ADVISORY COUNCIL
MEETING

THIS MEETING WILL BE CONDUCTED UNDER PROCEDURES AUTHORIZED BY
ASSEMBLY BILL 361

- THE PUBLIC MAY OBSERVE THIS MEETING THROUGH THE WEBCAST
  BY CLICKING THE LINK AVAILABLE ON THE AIR DISTRICT’S AGENDA
  WEBPAGE AVAILABLE AT
  
  https://www.baaqmd.gov/about-the-air-district/advisory-council/agendasreports

- THE PUBLIC MAY PARTICIPATE REMOTELY VIA ZOOM AT THE
  FOLLOWING LINK OR BY PHONE

  https://bayareametro.zoom.us/j/84093629410

  (669) 900 6833 or (408) 638 0968

  WEBINAR ID: 840 9362 9410

- THOSE PARTICIPATING BY PHONE WHO WOULD LIKE TO MAKE A
  COMMENT CAN USE THE “RAISE HAND” FEATURE BY DIALING “*9”. IN
  ORDER TO RECEIVE THE FULL ZOOM EXPERIENCE, PLEASE MAKE
  SURE YOUR APPLICATION IS UP TO DATE
AGENDA

1. CALL TO ORDER - ROLL CALL

PLEDGE OF ALLEGIANCE

PUBLIC MEETING PROCEDURE

The Council Chair shall call the meeting to order and the Clerk of the Boards shall take roll of the Council members.

Public Comment on Agenda Items The public may comment on each item on the agenda as the item is taken up. Members of the public who wish to speak on matters on the agenda for the meeting, will have three minutes each to address the Council. No speaker who has already spoken on that item will be entitled to speak to that item again.

Staff/Phone (415) 749-

2. APPROVAL OF THE MINUTES OF OCTOBER 25, 2021 and NOVEMBER 8, 2021

Clerk of the Boards/5073

The Council will consider approving the draft minutes of the Advisory Council Regular Meetings of October 25, 2021 and November 8, 2021.

3. OVERVIEW OF PARTICULATE MATTER

G. Nudd/4786
gnudd@baaqmd.gov

The Council will receive an overview of Particulate Matter from Air District staff.

4. DISCUSSION OF ADVISORY COUNCIL MEETINGS AND 2022 TOPICS

G. Nudd/4786
gnudd@baaqmd.gov

The Council will discuss presentations from previous 2021 meetings of the Advisory Council and discuss key questions the Council may want to address in 2022.

5. REPORT OF THE EXECUTIVE OFFICER/APCO

6. PUBLIC COMMENT ON NON-AGENDA MATTERS

Members of the public who wish to speak on matters not on the agenda for the meeting, will have three minutes each to address the Council.
7. **COUNCIL MEMBER COMMENTS / OTHER BUSINESS**

Council members may make a brief announcement, provide a reference to staff about factual information, or ask questions about subsequent meetings.

8. **TIME AND PLACE OF NEXT MEETING**

*At the Call of the Chair.*

9. **ADJOURNMENT**

*The Council meeting shall be adjourned by the Chair.*
Any writing relating to an open session item on this Agenda that is distributed to all, or a majority of all, members of the body to which this Agenda relates shall be made available at the Air District’s offices at 375 Beale Street, Suite 600, San Francisco, CA 94105, at the time such writing is made available to all, or a majority of all, members of that body.

### Accessibility and Non-Discrimination Policy

The Bay Area Air Quality Management District (Air District) does not discriminate on the basis of race, national origin, ethnic group identification, ancestry, religion, age, sex, sexual orientation, gender identity, gender expression, color, genetic information, medical condition, or mental or physical disability, or any other attribute or belief protected by law.

It is the Air District’s policy to provide fair and equal access to the benefits of a program or activity administered by Air District. The Air District will not tolerate discrimination against any person(s) seeking to participate in, or receive the benefits of, any program or activity offered or conducted by the Air District. Members of the public who believe they or others were unlawfully denied full and equal access to an Air District program or activity may file a discrimination complaint under this policy. This non-discrimination policy also applies to other people or entities affiliated with Air District, including contractors or grantees that the Air District utilizes to provide benefits and services to members of the public.

Auxiliary aids and services including, for example, qualified interpreters and/or listening devices, to individuals who are deaf or hard of hearing, and to other individuals as necessary to ensure effective communication or an equal opportunity to participate fully in the benefits, activities, programs and services will be provided by the Air District in a timely manner and in such a way as to protect the privacy and independence of the individual. Please contact the Non-Discrimination Coordinator identified below at least three days in advance of a meeting so that arrangements can be made accordingly.

If you believe discrimination has occurred with respect to an Air District program or activity, you may contact the Non-Discrimination Coordinator identified below or visit our website at www.baaqmd.gov/accessibility to learn how and where to file a complaint of discrimination.

Questions regarding this Policy should be directed to the Air District’s Non-Discrimination Coordinator, Terri Levels, at (415) 749-4667 or by email at tlevels@baaqmd.gov.
<table>
<thead>
<tr>
<th>TYPE OF MEETING</th>
<th>DAY</th>
<th>DATE</th>
<th>TIME</th>
<th>ROOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Directors Technology Implementation Office Steering Committee - CANCELLED</td>
<td>Thursday</td>
<td>9</td>
<td>1:00 p.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Board of Directors Legislative Committee</td>
<td>Thursday</td>
<td>9</td>
<td>2:00 p.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Advisory Council Meeting</td>
<td>Monday</td>
<td>13</td>
<td>8:30 a.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Board of Directors Special Meeting</td>
<td>Wednesday</td>
<td>15</td>
<td>8:30 a.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Board of Directors Administration Committee - CANCELLED AND RESCHEDULED TO WEDNESDAY, DECEMBER 1, 2021 AT 11:00 AM</td>
<td>Wednesday</td>
<td>15</td>
<td>11:00 a.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Board of Directors Legislative Committee - CANCELLED AND RESCHEDULED TO THURSDAY, DECEMBER 9, 2021 AT 2:00 PM</td>
<td>Wednesday</td>
<td>15</td>
<td>1:00 p.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Board of Directors Stationary Source and Climate Impacts Committee</td>
<td>Monday</td>
<td>20</td>
<td>9:00 a.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
<tr>
<td>Board of Directors Mobile Source and Climate Impacts Committee — CANCELLED AND RESCHEDULED TO MONDAY, DECEMBER 6, 2021, AT 1:00PM</td>
<td>Thursday</td>
<td>23</td>
<td>9:30 a.m.</td>
<td>Webcast only pursuant to Assembly Bill 361</td>
</tr>
</tbody>
</table>
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairpersons Linda Rudolph and Gina Solomon, and Members of the Advisory Council

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 8, 2021

Re: Approval of the Minutes of October 25, 2021, and November 8, 2021

RECOMMENDED ACTION

Approve the attached draft minutes of the Advisory Council meetings of October 25, 2021, and November 8, 2021.

DISCUSSION

Attached for your review and approval are the draft minutes of the Advisory Council meetings of October 25, 2021, and November 8, 2021.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Marcy Hiratzka
Reviewed by: Vanessa Johnson

Attachment 2A: Draft Minutes of the Advisory Council Meeting of October 25, 2021
Attachment 2B: Draft Minutes of the Advisory Council Meeting of November 8, 2021
Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
(415) 749-5073

DRAFT MINUTES
Advisory Council Regular Meeting
Monday, October 25, 2021

An audio recording of the meeting is available on the website of the Bay Area Air Quality Management District at http://www.baaqmd.gov/about-the-air-district/advisory-council/agendasreports

This meeting was conducted under procedures authorized by Assembly Bill 361. Members of the Council participated by teleconference.

1. CALL TO ORDER

Greg Nudd, Deputy Air Pollution Control Officer (APCO) of Policy, acting as meeting facilitator, called the meeting to order at 8:33 a.m.

Roll Call:

Present: Advisory Council (Council) Co-Chairpersons Drs. Linda Rudolph and Gina Solomon; Vice Chairperson Prof. Michael Kleinman; and Members Dr. Danny Cullenward, Dr. Adrienne Hollis, Dr. Pallavi Phartiyal, Garima Raheja; and Board of Directors (Board) Liaison David Haubert.

Absent: None.

2. APPROVAL OF THE MINUTES OF SEPTEMBER 13, 2021

Public Comments

No requests received.

Council Comments

None.
Council Action

Vice Chair Kleinman made a motion, seconded by Board Liaison Haubert, to approve the Minutes of September 13, 2021; and the motion carried by the following vote of the Council:

AYES: Cullenward, Haubert, Hollis, Kleinman, Phartiyal, Raheja.
NOES: None.
ABSTAIN: Rudolph.
ABSENT: Solomon.

3. ELECTION OF OFFICERS

Mr. Nudd reported that following the September 13, 2021 Council meeting, Air District staff had one-on-one discussions with Drs. Rudolph and Solomon, who indicated their interest in a Co-Chairperson model. Mr. Nudd asked if Prof. Kleinman would like to continue his role as the Council’s Vice Chairperson, and he said yes. Mr. Nudd proposed that the Council vote on the following election of Officers for the Council: Drs. Linda Rudolph and Gina Solomon as Co-Chairpersons and Prof. Kleinman as Vice Chairperson.

Public Comments

No requests received.

Council Comments

None.

Council Action

Board Liaison Haubert made a motion, seconded by Dr. Phartiyal, to recommend that the Board approve Drs. Linda Rudolph and Gina Solomon as Co-Chairpersons and Prof. Kleinman as Vice Chairperson for the 2021-2023 term of the Council; and the motion carried by the following vote of the Council:

AYES: Cullenward, Haubert, Hollis, Kleinman, Phartiyal, Raheja, Rudolph.
NOES: None.
ABSTAIN: None.
ABSENT: Solomon.

Co-Chair Rudolph facilitated the meeting from this point on.

4. LEGISLATIVE HISTORY OF THE ADVISORY COUNCIL AND ROLE OF OFFICERS

Mr. Nudd gave the staff presentation Legislative History of the Advisory Council and Role of Officers, including: previous Advisory Council defined by California Health & Safety Code; current Advisory Council defined by California Health & Safety Code; role of the Advisory Council; role of the Chair and Vice Chair; and Advisory Council and Boards of the Air District.
Public Comments

Public comments were given by Jed Holtzman, San Francisco resident; Bob Brown, Western States Petroleum Association; and Richard Gray, Sunflower Alliance.

Council Comments

The Council members and staff discussed how the Board would like to utilize the Council’s scientific expertise; whether the Council should develop policy recommendations to the Board; the anticipated interaction between the Council and the Air District’s Community Advisory Council; and the extent to which the Council has historically been proactive about issues of interest to the Air District.

NOTED PRESENT: Co-Chair Solomon was noted present at 9:12 a.m.

Council Action

None; receive and file.

5. AIR DISTRICT CLIMATE PROTECTION PROGRAM UPDATE

Mr. Nudd gave the staff presentation Air District Climate Protection Program, along with Abby Young, Air Quality Program Manager, Dr. Sally Newman, Air Quality Specialist, and Anthony Fournier, Technology Implementation Officer. Slides included: overview; Advisory Council input and guidance; growing urgency – impacts and equity; Bay Area greenhouse gas (GHG) emissions; Climate Protection Program; where do we go from here; potential win-win solutions; transportation – incentives for electric vehicles (EVs); innovative financing for innovative technologies; loan guarantees; funded projects; qualified projects; carbon dioxide removal/carbon capture and storage; path to carbon removal; general types of carbon capture; arguments against carbon dioxide removal; moving forward; and discussion questions.

Public Comments

Public comments were given by Jed Holtzman, San Francisco resident; and Richard Gray, Sunflower Alliance.

Council Comments

The Council members and staff discussed how to separate the causes of asthma (external pollutants versus inside the home), especially in Assembly Bill (AB) 617 and other overburdened communities; the opportunity costs of addressing point source carbon capture; tradeoffs between climate and air quality issues, specifically regarding the conversion of conventional petroleum refineries to biodiesel operations; mitigating short lived climate pollutants like methane (versus long term climate pollutants, such as carbon dioxide); how the reduction of Particulate Matter (PM), ozone, and nitrogen oxide emissions, both indoor and outdoor, can help mitigate asthma, and the suggestion that the Air District focuses on indoor air quality; climate dis-benefits; how the Air District is assessing GHG emissions impacts and cost-effectiveness for each of the Air District’s programs; and the suggestion of creating climate resilience spaces in schools, libraries, and community centers during wildfires and heatwaves.
Council Action

None; receive and file.

6. REPORT OF THE EXECUTIVE OFFICER/APCO

On behalf of Jack P. Broadbent, Executive Officer/APCO, Mr. Nudd said that there was nothing to report.

7. PUBLIC COMMENT ON NON-AGENDA MATTERS

No requests received.

8. COUNCIL MEMBER COMMENTS/ OTHER BUSINESS

Board Liaison Haubert expressed his gratitude to the Council and Air District staff and remarked that the Board will benefit from the Council’s discussions and guidance regarding science, metrics, prioritization.

Dr. Cullenward asked about the sources of information on which the Air District bases its policies regarding future climate impacts and emission reductions targets.

9. TIME AND PLACE OF NEXT MEETING

Monday, November 8, 2021, at 8:30 a.m., via webcast, pursuant to procedures in accordance with Assembly Bill 361.

10. ADJOURNMENT

The meeting adjourned at 10:43 a.m.

Marcy Hiratzka
Clerk of the Boards
DRAFT MINUTES

Advisory Council Regular Meeting
Monday, November 8, 2021

An audio recording of the meeting is available on the website of the Bay Area Air Quality Management District at
http://www.baaqmd.gov/about-the-air-district/advisory-council/agendasreports

This meeting was conducted under procedures authorized by Assembly Bill 361. Members of the Council participated by teleconference.

1. CALL TO ORDER

Advisory Council (Council) Co-Chairperson, Dr. Gina Solomon, called the meeting to order at 8:37 a.m.

Roll Call:

Present: Advisory Council (Council) Co-Chairpersons Drs. Linda Rudolph and Gina Solomon; Vice Chairperson Prof. Michael Kleinman; and Members Dr. Danny Cullenward, Garima Raheja; and Board Liaison David Haubert.

Absent: Members Dr. Adrienne Hollis and Dr. Pallavi Phartiyal.

2. OVERVIEW OF ENVIRONMENTAL JUSTICE

Azibuike Akaba, Public Information Officer, introduced Dr. Bhavna Shamasunder, Chair and Associate Professor of Occidental College’s Urban & Environmental Policy Department, who gave the presentation Translating Community Engagement in Science into Emissions Reduction, including: our projects; community engaged research frameworks; from buckets to networks (community based monitoring); ongoing challenges and questions; support internal and out for community engagement; and possible considerations.

Public Comments

Public comments were given by Jed Holtzman, San Francisco resident.
Council Comments

The Council and staff discussed concerns about monitors focusing on Particulate Matter (PM)$_{2.5}$ over other pollutants; whether the Air District has seen a difference between enforcement-oriented action and rule development-oriented action in the community engagement space; whether regulating agencies acknowledge their differences in resources, time, and expertise when assisting overburdened communities; whether the Air District has identified preferred community engagement models it would like to see replicated; how to maintain proposed timelines and make progress, given the time-intensive nature of community engaged work; challenges regarding agencies’ response times to incidents; how volatile organic compounds (VOC) and toxic components from transient events can contribute to PM levels and to the changing of baselines for other sources; whether the Air District can capture particulate matter that are formed through secondary aggregation of VOCs in its emissions inventories; whether the Air District collects measurements intentionally during incidents; and the request for a future presentation on transient emissions events at facilities.

Council Action

None; receive and file.

3. CURRENT U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA) EFFORTS TO ADDRESS DISPROPORTIONATE IMPACTS IN OVERBURDENED COMMUNITIES

Mr. Nudd, Deputy Air Pollution Control Officer of Policy, introduced Dr. Phil Fine, Principal Deputy Associate Administrator for Policy at U.S. EPA, who gave the presentation US EPA Efforts to Address Disproportionate Impacts on Overburdened Communities, including: message from the Administrator; Executive Order on advancing racial equity and support for underserved communities through the federal government; Executive Order on tackling the climate crisis at home and abroad; prioritizing enforcement in communities with environmental justice concerns; disproportionate and cumulative impacts; Draft Fiscal Year 2022-2026 EPA Strategic Plan Framework; Budget of the US Government; EPA creates $50 million fund for environmental justice initiatives; and partnerships.

Public Comments

Public comments were given by Jed Holtzman, San Francisco resident.

Council Comments

The Council and staff discussed enforcement efforts of the EPA; whether the upcoming Request for Proposals regarding air district air monitors will be open to community associations and non-profits organizations; what the EPA considers ideal characteristics of newly developed tools; concerns with the current version of CalEnviroScreen, including the exclusion of certain neighborhoods and the need to consider toxic exposure; and how the federal government assesses health equity impacts of transportation or energy policy.
Council Action

None; receive and file.

The Council recessed at 10:15 a.m. and resumed at 10:21 a.m.

4. OVERVIEW OF AIR POLLUTION, INEQUALITY, AND COMMUNITY HEALTH IN THE BAY AREA

Mr. Nudd and Dr. Phil Martien, Director of Assessment, Inventory, & Modeling, gave the staff presentation *Overview of Air Pollution, Inequality, and Community Health in the Bay Area*, including: overview; what are the data and models telling us; community health; health inequities; air pollution; regional PM$_{2.5}$ and air toxics modeling; measuring air pollution – expansion of monitoring and analysis options to understand inequities; ambient concentrations – area-wide measurement trends (24-hour PM$_{2.5}$); measuring air pollution – inequities; what actions is the Air District currently taking; Assembly Bill (AB) 617 Program overview; Bay Area communities; a community-centered program; “Owning Our Air” – West Oakland Community Action Plan; community-centered planning; “Owning Our Air” implementation approach and progress; why Richmond, North Richmond, and San Pablo; community co-leading the process; progress to date; East Oakland air pollution; incentives awarded in 2020; next steps; Community Advisory Council; air pollution and rules; prioritizing enforcement in AB 617 communities; facility risk reduction (Rule 11-18); and discussion questions.

Public Comments

Public comments were given by Jed Holtzman, San Francisco resident.

Council Comments

The Council and staff discussed how to scale-up and make the process of the Air District partnering with communities to reduce inequitable exposures, less time and resource intensive; how the Air District applies data from one community and/or source to others and scale models for different sources; ways to adapt the Air District’s analyses to address issues in multiple communities and scale up the Air District’s approach; the Council’s interest in joint mtgs with the Community Advisory Council; the request that Council members be alerted of Air District community meetings, especially in AB 617 communities; the need to develop strategies to prioritize the Air District’s limited enforcement capacity; the request for a presentation on the Air District’s key efforts and initiatives for 2022; the status of the Air District’s Rule 11-18 (Hazardous Pollutants: Reduction of Risk From Air Toxic Emissions at Existing Facilities); how the Air District selects sites’ short term monitoring, and how the history of community complaints in those areas informs the placement of new monitors.

Council Action

None; receive and file.
5. **REPORT OF THE EXECUTIVE OFFICER/APCO**

On behalf of Jack P. Broadbent, Executive Officer/APCO, Veronica Eady, Senior Deputy Executive Officer of Policy & Equity, reported that Air District staff and Board members are attending the 2021 United Nations Climate Change Conference, COP26 (Conference of the Parties) annual summit, which brings countries together to accelerate action towards the goals of the Paris Agreement and the United Nations Framework Convention on Climate Change. She described several conference events that the Air District’s Board members will be leading that may be viewed live by the public.

6. **PUBLIC COMMENT ON NON-AGENDA MATTERS**

No requests received.

7. **COUNCIL MEMBER COMMENTS/ OTHER BUSINESS**

None.

8. **TIME AND PLACE OF NEXT MEETING**

Monday, December 13, 2021, at 8:30 a.m., via webcast, pursuant to procedures in accordance with Assembly Bill 361.

9. **ADJOURNMENT**

The meeting adjourned at 11:43 a.m.

Marcy Hiratzka
Clerk of the Boards
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairpersons Linda Rudolph and Gina Solomon, and Members of the Advisory Council

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 8, 2021

Re: Overview of Particulate Matter

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The 2020 Advisory Council researched and provided a report to the Air District Board of Directors on particulate matter at a joint meeting of the Advisory Council and Board of Directors in December 2020.

DISCUSSION

Advisory Councilmembers will receive an overview of the work of the 2020 Advisory Council, current Air District work to address particulate matter and the path forward.

BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by: Sonam Shah-Paul
Reviewed by: Greg Nudd
BAY AREA AIR QUALITY MANAGEMENT DISTRICT
Memorandum

To: Chairpersons Linda Rudolph and Gina Solomon, and Members of the Advisory Council

From: Jack P. Broadbent
Executive Officer/APCO

Date: December 8, 2021

Re: Discussion of Advisory Council Meetings and 2022 Topics

RECOMMENDED ACTION

None; receive and file.

BACKGROUND

The Advisory Council has received several presentations from both guest speakers and Air District staff to inform discussion and research in 2022.

DISCUSSION

Advisory Council members will discuss the presentations received at all 2021 Advisory Council meetings and discuss key questions the Advisory Council may want to address in 2022.

The Advisory Council has received the following presentations to date:

September 13, 2021:
• Overview of the Ralph M. Brown Act
• Introduction of the Air District
• Bay Area Air Quality Overview
• Overview of Air District Programs

October 25, 2021:
• Legislative History of the Advisory Council and Role of officers
• Air District Climate Protection Program Update
November 8, 2021:
- Overview of Environmental Justice (Guest speaker Dr. Bhavna Shamasunder, Occidental College)
- Current U.S Environmental Protection Agency (EPA) Efforts to Address Disproportionate Impacts in Overburdened Communities (Guest speaker Dr. Phil Fine, USEPA)
- Overview of Air Pollution, Inequity, and Community Health in the Bay Area

December 13, 2021:
- Overview of Particulate Matter

In addition to discussing any of the presentations previously provided to the Advisory Council, Councilmembers will also consider key questions or topics areas where the Air District seeks greater input and advice, including the following items from the subject-matter presentations:

From the Climate Presentation:
- When prioritizing policy interventions, how should we account for climate benefits/dis-benefits?
- What metrics should the Air District use to track progress and prioritize climate actions?

From the Equity and Community Health Presentation:
- What metrics should the Air District use to track progress and prioritize actions?
- Who should be at the table to decide those metrics?

From the Particulate Matter Presentation:
- What recommendations does the Advisory Council have for developing a method/framework to relate emissions to health risk?
- Who should develop a method/framework for relating emissions to health risk?
- How can we assess the health risk of short-term, relatively high, exposures? What metric(s) should we use to measure and demonstrate progress?

Air District staff are particularly interested in the highlighted item above: What recommendations does the Advisory Council have for developing a method/framework to relate emissions to health risk? The current statutory and regulatory framework for air pollution does not adequately address the localized health risks from directly emitted particulate matter. A method for relating fine particulate matter emissions to health risk will enable the Air District Board to make informed decisions about permitting, and significance thresholds under the California Environmental Quality Act (CEQA). Progress on this issue will greatly help the Air District to develop health protective policy interventions.
BUDGET CONSIDERATION/FINANCIAL IMPACT

None.

Respectfully submitted,

Jack P. Broadbent
Executive Officer/APCO

Prepared by:  Sonam Shah-Paul
Reviewed by:  Greg Nudd