources of pollution and the health effects associated with those sources. Staff responded that detailed information on the emissions inventory is in Appendix III of the 2022 AQMP.

Comments from Public and Staff Responses:

Laura Rosenberger inquired on the level of pollution from incinerators in comparison to the air pollution in general, the link between Alzheimer's and air pollution, and the impact of lead poisoning on brain cells. Staff responded that South Coast AQMD does not disaggregate pollution associated with incinerators; however, there are a variety of air toxics associated with incinerators. They are subject to permitting requirements, controls installed, and emission minimization requirements. Some studies suggest a link between Alzheimer's and fine particulate matter. This is an emerging area of research. Leaded paint was not phased out until 1978, but it is still present in old housing stock and apartments. Thus, children are still being exposed and it is an issue that South Coast AQMD is aware of.

Gloria Cruz inquired whether health impacts are based on hospitalization data, as this may underrepresent non-English speaking communities who do not seek medical care or do so at local community clinics. Staff responded that the socioeconomic analysis of the 2022 AQMP is not based on actual hospitalization rates. Rather, the socioeconomic impact analysis uses models based on literature that shows the relationships between different pollutants and the associated health impacts to estimate hospitalizations, premature deaths, and other health impacts from air pollution. Gloria Cruz also inquired if there has been analysis regarding the type of pollutants and emission rates in communities near railroads and how emissions from locomotives are quantified. Staff responded that South Coast AQMD is currently in the rulemaking process for railyards and is seeking to gain a better understanding of railyard emissions. Staff is aware of the increase in railroad activity and uses growth factors to predict future activity for railyards and other emission sectors.

Gabriela Mendez inquired regarding opportunities for conducting outreach in Environmental Justice communities (e.g., health fairs) to help collect data on hospitalization rates. Staff responded that data on hospitalization rates or public health metrics are not collected, but staff welcomes ideas to improve outreach so that people are more aware of the impacts of air quality on their health.

3. Other Businesses

No additional comments, announcements, or reports from the Advisory Council members.

4. Public Comment

<u>Comments from Advisory Council and Staff Responses</u>: No comments from the Advisory Council on this agenda item.

<u>Comments from Public and Staff Responses</u>: No comments from the Public on this agenda item.

Members Present (15)

Adonis Galarza, Alianza Coachella Valley Ana Gonzalez, Center for Community Action and Environmental Justice Bill La Marr. California Alliance of Small Business Bonnie Holmes-Gen, California Air Resources Board (CARB) David Rothbart, The Los Angeles County Sanitation Districts and Southern California Alliance of Publicly Owned Treatment Works Greg Osterman, Jet Propulsion Laboratory, NASA Irene Burga, GreenLatinos Jennifer Bullard, Orange County Business Council Jo Kay Ghosh, Heluna Health Ken Chawkins, Chawkin Communications Consulting Michael Keinman, University of California, Irvine Scott Weaver, Ramboll Natalie Hernandez. Climate Resolve Yassi Kavezade, Sierra Club Xiangmei (May) Wu, Office of Environmental Health Hazard Assessment

Public Attendees and Interested Parties (54)

Alan Caldwell Alison Torres, Eastern Municipal Water District Amy Jeffries Amy Lilly, Mercedes-Benz

Anthony Bonilla Archana Agrawal Bill Quinn Craig Sakamoto, PBF Energy Curtis Coleman, Southern California Air Quality Alliance Dean West Dinh Quach, CARB Nichole Quick Peter Evangelakis, REMI Gabriela Mendez Gloria Cruz Ih Shan Jamie Bartolome Janet Bernabe Joaquin Catillejos John Heintz John Henkelman, Ventra County APCD John Peherson Julia Lester, Ramboll Karin Fickerson Kim Fuentes Kristy Monji-Chung Lakshmi Jayaram, Ramboll Laura Rosenberger Lauren De Valencia Lauren Nevitt, Sunrun Lee Kindberg, Maersk Les Swizer Leslie Velasquez Lijin Sun, SCAG Liz Sena Lori Huddleston. LA Metro Luis Amezcua Mark Abramowitz Mark Taylor Marven Norman, CCAEJ Mary Valdeman, Yuhaaviatam/Serrano Land Patty Senecal, Western States Petroleum Association Peter Okuroswki Ramine Cromartie, Western States Petroleum Association Resa Barilla Richard Parks, Redeemer Community Partnership Robert Freeman, LAWA Scott King, CARB Shayne Seever Steven Slater Steven Wadding

Thomas Jelenić Tim French Ursula Lai

South Coast AQMD Staff Present (23)

Alicia Lizarraga, Senior Public Affairs Manager Anthony Tang, Information Technology Supervisor Barbara Baird, Chief Deputy Counsel Barbara Radlein, Program Supervisor Brian Choe, Program Supervisor Britney Gallivan, Acting Program Supervisor Daphne Hsu, Principal Deputy District Counsel Elham Baranizadeh, AQ Specialist Emily Yen, AQ Specialist Farzaneh Khalaj, Assistant AQ Specialist Ian MacMillan, Assistant Deputy Executive Officer Jong Hoon Lee, AQ Specialist Kathryn Roberts, Deputy District Counsel II Kayla Jordan, Assistant AQ Specialist Kevin Ni, AQ Specialist Khadeeja Abdullah, Contractor Lane Garcia, Program Supervisor Marc Carreras-Sospedra, AQ Specialist Ranil Dhammapala, Senior Meteorologist Rosalee Mason, Administrative Assistant I Sang-Mi Lee, Planning and Rules Manager Sarah Rees, Deputy Executive Officer Sina Taghavaee, AQ Specialist

DRAFT MAY 31, 2022 SCIENTIFIC, TECHNICAL & MODELING PEER REVIEW MEETING MINUTES

(To be submitted to the South Coast AQMD Governing Board Mobile Source Committee)

COMITTEE MEETING DATE: October 21, 2022 AGENDA NO.

REPORT: Scientific, Technical & Modeling Peer Review Meeting Minutes

SYNOPSIS: The Scientific, Technical & Modeling Peer Review Advisory Group held a remote meeting on Tuesday, May 31, 2022. The following is a summary of the meeting.

RECOMMENDED ACTION: Receive and file.

SLR:IM:IES:CN:WS

Advisory Group Members

Present:	Jeremy Avise, Chief of Modeling & Meteorology, CARB				
	John Cho, Southern California Association of Governments				
	Ken Davidson, U.S. EPA Region IX				
	Peter Evangelakis, Vice President, REMI, Inc.				
	Gloria González-Rivera, University of California, Riverside				
	Ralph Morris, Principal, Ramboll				
	Anthony Oliver, Senior Economist, CARB				
Absent:	Greg Osterman, Jet Propulsion Laboratory/NASA				
	Robert Kleinhenz, Kleinhenz Economics				
	Gabriele Pfister, National Center for Atmospheric Research				
	Fred Lurmann, Sonoma Technology Inc.				
	Rynda Kay, U.S. Environmental Protection Agency, Region 9				
	Alex Gunther, University of California, Irvine				
	Pablo Saide, University of California, Los Angeles				
	Kelly Barsanti, University of California, Riverside				

For additional details of the Scientific, Technical & Modeling Peer Review Meeting, please refer to the Webcast at: Webcast

AGENDA ITEM:

- 1. Welcome, Introduction, and Approval of March 16th STMPR Meeting Minutes Ian MacMillan, Assistant Deputy Executive Officer/Planning, Rule Development & Implementation, welcomed STMPR members and introduced staff. The STMPR Advisory Group approved the March 16th meeting minutes. For additional details, please refer to the <u>Webcast</u> beginning at 00:00.
- Preliminary Costs of the 2022 AQMP South Coast AQMD Measures Brian Vlasich, Air Quality Specialist/Planning Rule Development and Implementation, provided a summary on the preliminary costs of the Draft 2022 AQMP control measures.

Harvey Eder, Public Solar Power Coalition, requested that the 2022 AQMP residential control measures address cooling and solar renewables in the cost-effectiveness and public health benefits analyses. For additional details, please refer to the <u>Webcast</u> beginning at 17:09.

3. 2022 State Strategy for the State Implementation Plan: Economic Analysis Approach

Dr. Jie Zhou, Office of Economic and Policy Analysis Section, California Air Resources Board (CARB), presented a summary of CARB's economic impact analysis approach for the State Implementation Plan (SIP) and next steps for the publication and outreach for the next draft of the SIP.

Mr. Eder expressed concerns regarding renewable natural gas and support for solar power. For additional details, please refer to the <u>Webcast</u> beginning 38:10.

4. Preliminary Public Health Benefits Associated with the 2022 AQMP Implementation

Henry Roman and William Raich, Industrial Economics, Inc. (IEc), presented a summary of the preliminary public health impacts of the Draft 2022 AQMP.

Dr. Ken Davidson, United States Environmental Protection Agency (U.S. EPA), inquired whether there were any additional health endpoints considered with California or South Coast specific baseline data. Mr. Roman responded that his team has been looking for local health endpoint data where possible and that county level data was obtained from the U.S. EPA Environmental Benefits Mapping and Analysis Program (BenMAP), and data obtained from the California Department of Health Care Access and Information (HCAI) are more refined and current than BenMAP. Dr. Elaine Shen, Planning and Rules Manager/Planning, Rule Development and Implementation, also responded that the analysis also utilizes data from the California Department of Finance data to project future mortality rates stratified by age group, gender, and other demographic units. For additional details, please refer to the <u>Webcast</u> beginning 1:20:32.

Dr. James Enstrom, Scientific Integrity Institute, expressed concern that the results presented by IEc misrepresent the public health impacts from ozone and particulate matter (PM) exposures in the South Coast region. Dr. Enstrom commented that the measured personal individual exposures in the South Coast region are far below the reported monitor levels and national ambient air quality standards (NAAQS) for ozone and PM, and asked that IEc staff consider two scientific articles Dr. Enstrom published finding the lack of mortality effects of PM_{2.5}. Dr. Enstrom expressed desire to engage with South Coast AQMD staff to further discuss health impacts. Staff welcomed discussions with Dr. Enstrom. For additional details, please refer to the <u>Webcast</u> beginning 1:29:41.

Mr. Mark Abramowitz, Community Environmental Services, commented on the importance to include the most conservative data to prevent the underestimation of air adverse quality impacts on public health and to weigh studies with differing conclusions appropriately when conducting health impact analyses. For additional details, please refer to the <u>Webcast</u> beginning 1:37:35.

Dr. Stan Young, former statistician at a pharmaceutical company, commented that ozone does not pose health risks based on multiple sources and that CARB data sets used for ozone health impact analyses be publicly available. For additional details, please refer to the <u>Webcast</u> beginning 1:42:38.

OTHER MATTERS:

5. Other Business

Mr. MacMillan presented on the proposed cost-effectiveness approach in the Draft 2022 AQMP for the South Coast AQMD Control Measure Implementation.

Mr. Abramowitz expressed concern with increasing cost-effectiveness thresholds based on cost of living, given that the South Coast AQMD has not identified ways to achieve standards under the cost-effectiveness thresholds and requested that staff not prioritize more costly stationary source measures over less costly mobile source measures. For additional details, please refer to the <u>Webcast</u> beginning 1:50:41.

6. Public Comment on Non-Agenda Items None.

7. Next Meeting Date TBD

Adjournment The meeting adjourned at 11:55 a.m.

Attachments

Advisory Council's Comments on the Health Effects Analysis

South Coast

Advisory Council – STMPR Joint Meeting October 5, 2022

Agenda Item 5

South Coast Air Quality Management District

Advisory Council Meeting #1

- First Advisory Council meeting on August 10, 2022
- Staff presented on:
 - The Advisory Council mechanics and objectives
 - U.S. Environmental Protection Agency (U.S. EPA)'s recent review on fine particulate matter and ozone National Ambient Air Quality Standards (NAAQS)
 - Health effects analysis of six criteria air pollutants



Key Stakeholder Comments

- Received six comment letters for Appendix I, Health Effects Analysis
- Request to review socioeconomic analysis and health benefits associated with the 2022 AQMP
- Air quality and health impacts differentiated by race, ethnicity, and geographic location
- Request to assess the dual impacts of heat waves on air pollution and health effects
- Discuss limitations of studies used for health impacts of COVID-19
- Evaluate the health effects of cumulative exposure to multiple pollutants

Key Stakeholder Comments (cont'd)

- Utilize satellite data in health effects and air quality analysis
- Analyze railyard emissions and associated health impacts
- Address vulnerable populations, including low-income communities and communities of color
- Include recent epidemiological studies:
 - Conducted in Southern California or California in general
 - Published since USEPA's Integrated Science Assessments for Ozone and Particulate Matter¹
- Comment on health effects of ozone below the current 70 ppb ozone standard



Draft Socioeconomic Report for the Revised Draft 2022 AQMP

Updated Draft Public Health Benefits and Incremental Costs

> South Coast Air Quality Management District

> > October 5, 2022

Current Status

- Revised Draft 2022 Air Quality Management Plan (AQMP) released September 2
 - Available at: <u>http://www.aqmd.gov/2022aqmp</u>
- Draft Socioeconomic Report released October 1
 - Analyzes benefits, costs, economic, and environmental justice impacts of the Revised Draft 2022 AQMP
 - Preliminary costs and health benefits of Draft 2022
 AQMP discussed at the May 31st STMPR Meeting
 - Available at: <u>http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis</u>



Updated Draft Public Health Benefits

IEc

Public Health Benefits of South Coast AQMD 2022 AQMP: Updated Draft Estimates

Presented by: Industrial Economics, Inc. Henry Roman

October 5, 2022

Updates to Benefits Estimates

- Ozone and PM2.5 projections
 - Revised baseline emissions inventory to be consistent with AQMP and State Implementation Plan (SIP)
 - Updated emissions reductions to reflect revised baseline
 - Revised region's carrying capacity* to 60 tpd NOx
- Added 2032 estimate
- Interpolation of benefits in intervening years
- Incorporation of local datasets
 - California-specific zip code level morbidity incidence data from HCAI
 - California income growth data
 - California inflation data

^{*} Maximum emissions permissible to still attain clean air standards by 2037

Updates to Benefits Estimates

- Additional IEc changes
 - Restricted the age-range of AMI to 65+
 - Expanded long-term Ozone impacts to reflect a full-year of exposure, rather than seasonal
 - Restricted the Ozone season assessed to May Sept (previously BenMAP-CE analyzed April - September)

INDUSTRIAL ECONOMICS, INCORPORATED



Reduction in Average Daily PM2.5 Concentration (ug/m3)

----- Major Highways





Reduction in Average Daily 8-hour Max Ozone Concetration (ppb)

----- Major Highways



Updated Projected Air Quality Changes in 2037

Updated Draft Health Impacts - Mortality



----- Major Highways

Avoided Mortality in 2037 (Per Grid)



Updated Draft Health Impacts - Mortality (cont'd)

Avoided Premature Mortality					
	2032	2037			
Mortality, Respiratory / Mortality, All Cause	1,619	3,031			
Ozone	339	744			
Los Angeles	124	309			
Orange	48	85			
Riverside	84	164			
San Bernardino	83	186			
РМ	1,280	2,287			
Los Angeles	821	1,471			
Orange	184	300			
Riverside	128	236			
San Bernardino	146	279			

INDUSTRIAL ECONOMICS INCORPORATED INCOMING INCOMPANY INTERVICE INTERVI

Updated Draft Health Impacts - Morbidity

Reduced Morbidity Incidence	2032	2037
Long-Term Ozone Exposure		
Asthma, New Onset	4,506	9,501
Short-Term Ozone Exposure		
Asthma Symptoms (Chest Tightness,		
Cough, Shortness of Breath, Wheeze)	795,164	1,741,652
ED Visits, Asthma	286	649
ED Visits, All Respiratory	655	1,501
HA, Asthma	8,244	18,292
Minor Restricted Activity Days	318,008	710,412
School Loss Days, All Cause	96,176	208,938

Reduced Morbidity Incidence	2032	2037
Long-Term PM2.5 Exposure		
Asthma, New Onset	1,903	3,280
HA, Alzheimer's Disease	131	239
HA, Parkinson's Disease	54	100
Incidence, Hay Fever/Rhinitis	9,024	15,726
Incidence, Lung Cancer (non-fatal)	107	191
Short-Term PM2.5 Exposure		
Acute Myocardial Infarction, Nonfatal	18	35
Asthma Symptoms, Albuterol use	316,362	554,968
ED Visits, Asthma	66	117
ED Visits, All Cardiac Outcomes	138	255
ED Visits, All Respiratory	325	582
EHA, Asthma	3	6
HA, All Cardiac Outcomes	47	87
HA, All Respiratory	132	245
Incidence, Ischemic Stroke	73	138
Incidence, Out-of-Hospital Cardiac Arrest	13	23
Minor Restricted Activity Days	430,241	755,830
Work Loss Days	73,341	129,022

Updated Draft Health Benefits - Total

- The draft total value of quantified public health benefits:
 - \$20.0 Billion in 2032
 - \$40.5 Billion in 2037
 - \$134.3 Billion total from 2025 2037 in 2022 present value (\$2021) using a 4% DR

	Monetized Public Health Benefits (Billions of \$2021)				
			Annual Average	Present Value	
	2032	2037	(2025-2037)	(2025-2037)	
Mortality-related benefits	\$19.3	\$39.1	\$18.7	\$129.6	
Long-Term Ozone Exposure	\$4.0	\$9.6	\$4.2	\$29.4	
Long-Term PM2.5 Exposure	\$15.3	\$29.5	\$14.4	\$100.2	
Morbidity-related benefits	\$0.7	\$1.4	\$0.7	\$4.7	
Grand Total	\$20.0	\$40.5	\$19.4	\$134.3	



Henry Roman HRoman@indecon.com Will Raich <u>WRaich@indecon.com</u>

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Updated Draft Incremental Costs

Summary of Draft Updated Incremental Costs*

Measures	Annual Amortized Average 2023-2037** (Billions of 2021 dollars)					Percent of Total Annualized
	Remaining Incremental Cost		Incentives		Total Incremental Cost	Cost
Stationary and Area Sources	\$1.12	+	\$0.12	=	\$1.24	43.5%
Mobile Sources	\$1.44	+	\$0.17	=	\$1.61	56.5%
All Sources	\$2.56	+	\$0.29	=	\$2.85	100%

* Costs are incremental to the business-as-usual scenario without the Revised Draft 2022 AQMP. Incremental costs were quantified for control measures with quantified emission reductions only.

****** Costs associated with deployed controls may continue to be incurred beyond 2037.

Costs and NOx Reductions Breakdown



Costs by Industry

South Coast AQMD Measures

Sector	Present Value of Incremental Cost (Millions of 2021 Dollars)	Amortized Annual Average, 2023-2037 (Millions of 2021 Dollars)
Oil and Gas Extraction	\$248.6	\$6.9
Utilities	\$9,565.0	\$286.7
Construction	\$99.4	\$6.1
Manufacturing	\$4,127.4	\$126.9
Wholesale trade	\$110.4	\$3.5
Retail trade	\$57.3	\$1.7
Transportation & Warehousing	\$96.6	\$2.5
Real Estate & Rentals	\$153.2	\$4.4
Administrative and Waste Management Services	\$459.8	\$14.4
Health Care and Social Assistance	\$564.4	\$15.9
Restaurants & Accommodation	\$2,069.3	\$75.2
Subtotal of All Industries with Specific Costs	\$18,122.3	\$560.9
Subtotal of Private Industries with Across-the- Board costs	\$7,469.7	\$153.3
Consumers	\$2,960.5	\$144.8
Government Spending	\$5,777.4	\$296.1
Total	\$34,329.9	\$1,155.1

http://www.aqmd.gov/docs/default-source/clean-air-plans/draft-socioeconomic-report.pdf

CARB Measures & Fed. Actions

Industry or Sector ²¹³	Cumulative Change in Production Costs (\$2020M) ²¹⁴
Air transportation (Industry)	\$14,756
Transportation and Public Utilities (Sector)	\$13,876
Truck transportation (Industry)	\$9,119
Construction (Sector)	\$4,458
Retail and Wholesale (Sector)	\$4,251
Services (Sector)	\$3,893
Increased prices for commodities in motor vehicles and parts, furnishings and durable household equipment, recreational goods and vehicles and other durable goods, clothing and footwear, and other nondurable goods ²¹⁵	\$3,618
Aggregation of Forestry, Mining, Utilities, Construction, and Manufacturing (Industry)	\$3,450
Transit and ground passenger transportation (Industry)	\$2,953
Scenic and sightseeing transportation and support activities for transportation (Industry)	\$2,802
Personal and laundry services ²¹⁶ (Industry)	\$2,158

https://ww2.arb.ca.gov/sites/default/files/2022-09/2022 State SIP Strategy App A.pdf

8
Follow-up Discussion on Zero Emission Technologies

ZE Technology in Revised Draft 2022 AQMP

- 100% ZE technology pursued broadly in all sectors
 - However, it does not exist and/or isn't feasible for all applications
 - ZE technology will continue to be pursued during rulemaking, even if not identified as currently feasible in AQMP
- Current cost of ZE technologies are higher than conventional combustion in nearly all applications

South Coast AQMD Stationary & Area Source Control Measures*



Costs of ZE Technology

ZE Equipment

- Hardware
- Installation
- Operations and maintenance
- Building electrification
- Stationary source ZE equipment

Energy Systems

- Energy supply (e.g., power plants, microgrids)
- Regional transmission
- Local distribution

'Soft' Costs

- Land use (e.g., site acquisition, site redesign, easements, etc.)
- Opportunity costs (e.g., permitting delays, new technology malfunctions)
- Marketing
- Employee training
- Future-proofing (e.g., overbuilding infrastructure to prepare for future changes)
- Stranded assets (e.g., new plug technology replacing older plugs)
- Climate resiliency

Increasingly Challenging to Quantify

One of Many Challenges – Energy Supply

- CEC, CPUC, and CARB studied impacts to grid from statewide policies focused on decarbonization
- Electric generation capacity *needs to approximately double* in next two decades (SB100 report)
 - Average of 6 to 7 GW of new generation every year statewide
 - 8 to 9 GW per year for 100% electricity generation with no combustion
 - In past decade, the average new solar + wind addition is 1.3 GW per year, with a max annual increase of 3.7 GW
- Electrification will play significant role with zero emissions, but hydrogen's role is still emerging
 - Fuel cell vehicles, stationary applications, electrical grid support



https://www.energy.ca.gov/publications/ 2021/2021-sb-100-joint-agency-reportachieving-100-percent-clean-electricity

South Coast AQMD will continue to support state efforts to estimate costs from this transition

Next Steps

Next Steps for AQMP Socioeconomic Report

South Coast AQMD Public Hearing December 2, 2022

> Release Draft Final Socioeconomic Report Mid-November, 2022

> > Public Comment Period for Draft Socioeconomic Report October 2 - November 2, 2022



South Coast AQMD Regional Public Hearings October – November, 2022



Released Draft Socioeconomic Report October 1, 2022

Staff Contacts

Socioeconomic Analysis	AQMP Questions and Inquiries
Brian Vlasich Air Quality Specialist <u>bvlasich@aqmd.gov</u> 909.396.2176	Sang-Mi Lee, Ph.D. Planning & Rules Manager <u>slee@aqmd.gov</u> 909.396.3169
Elaine Shen, Ph.D. Planning & Rules Manager <u>eshen@aqmd.gov</u> 909.396.2715	Ian MacMillan Assistant Deputy Executive Officer Planning, Rule Development & Implementation <u>imacmillan@aqmd.gov</u> 909.396.3244

Comments or questions on Draft Socioeconomic Report?

Visit us at: www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis

or email us at: SocioEcon@aqmd.gov

Draft Environmental Justice and Distributional Analysis

PRESENTED BY: STEFANI PENN, PHD INDUSTRIAL ECONOMICS, INC. (IEC)

October 5, 2022

IEC

Outline

- Environmental Justice Community Screening
- Public Health Benefits of 2022 AQMP in 2037
- Draft Distributional Analysis and Inequality Assessment

Introduction

Introduction

- South Coast AQMD implemented its first environmental justice (EJ) area screening and distributional analysis of air quality policies as part of the 2016 AQMP Socioeconomic Assessment, based on methodology provided by IEc
- We provide an update to these analyses for the Draft 2022 AQMP Socioeconomic Assessment

2022 AQMP EJ and Distributional Analysis

- Review and sensitivity analysis of alternative EJ screening and designation methods in the South Coast Air Basin
- Analyze public health impacts across "EJ" and "non-EJ" communities by alternative EJ definitions
- Perform distributional analysis of public health impacts in "EJ" and "non-EJ" communities using inequality indicators to understand the 2022 AQMP's impact on the variance in health risks between and within communities

Environmental Justice Area Screening

SB 535 Definition for EJ Communities

- In May 2022, CalEPA updated its designation of disadvantaged communities (DACs) for CA Senate Bill (SB) 535, including:
 - Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen4.0 (CES4.0),
 - Census tracts lacking *overall* scores in CES4.0 due to data gaps, but ranking among the highest five percent of the cumulative pollution burden scores,
 - Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their CES4.0 score, and
 - Lands under control of federally recognized Tribes

Alternative	Population Chara	acteristics Indicators	Pollution Burden Indicators			
Definition	Socioeconomic	Sensitive	Exposure	Environmental Effects		
1 (Poverty and air quality)	Poverty	-	PM2.5, ozone	-		
2 (Socioeconomic and air quality)	Education, housing burden, linguistic isolation, poverty, unemployment	Asthma, cardiovascular disease (CVD), low birth weight	PM2.5, ozone, diesel PM, traffic impacts	-		
3 SB 535 Definition (Socioeconomic, health, environmental, and air quality)	Education, housing burden, linguistic isolation, poverty, unemployment	Asthma, CVD, low birth weight	Ozone, PM2.5, diesel PM, traffic impacts, drinking water contaminants, children's lead risk from housing, pesticide use, toxic releases from facilities	Cleanup sites, groundwater threats, hazardous waste, impaired waters, solid waste sites		



Definition 1 EJ Areas v. SB 535 EJ Areas



Definition 1: Poverty, PM2.5, and ozone.

Definition 2 EJ areas v. SB 535 EJ Areas



Definition 2: Poverty, PM2.5, ozone, diesel PM, traffic impacts, education, housing burden, linguistic isolation, unemployment, asthma, cardiovascular disease, low birth weight



SB 535 EJ Areas



Public Health Benefits of 2022 AQMP (Year 2037)

Avoided Premature Mortality (Age 30+): PM_{2.5} and Ozone

EJ Designation	EJ Communities	Non-EJ Communities	Difference
Definition 1 (Top 50 to Top 25%)	262 to 274	211 to 228	51 to 45
Definition 2 (Top 50 to Top 25%)	262 to 268	209 to 229	53 to 39
Definition 3 (Top 25% and additional SB 535 DAC)	260	232	29

Decrease per million residents Age 30+

Avoided Asthma-Related ED Visits (All Ages): $PM_{2.5}$ and Ozone

EJ Designation	EJ Communities	Non-EJ Communities	Difference
Definition 1 (Top 50 to Top 25%)	42 to 47	24 to 30	18
Definition 2 (Top 50 to Top 25%)	41 to 45	25 to 30	17 to 15
Definition 3 (Top 25% and additional SB 535 DAC)	43	31	12

Decrease per million residents all ages

Avoided Asthma Incidence (Age 0-17): $PM_{2.5}$ and Ozone

EJ Designation	EJ Communities	Non-EJ Communities	Difference
Definition 1 (Top 50 to Top 25%)	2,923 to 3,008	2,485 to 2,638	438 to 370
Definition 2 (Top 50 to Top 25%)	2,880 to 2,878	2,548 to 2,715	332 to 163
Definition 3 (Top 25% and additional SB 535 DAC)	2,752	2,812	-60

Decrease per million residents Age 0 - 17

Distributional Analysis

Methodology

- Estimate health risk associated with *baseline* and 2022 AQMP *policy* scenario using BenMAP-CE
- Calculate inequality index values for baseline and policy scenarios
 - Inequality indices summarize the distribution of exposure-related health risk among all census tracts (or communities) in the Basin
- Analyze between and within EJ group inequality

Distributive Analysis: Illustrative Example



- Between group inequality *decreases* from baseline to policy scenario
- Within group inequality *remains the same* from baseline to policy scenario

Distribution of Health Risks Across Communities

	PM2.5 and Ozone Mortal	Exposure Related ity Risk	PM2.5 and Ozone Asthma ED Vis	Exposure Related sits for Asthma	PM2.5 and Ozone Exposure Related Asthma Incidence			
	(Among Residents	30 Years or Older)	(Among Reside	nts of All Ages)	(Among Residents Age 0-17)			
	Relative Inequality Index	Absolute Inequality Index	Relative Inequality Index	Absolute Inequality Index	Relative Inequality Index	Absolute Inequality Index		
% Change	-23%	-23%	-16%	-16%	-14%	-14%		
Change	\downarrow	\downarrow	\downarrow \downarrow		\downarrow	\downarrow		

Relative Inequality

	PM2.5 and Ozone Exposure Related Mortality Risk				PM2.5 and Ozone Exposure Related Asthma ED Visits for Asthma				PM2.5 and Ozone Exposure Related Asthma Incidence			
	(Among Residents 30 Years or Older)				(Among Residents of All Ages)				(Among Residents 0 to 17 Years Old)			
	Тор	50%	Top 25%		Тор 50%		Top 25%		Тор 50%		Top 25%	
	Between	Within	Between	Within	Between	Within	Between	Within	Between	Within	Between	Within
Def. 1 % Change	-44%	-23%	-51%	-23%	-21%	-15%	-21%	-15%	-26%	-12%	-25%	-12%
	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow
Def. 2 % Change	-39%	-23%	-42%	-23%	-19%	-15%	-17%	-16%	-26%	-13%	-12%	-15%
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Def. 3 % Change			-31%	-23%			-13%	-18%			4%	-18%
			\downarrow	\downarrow			\downarrow	\downarrow			↑	\downarrow

Absolute Inequality

	PM2.5 and Ozone Exposure Related Mortality Risk				PM2.5 and Ozone Exposure Related Asthma ED Visits for Asthma				PM2.5 and Ozone Exposure Related Asthma Incidence			
	(Among Residents 30 Years or Older)				(Among Residents of All Ages)				(Among Residents 0 to 17 Years Old)			
	Тор	50%	Top 25%		Тор 50%		Top 25%		Тор 50%		Top 25%	
	Between	Within	Between	Within	Between	Within	Between	Within	Between	Within	Between	Within
Def. 1 % Change	-44%	-23%	-51%	-23%	-21%	-15%	-21%	-15%	-25%	-12%	-25%	-12%
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Def. 2 % Change	- 39 %	-23%	-42%	-23%	-19%	-15%	-17%	-16%	-21%	-13%	-11%	-15%
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Def. 3 % Change			-31%	-23%			-13%	-18%			4%	-18%
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IEC

Questions?

Draft Socioeconomic Report for the Revised Draft 2022 AQMP

South Coast

Job Impacts

South Coast Air Quality Management District

October 5, 2022

Summary of Projected Job Impacts



Job impacts of benefits and costs combined

- 0.27% annualized job growth v.s. baseline growth of 0.44% between 2023-37
- An annual average of *17,000 jobs* foregone in an economy with over 10 million jobs

Model for Impacts Simulation

REMI

- The Regional Economic Models, Inc. (**REMI**) Model is a regional economic forecasting model that has been continually operated since 1980.

It is built for the region using available government data:

- Type: Population, employment, wages, tax rates, GDP
- **Sources:** Bureau of Labor Statistics, Bureau of Economic Analysis, US Census Bureau
- REMI takes this historical data and creates a **baseline** or **control forecast** out to 2080.
- REMIcan then run an alternative forecast or "What if?" simulation on top of the control to simulate a change in the regional economy.
 - These data are then compared to baseline data, giving a difference (as a level or %) that shows the **economic impact of the given policy**.

Forecast



Model Layout

- The model's underling principles of economic geography reflect spatial constraints and positions of the regions
- Each region is assigned values corresponding to input data, and may interact with one another via migration, competition, and trade



Model Structure

- Components of the economy interact with one another by way of:
 - Econometrics express building blocks of an economy, shown here
 - Input-output modeling shows how firms and industries consume and produce for one another
- The model also follows principles of economic equilibrium to model market behavior in areas such as investment


REMI Results

- Direct, indirect, and induced impacts may finally be analyzed and visualized.

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Modeling Discussion

Custom-Built Model for South Coast AQMD

- REMI Policy Insight Plus (PI+) Version 3.0.0
- 23-region model
 - 21 sub-counties within South Coast AQMD jurisdiction (see map)
 - Rest of California
 - Rest of U.S.

Note: For readability, this map does not show the entire subregions of North (of the Los Angeles County), Other San Bernardino, Riverside Southwest, and Riverside Other.



Baseline Adjustments

 REMI baseline adjusted based on the 2020 Growth Forecast by Southern California Association of Governments (SCAG)

- California Health and Safety Code requirements for AQMP
- Consistency throughout AQMP



Update = Adjusted REMI; Standard = Default REMI

Modeling of Incremental Costs

• Direct impacts from increased spending on clean air controls & technologies:

Private Industries

 Increased cost of doing business (or "production cost")

Consumer & Households

 Less in the budget to spend on other goods and services (or "budget reallocation")

State and Local Governments

 Less in the budget to provide public services (assuming no increase in tax and other revenues)

• Direct impacts from increased demand for clean air controls & technologies:

- More research, development, and output from businesses and industries supporting the clean air economy ("exogenous final demand")
- Encourages job creation but opportunities not necessarily in the region



Modeling of Health Benefits



- Monetized health benefits based on individual's willingness-to-pay for reduced mortality risk
- Used 25% of estimated benefits as increased "regional amenity" in REMI
 - Reflecting REMI modeling rationale
 - Unresolved uncertainty based on the 2014 Abt Associates review
 - Sensitivity tests with 50% and 100%



- More in the budget to spend on other goods and services
 - Less spending on healthcare products and services
- Higher worker productivity
 - Avoided work absences due to own or dependents' illness and symptoms

Staff Contacts

Socioeconomic Analysis	AQMP Questions and Inquiries						
Brian Vlasich Air Quality Specialist <u>bvlasich@aqmd.gov</u> 909.396.2176	Sang-Mi Lee, Ph.D. Planning & Rules Manager <u>slee@aqmd.gov</u> 909.396.3169						
Elaine Shen, Ph.D. Planning & Rules Manager <u>eshen@aqmd.gov</u> 909.396.2715	Ian MacMillan Assistant Deputy Executive Officer Planning, Rule Development & Implementation <u>imacmillan@aqmd.gov</u> 909.396.3244						

Comments or questions on Draft Socioeconomic Report?

Visit us at: <u>www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/socioeconomic-analysis</u> or email us at: <u>SocioEcon@aqmd.gov</u> Draft Socioeconomic Report for the Revised Draft 2022 AQMP

South Coast

Cost-Effectiveness

South Coast Air Quality Management District

October 5, 2022

Background

- California Health & Safety Code requires consideration of costeffectiveness of control measures in the AQMP
 - Must evaluate cost-effectiveness of each control measure to the greatest extent possible
 - Control measures must be ranked by cost-effectiveness
- Cost-Effectiveness is the total cost (capital and annual operating costs) to achieve a standard over the emission reductions for the life of the equipment compared to a business-as-usual scenario



High and Low Cost-Effectiveness Scenarios



Requirements for Cost Effectiveness Under the Health and Safety Code

2022 AQMP

Requires cost-effectiveness analysis of each control measure to the greatest extent possible

Requires that control measures are ranked by cost-effectiveness

Rulemaking

Must account for economic impacts when establishing BARCT standards

Requires cost-effectiveness analysis when establishing BARCT

AQMP Control Measure Initial cost-effectiveness estimate

Comprehensive cost-effectiveness analysis

Cost-Effectiveness Analysis in Rulemaking

Comprehensive cost-effectiveness analysis conducted when establishing BARCT standards during rulemaking

Capital Costs (One-Time Costs)

- Equipment costs
- Installation costs
- Permitting fees

Annual Costs (Recurring Costs)

- Labor and maintenance
- Fuel, Electricity, etc.
- Source Testing
- Monitoring, Reporting, and Recordkeeping
- Catalyst, filters or other materials for pollution controls

Bottom-Up Approach

- Facility-specific information where available
- Use actual cost data where available from affected facilities and equipment vendors

Other Considerations

- Stranded assets
- Cost savings
- Equipment life

Cost-Effectiveness Threshold for Rulemaking

- Comprehensive cost-effectiveness analysis will continue to be conducted during rulemaking
- To guide rulemaking efforts, previous AQMPs included cost-effectiveness thresholds to assess the cost-effectiveness of a proposed rule
- If the average cost-effectiveness exceeded the threshold, previous AQMPs suggested that the rulemaking include:
 - A more rigorous cost-effectiveness analysis
 - Alternatives to lower the cost
 - Additional public meetings
- Draft 2022 AQMP proposed a cost-effectiveness threshold of \$59,000/ton of NOx reduced, which is based on past AQMP costs adjusted to inflation
- Some Board members expressed concern that \$59,000/ton may be too low
 - Particularly when considering the cost-effectiveness of measures in the 2022 AQMP

Control Measure Cost-Effectiveness and NOx Emission Reductions



(modified for costs incurred through 2037)

**Clean Miles Standard, [0.1 tpd] (not shown) has a cost savings

Control Measures Ranked by Cost-Effectiveness

Alternative Cost-Effectiveness Threshold

- Staff is proposing an alternative cost-effectiveness threshold based on <u>public health benefits</u> instead of cost of pollution controls
- Public health benefits threshold monetizes public health impacts associated with specific air contaminants such as:
 - Premature deaths, lost school and work days, hospital admissions, respiratory and cardiovascular symptoms
- Public health benefits threshold:
 - Accounts for health impacts and overall benefit to society from improved air quality
 - Used by U.S. EPA and CARB for rulemaking



Alternative Cost-Effectiveness Threshold (cont.)

- Revised Draft 2022 AQMP proposed an alternative public health benefit screening threshold of:
 - \$325,000/ton of NOx reduced
 - Based on U.S. EPA studies and 2016 AQMP
- Threshold would be used as a guide for evaluating the:
 - Cost-effectiveness and incremental cost-effectiveness for stationary and mobile source rulemakings
 - If cost-effectiveness or incremental cost-effectiveness of the proposed rule exceeds the threshold, public meeting would be required
 - Public meeting would identify alternatives to reduce the cost-effectiveness
- Public hearing for proposed rules includes cost-effectiveness analysis and will be presented to the Board for their consideration