BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AGENDA: 11

Public Hearing to Consider Adoption of Proposed Amendments to Air District Regulation 3: Fees

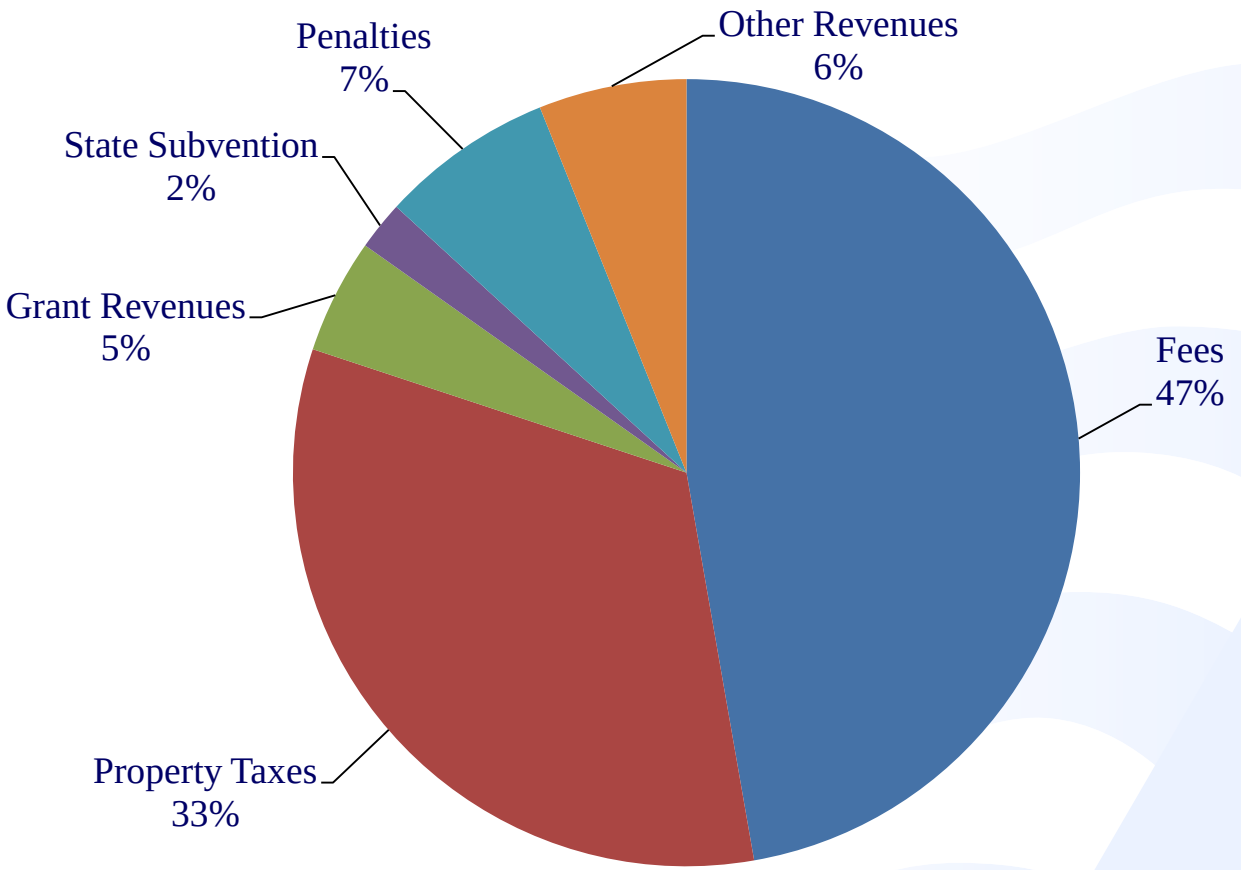
Board of Directors Meeting
June 21, 2017

Jaime A. Williams
Director of Engineering

Agenda

1. Cost Recovery Background
2. Draft Fee Amendments
3. Public Comments Received
4. Rule Development Schedule

Revenue Sources – Fiscal Year Ending (FYE) 2016



Cost Recovery Background

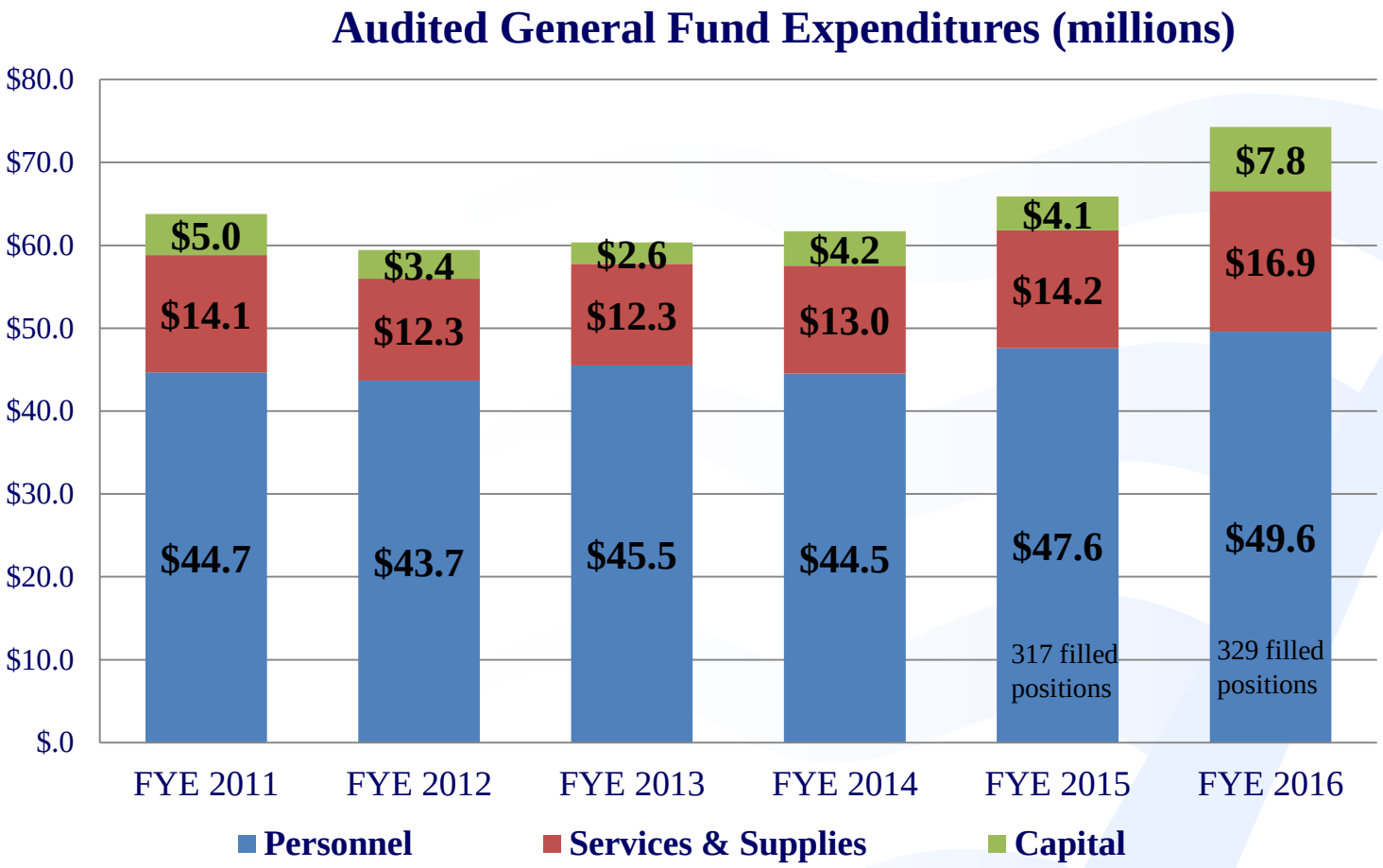
- District is authorized to recover 100% of its costs for regulatory programs

- Cost Recovery % = Fee Revenue / Costs

Trends in Cost Recovery

- Fee revenue falls short of overall full cost recovery
  - FYE 2011: Cost recovery = 65%
  - FYE 2012: Cost recovery = 75%
  - FYE 2013: Cost recovery = 80%
  - FYE 2014: Cost recovery = 80%
  - FYE 2015: Cost recovery = 83%
  - FYE 2016: Cost recovery = 82%
  - *FYE 2017: Cost recovery = 82% Projected*
- Cost recovery gap is filled by county tax revenue

Trends in Cost Cutting



Proposed Changes to Fee Schedules

Revenue from Fee Schedule	Change in Fees	Fee Schedules
95 – 100% of costs	2.7% increase (CPI-W)*	M, U
85 – 95% of costs	7% increase	F, G3, T
75 – 84% of costs	8% increase	D, P
Less than 75% of costs	9% increase	A, E, G1, G2, G4, H, I, K, R, S, V

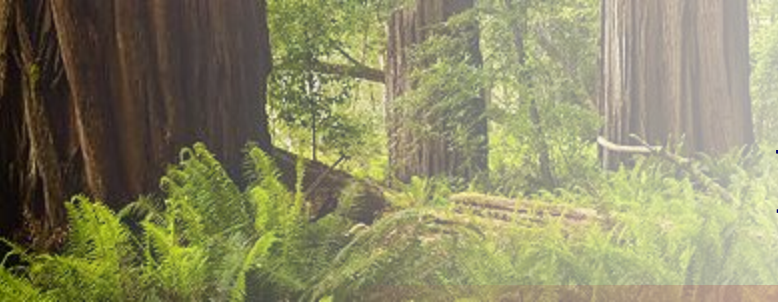
* The annual Consumer Price Index for Bay Area Urban Wage Earners and Clerical Workers (CPI-W) increased 2.7% from 2015 to 2016

Regulation 11, Rule 18
Rule Development Underway

- Reduction of Risk from Air Toxic Emissions at Existing Facilities
- Proposed to ensure TAC emissions from existing facilities do not pose an unacceptable health risk to people living and working nearby.
- Proposed Rule 11-18 will require submittal of Facility-Wide HRAs and Risk Reductions Plans that will require assessment, review, and approval by Air District staff
- Air District estimates that up to 1,000 facilities will be impacted by this rule.

Regulation 11, Rule 18 Facility-Wide HRA Fees

- These fees would only become effective upon Board adoption of proposed Regulation 11, Rule 18.
- These fees would be charged only upon submittal of facility-wide HRAs required pursuant to Regulation 11, Rule 18.
- To help recover the Air District's costs for facility-wide Health Risk Assessments required pursuant to proposed Regulation 11, Rule 18.
- The facility-wide HRA fees will range from a minimum of $499 to a maximum of $150,000 per facility.



Regulation 11, Rule 18 Risk Reduction Plan Fees

- These fees would only become effective upon Board adoption of proposed Regulation 11, Rule 18.
- These fees would be charged only upon submittal of Risk Reduction Plans required pursuant to Regulation 11, Rule 18.
- To help recover the Air District's costs for review and approval of Risk Reduction Plans required pursuant to proposed Regulation 11, Rule 18.
- The Risk Reduction Plan fees will range from a minimum of $1,500 to a maximum of $32,000 per facility.

Other Proposed Amendments

Schedule A: Hearing Board Fees (Table I)

- Revisions to include diesel exhaust particulate matter in the schedule of toxic air contaminants subject to excess emissions fees.

Schedule H: Semiconductor and Related Operations

- Revisions to directly calculate the fee based on gross throughput of organic solvent processed.

Schedule N: Toxic Inventory Fees

- Update the "slope factor" to recover current costs and higher ARB AB2588 annual fees for FYE 2017

Other Proposed Amendments (cont'd)

- A new fee equal to the Risk Assessment Fee to help recover the costs for each HRA scenario above three in any new or modified source permit application in Section 3-302
- Delete fees for Duplicate Permits and Duplicate Registrations in Section 3-309
- Change all Regulation 3 references of "health risk screening analysis" to "health risk assessment"

Impact on Small Businesses

- Proposed FYE 2018 fee increases:

Facility Type	Facility Description	Fee Increase	Total Fee
Gas Station	10 multi-product gasoline nozzles	$263	$3,614
Dry Cleaner (permitted)	One machine: 1,400 lb/yr Perc emissions	$39	$666
Dry Cleaner (registered)	One machine: 800 lb/yr VOC emissions	$19	$225
Auto Body Shop	One spray booth: 400 gal/yr paint	$46	$622
Back-up Generator	One 365 hp engine	$2*	$332

* Represents a 2.7% increase in the Permit Renewal Processing Fee.

Impact on Large Facilities Petroleum Refineries

	Annual % Permit Fee Increase (Fiscal Year Ending)					Current Permit Fee (in millions)
	2014	2015	2016	2017	2018 Projected	
Chevron	3.4	12.1	9.3	14.7	13.1	$3.64
Shell	1.2	12.4	5.8	15.0	15.0	$3.12
Phillips 66	1.2	9.3	3.4	14.6	13.9	$1.59
Valero	7.2	8.4	11.9	15.0	15.0	$1.87
Tesoro	5.5	13.0	21.7	13.3	15.0	$2.42

Impact on Large Facilities Power Plants

	Annual % Fee Increase (Fiscal Year Ending)					Current Permit to Operate Fee
	2014	2015	2016	2017	2018 Projected	
Delta Energy	13.5	16.9	12.6	4.8	3.7	$ 459,600
Los Medanos	11.3	15.0	15.0	4.8	3.5	$ 326,900
Gateway	3.3	15.0	19.8	4.5	3.6	$ 320,300
Crockett Cogen	2.1	15.0	11.5	7.9	3.5	$ 222,700

Workshop Comments Received

CCEEB and Valero:

- Requested more information on cost and fee estimates for proposed Rule 11-18.
- Requested more information on cost assessment and cost containment efforts.

CCEEB:

- Asked whether the 15% state limit on annual permit fee increases applies to the proposed Rule 11-18 fees.

American Petroleum and Convenience Store Association:

- Requested justification for increase in Fee Schedule D, Gasoline Transfer at Gasoline Dispensing Facilities, Bulk Plants and Terminals.

Further Comments Received

CCEEB Comment Letter dated 3/29/2017:

- Comments that fees, cost recovery, and amendments to Regulation 3 be done within the broader context of the District's annual budget.
- Comments that it is unclear what activities or costs are driving increases to program expenditures.
- Comments that Regulation 3 proposes new fees related to implementation of proposed Rule 11-18 although Rule 11-18 rule development is ongoing.
- Requests to meet with staff on draft Rule 11-18 to improve understanding of the rule requirements.

Further Comments Received (cont'd)

WSPA Comment Letter dated 3/27/2017:

- Characterizes District fee increases for the refining industry to be higher than that for other sectors and the CPI.
- Concern with assessing a fee for proposed Rule 11-18, and the District's progress in cost recovery closure.
- Appreciates the District's Supplemental Supporting Information on the proposed Regulation 3 amendments to address cost containment efforts and cost assessment analysis.
- Requests that Risk Assessment Fees should be refundable if that Risk Assessment has not been done prior to an application being cancelled or withdrawn.
- Comments that full cost recovery assessment has not been conducted since 2011.

Rule Development Schedule

- **February 22, 2017**
  - Public workshop
- **March 15, 2017**
  - Written comments due
- **March 22, 2017**
  - Budget & Finance Committee briefing
- **April 19, 2017**
  - Board of Directors first public hearing to receive testimony only
- **June 21, 2017**
  - Board of Directors second public hearing to consider adoption
- **July 1, 2017**
  - Proposed effective date of fee amendments

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AGENDA: 12

Board of Directors Budget Hearing

June 21, 2017

Jeff McKay
Deputy Air Pollution Control Officer

OUTLINE

- Proposed Budget for Next Fiscal Year Ending (FYE 2018)
- Reserves
- Unfunded Liabilities
- Next Steps

NEXT FISCAL YEAR BUDGET

FYE 2018 PROPOSED BUDGET

OVERVIEW
Proposed Budget for FYE 2018

- $94.8 M General Fund Budget
- Use of Reserves $7.8 M
- Incorporates Cost Recovery Policy
- Staff Level: From 347 to 359 FTE
- Addresses Retirement Liabilities
- Includes 2.7% COLA *(pending negotiations)*

FYE 2018 FTE STAFFING LEVEL

FYE 2017 Budgeted Positions	347
FYE 2018 Recommended Positions	12
Total Budgeted Positions	359

ADDITIONAL STAFFING

NEW POSITIONS	Communication	Enforcement	Engineering	Executive	Information Services	Rule Development	Planning	FTE Total
Air Quality Engineer I			1					1
Air Quality Inspector I		1						1
Assistant Manager							1	1
Database Specialist			1					1
Health Officer				1				1
Information Systems Manager					1			1
Principal Air Quality Engineer							1	1
Public Information Officer II	1							1
Staff Specialist II				1				1
Supervising Air Quality Engineer			1					1
Senior Air Quality Engineer						2		2
FTE Total	1	1	3	2	1	2	2	12

UNFUNDED LIABILITIES

CALPERS PENSION RETIREMENT

CALPERS PENSION
Overview

- CalPERS Retirement (6/30/15 Valuation)
  - $269 M Obligation – 78% Funded
  - $59 M Unfunded
- Funding Policy: 90%
  - No Target Date
  - FYE 2018 Pre-fund: $1 M

CALPERS PENSION
Change In Rate Of Return

- **2016 Rate of Return: 0.6%**
  - Lower Rate of Return to 7% over 3 years

    FY17/18: 7.375%

    FY18/19: 7.25%

    FY19/20: 7.00%
- **Projected Employer Contribution Rates to increase from 18% to 31% over 5 years**

CALPERS PENSION

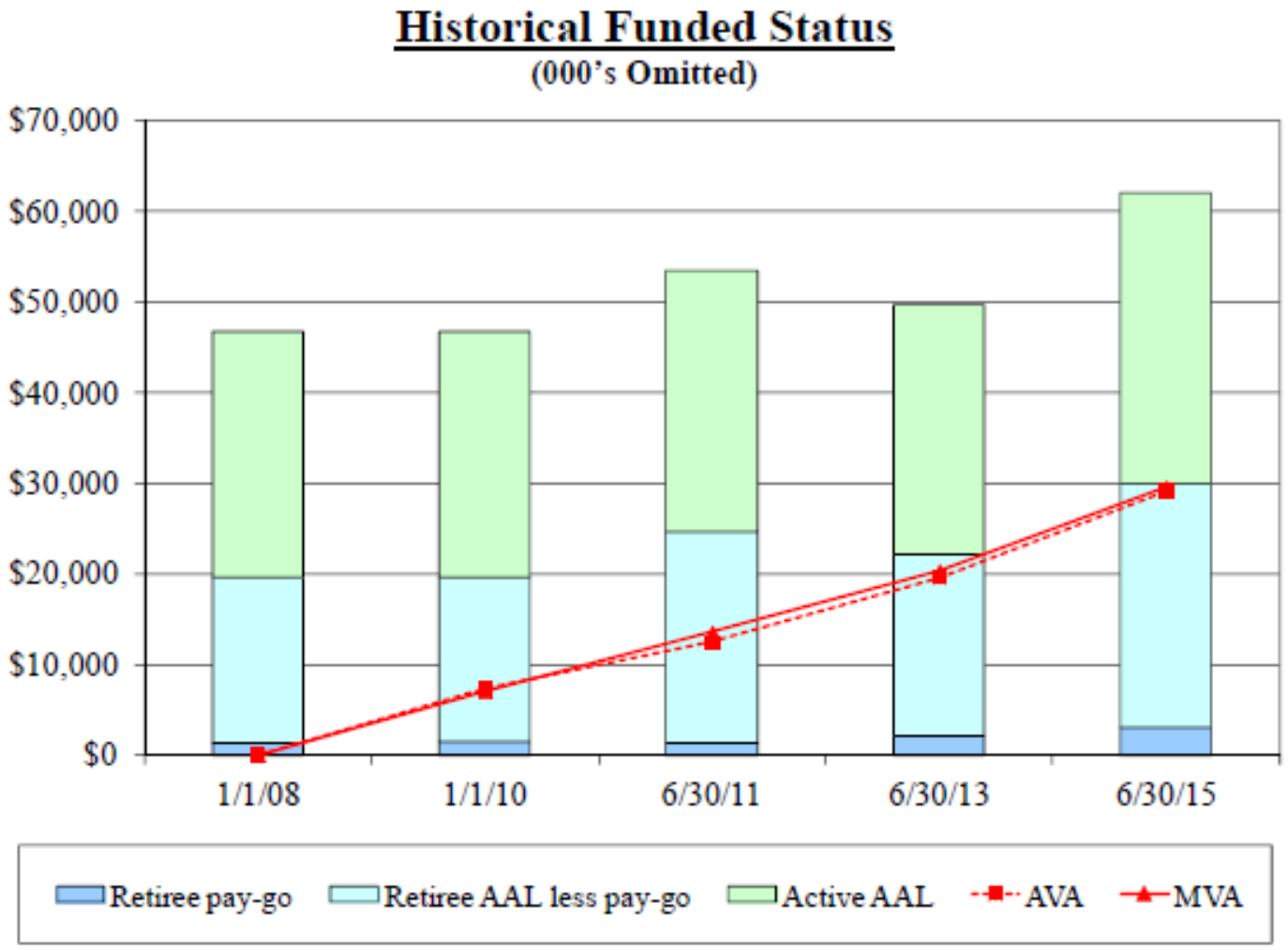
Possible Alternate Investment Vehicles

- Establish Pension Trust Fund through Public Agency Retirement Services (PARS)
- Prefund Pension through Pension Rate Stabilization Trust Fund to smooth rate volatility impacts

UNFUNDED LIABILITIES

OTHER POST RETIREMENT BENEFITS (OPEB)

OPEB
RETIREMENT MEDICAL



AAL = Actuarial Accrued Liability *AVA= Actuarial Value Assets* *MVA=Market Value Assets*

OPEB OVERVIEW

- OPEB Medical (6/30/15 Valuation)
  - $62 M Obligation – 47% Funded
  - $33 M Unfunded
- Funding Policy: 90% Funding Level
  - No Target Date
  - FYE 2018 Proposed Pre-Fund: $4 M*

*=The Air District will re-evaluate the level of contribution next year.

BUDGET SUMMARY
FYE 2018

- Budget balanced
- Use of Reserves of $7.9 M
- Budgeted positions increased to 359
- Other Post-Employment Benefits (OPEB):
  - Contribution increased to $4 M
- Pension Pre-funding
  - Contribution of $1 M

BUDGET SCHEDULE

- April 19 - Held 1st Public Hearing on Proposed Fees
- April 26 - Budget & Finance Recommends Budget
- May 17 - 1st Public Hearing on Proposed Budget
- June 21 - 2nd Public Hearing & Adoption of:

1. **Proposed Fees**
2. **Proposed Budget**

RECOMMENDATION

Approve the Resolution to approve the Budget for the Fiscal Year Ending 2018 (FYE 2017-2018) and various budget related actions.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

AGENDA: 13

Regulation 12, Rule 16

Eric Stevenson
Director of Meteorology, Measurement, and Rules

Board of Directors Meeting
June 21, 2017

Staff Recommendation

- ***Adopt Regulation 12, Rule 16 (Rule 12-16) as revised***

- ***Certify EIR for Rule 12-16***

Presentation Overview

- May 31st Board direction
- CBE Proposal
- Revised Staff Proposal
- Key Issues
- Reason for changes
- Summary
- Staff Recommendation

May 31st Board Direction

Revise Rule 12-16 to:

- Cap greenhouse gas (GHG) only
- Create a backstop to ensure GHG emissions do not increase
- Bring revised Rule 12-16 to Board for consideration of adoption on June 21st
- Work with CARB and CAPCOA to reduce refinery GHG emissions

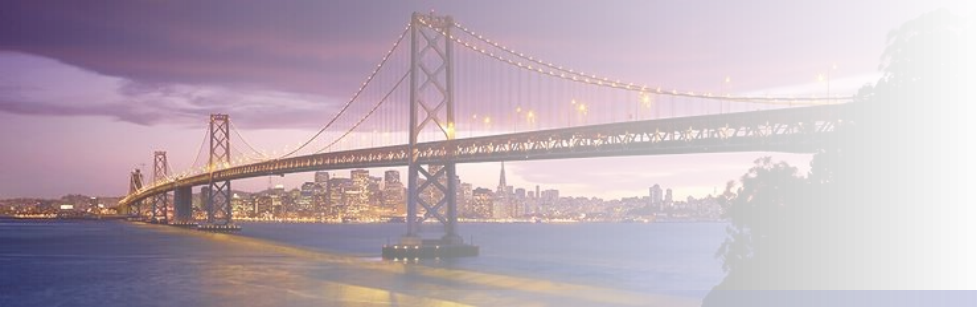
CBE Proposal

Limits refinery GHG & criteria pollutant emissions

- Affects five refineries and three associated facilities
- Caps GHG, PM_{10}, $PM_{2.5}$, SO_2 and NO_X emissions
- Limits set at 7% above each refinery's five-year max
- Staff cannot support this approach due to legal and technical issues

Revised Staff Proposal

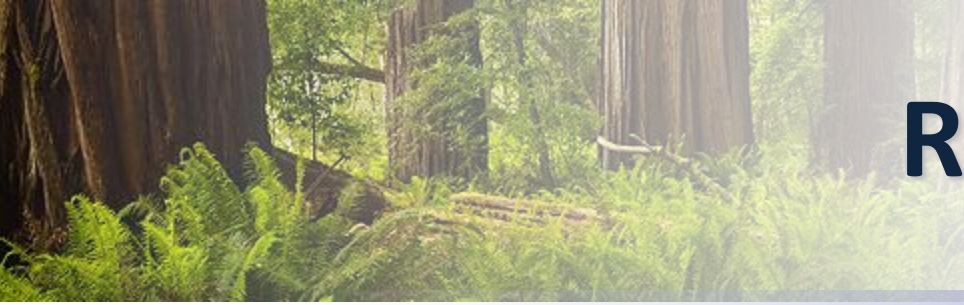
- Caps GHG emissions
- Affects five refineries and three associated facilities
- Methodology to set caps -
  - Mean of annual GHG emissions reported during the baseline period (2011 – 2015)
  - Add ~~three~~ two standard deviations for operational variability
  - ~~Add 3% to accommodate increase in fuel demand projected by EIA~~
  - Add emissions (~~100%~~ 95%) for permitted projects not fully operational during baseline period
- Staff recommends this approach; it is technically and legally defensible



Key Issues

Methodologies for determining the cap provided similar limits, however the staff proposal takes into account equipment/processes that are permitted but not fully utilized

- Emissions for baseline years do not account for all permitted equipment emissions
- By obtaining permits, facilities are allowed to operate permitted equipment under the conditions that existed when the permit was obtained
- Permits do not provide a vested right to emit, *but* they do convey a right to operate



Reason for Changes

- Using the mean emissions over baseline years is a better reflection of typical operations
- Standard deviation is best engineering practice to represent fluctuations in operation
- Allowing for 95% utilization of previously permitted equipment mirrors current production levels and operation

Summary

- This rule will serve as a backstop to increasing GHG emissions
  - Staff with work with CARB and CAPCOA to implement the Scoping Plan and achieve GHG emission reductions
- All future emissions must remain under the cap
- This is the first refinery emission cap in the nation

Staff Recommendations

- ***Adopt Regulation 12, Rule 16 (Rule 12-16) as revised***

- ***Certify EIR for Rule 12-16***

Technical Charts

Emission Limit Comparison

Facility	CBE Proposed Limit (metric tons CO_2e/yr.)	Staff Proposed Limit (metric tons CO_2e/yr.)	% Change
Chevron Refinery A-0010	4.77 M	5.11 M	7%
Shell Refinery A-0011	4.56 M	4.33 M	-5%
Valero Refinery, B-2626 & Asphalt Plant, B-3193	3.15 M	3.87 M	23%
Tesoro Refinery B-2758/B-2759	2.62 M	2.68 M	3%
Phillips 66 Refinery A-0016	1.61 M	1.79 M	10%
Air Liquide H2 Plant B-7419	947 K	1.21 M	28%
Air Products H2 Plant B-0295	290 K	296 K	2%
Martinez Cogen LP A-1820	451 K	431 K	-4%

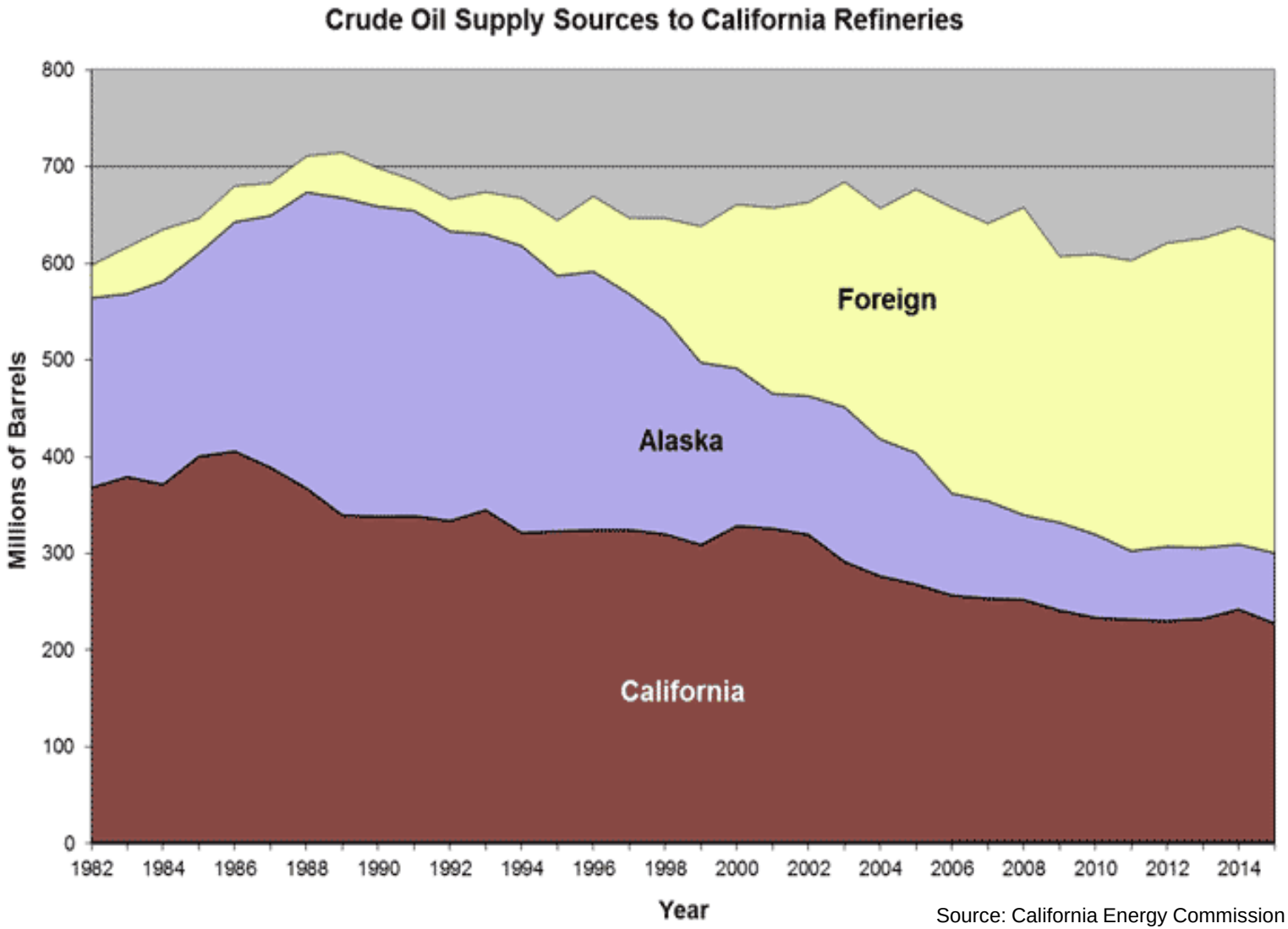
Staff Proposed Limit Details

Facility	Mean Emissions in 2011-2015 Baseline (metric tons CO_2e/yr.)	Operating Variability (metric tons CO_2e/yr.)	Increase for Permitted, Under-utilized Sources (metric tons CO_2e/yr.)	Emissions Limit (metric tons CO_2e/yr.)
Chevron Refinery A-0010	4.33 M	304 K	469 K	5.11 M
Shell Refinery A-0011	4.12 M	205 K	-	4.33 M
Valero Refinery, B-2626 & Asphalt Plant, B-3193	2.77 M	211 K	885 K	3.87 M
Tesoro Refinery B-2758/B-2759	2.26 M	322 K	94 K	2.68 M
Phillips 66 Refinery A-0016	1.36 M	156 K	257 K	1.79 M
Air Liquide H2 Plant B-7419	787 K	160 K	262 K	1.21 M
Air Products H2 Plant B-0295	240 K	56 K	-	296 K
Martinez Cogen LP A-1820	407 K	24 K	-	431 K

Permitted Projects

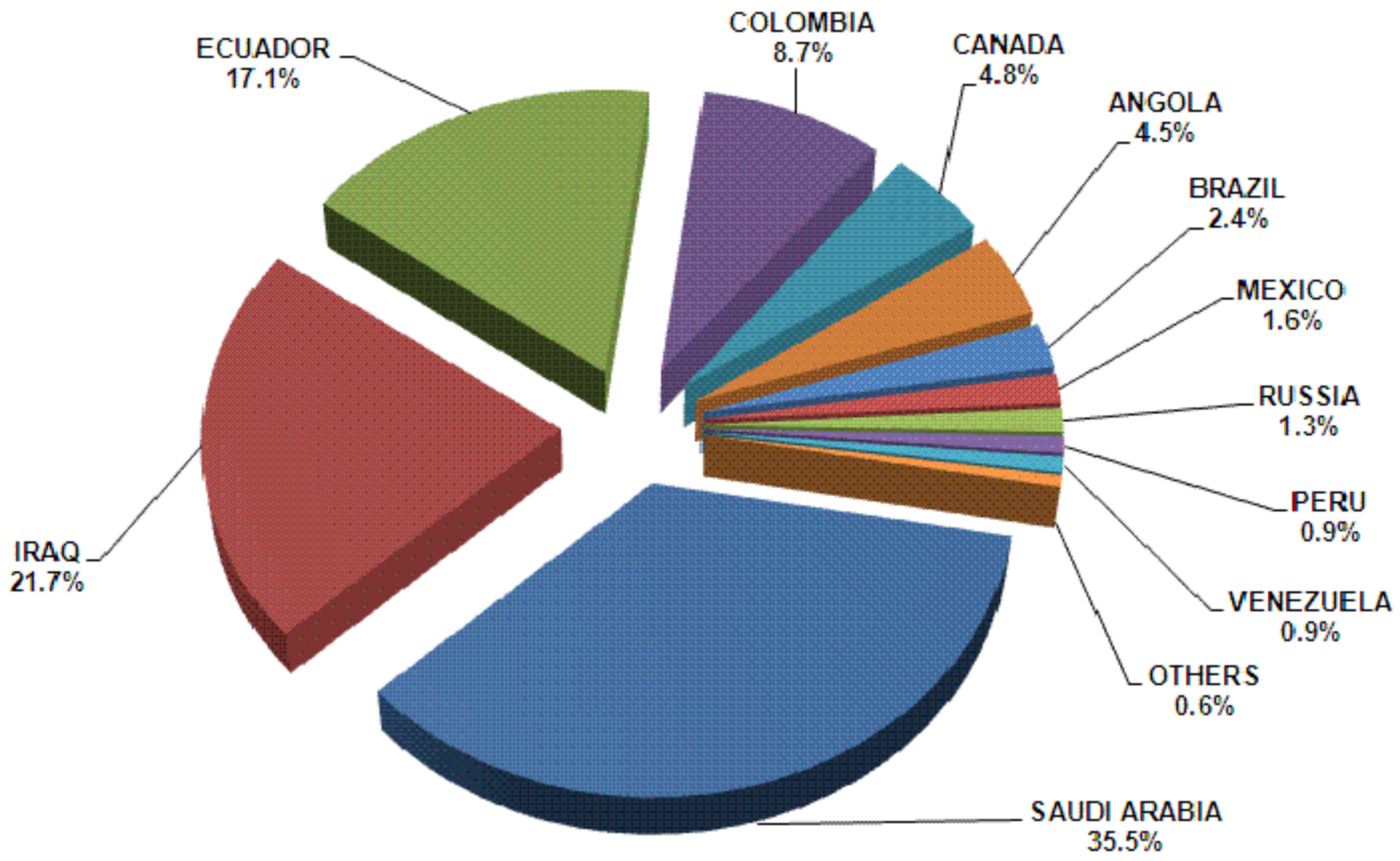
Facility	Application #	Description
Air Liquide Hydrogen Plant B-7419	13678	Clean Fuels
Chevron Refinery A-0010	12842	Chevron Modernization
Phillips 66 Refinery A-0016	13424	Clean Fuels
	11293	Hydrogen Production Increase
Tesoro Refinery B-2758/B-2759	23322	No 2 Reformer Heaters Firing Increase
	27395	Back-up Boilers (5X @ 99MM each)
Valero Refinery & Asphalt Plant B-2626/B-3193	2488	Cogen
	16937	VIP Amendments
	13009	Ultra-Low Sulfur Diesel (ULSD)

Crude Oil Information



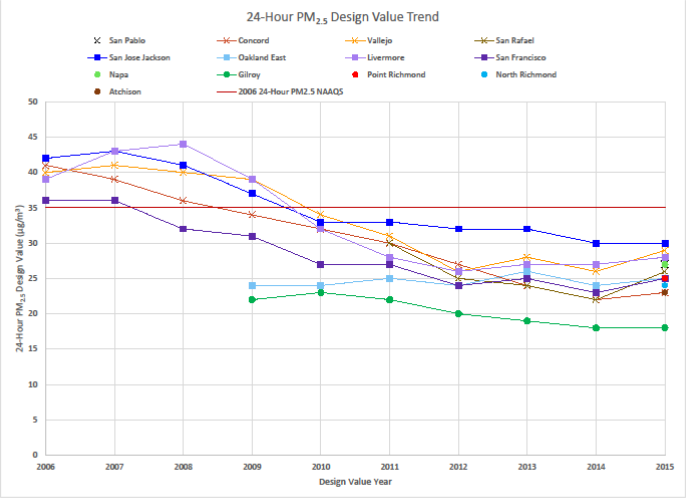
Source: California Energy Commission

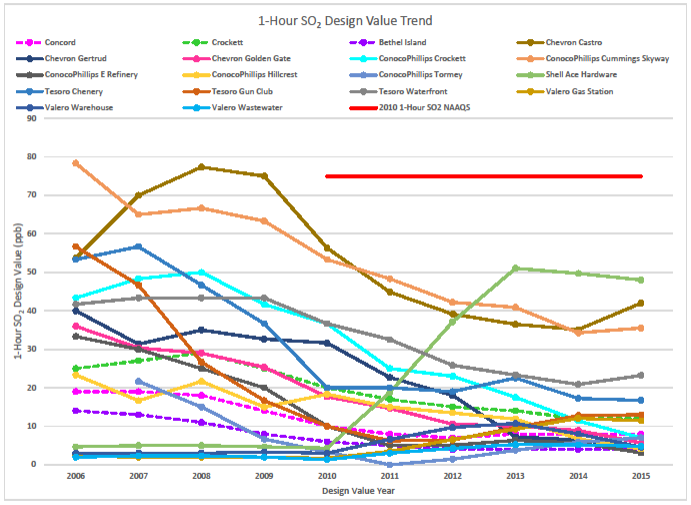
Foreign Sources of Crude Oil Imports to California 2014

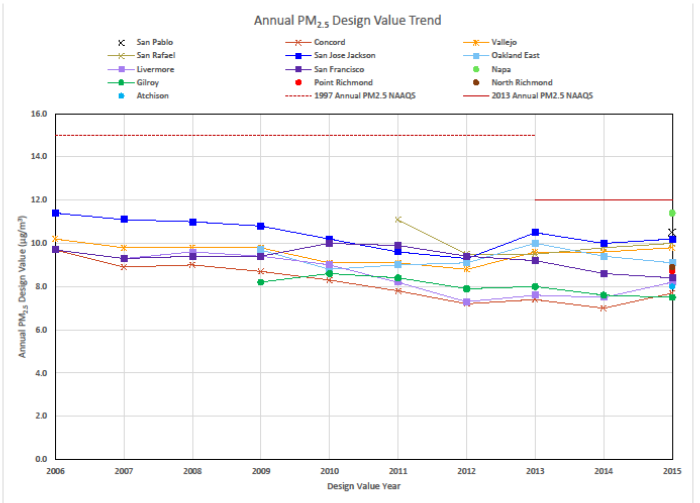


Source: Energy Information Administration (EIA), Company-Level Imports.

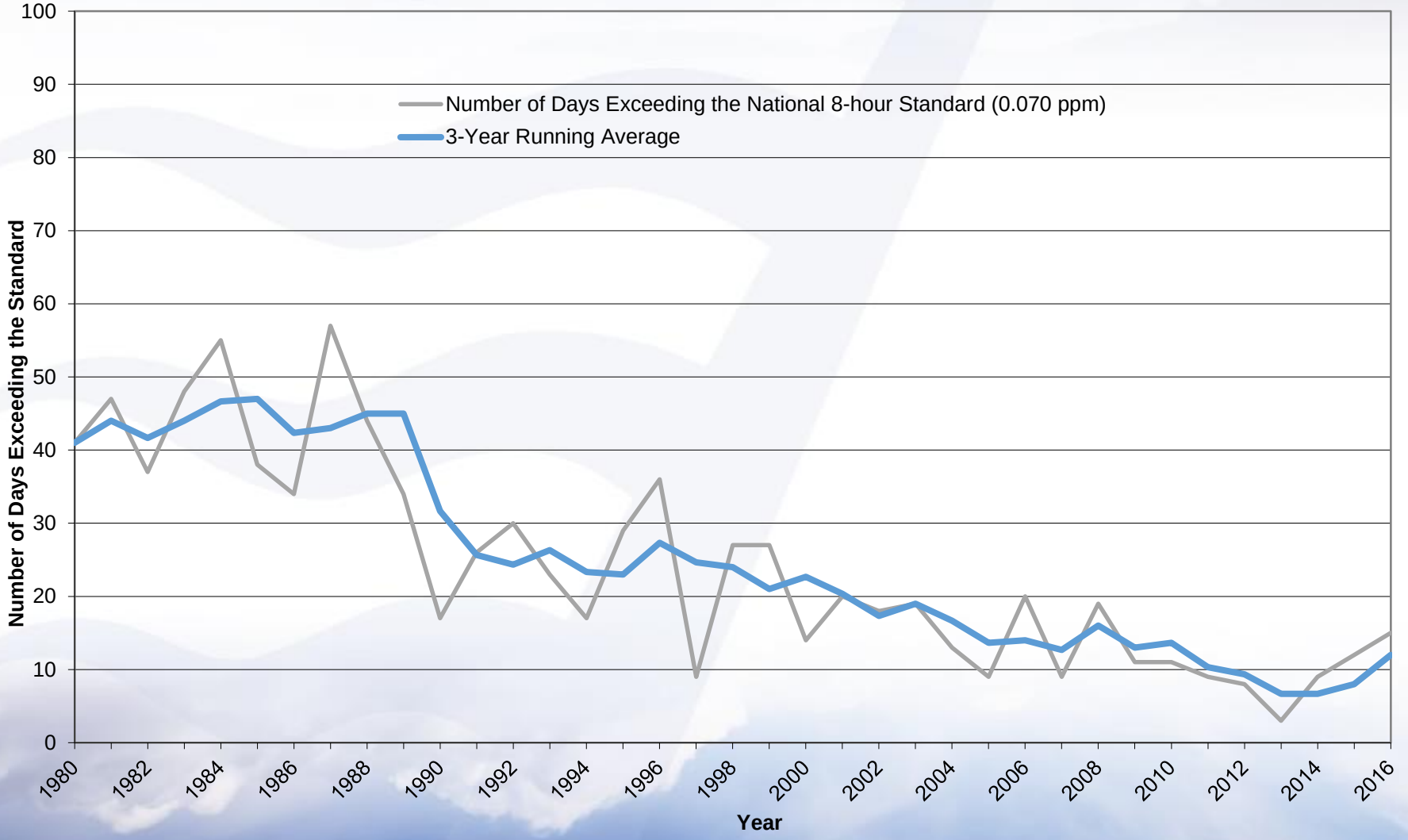
Criteria Pollutant Trends





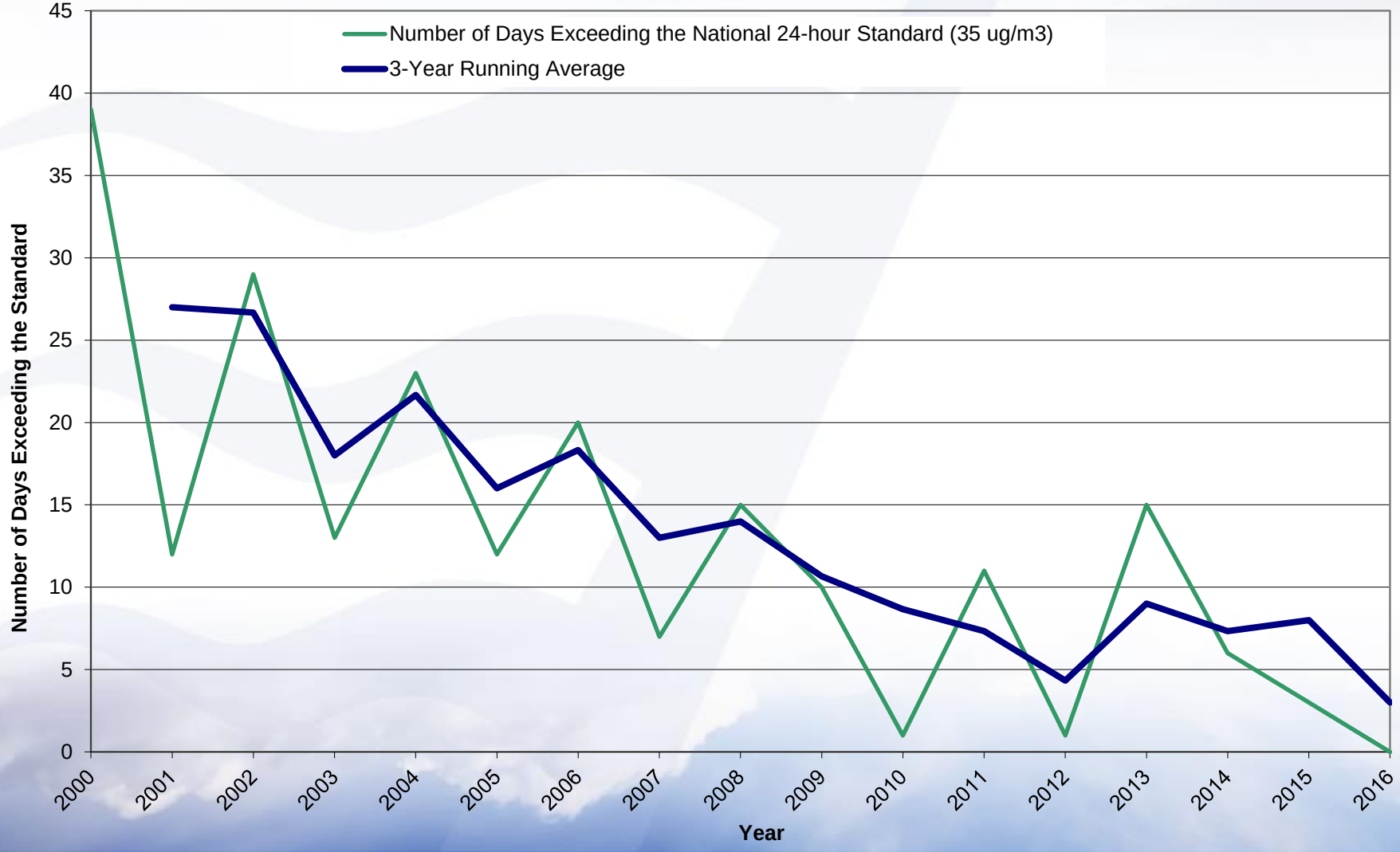


Ozone Exceedance Trends 1980 to Present

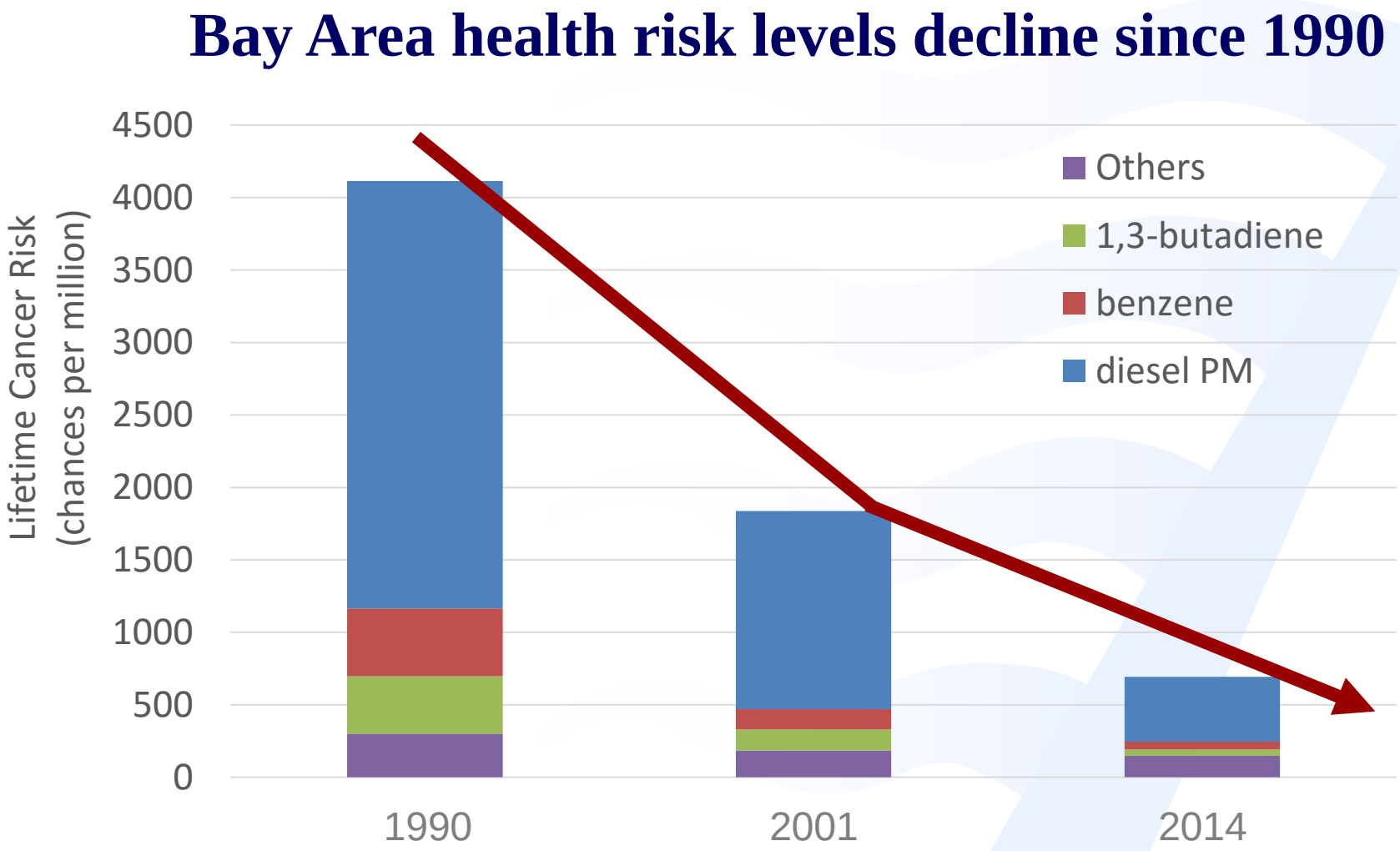


$PM_{2.5}$ EXCEEDANCE TRENDS 2000 to Present

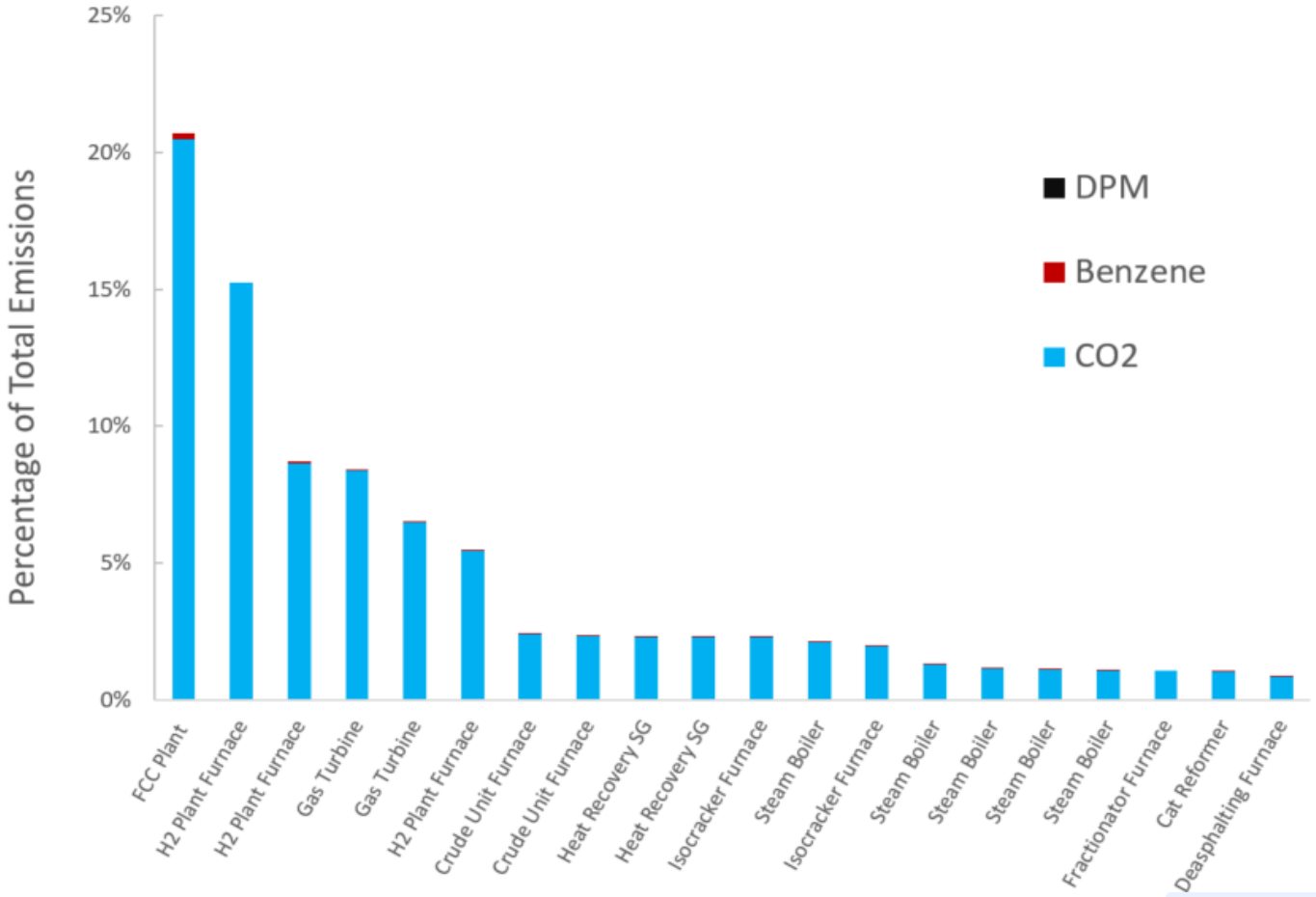
Bay Area $PM_{2.5}$ Trend (March to February)



Toxic Air Contaminants

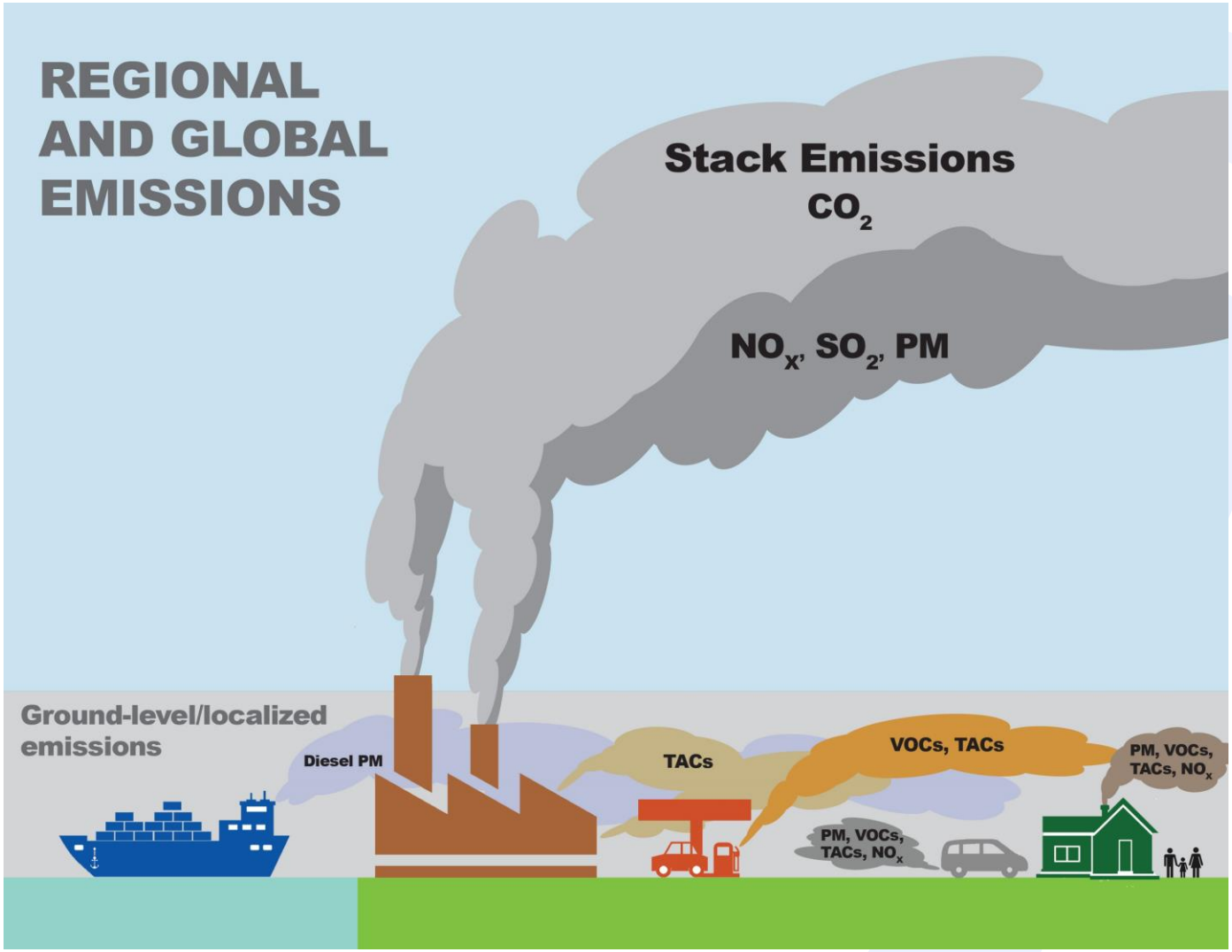


Top Sources of GHG Emissions at Typical Large Refinery

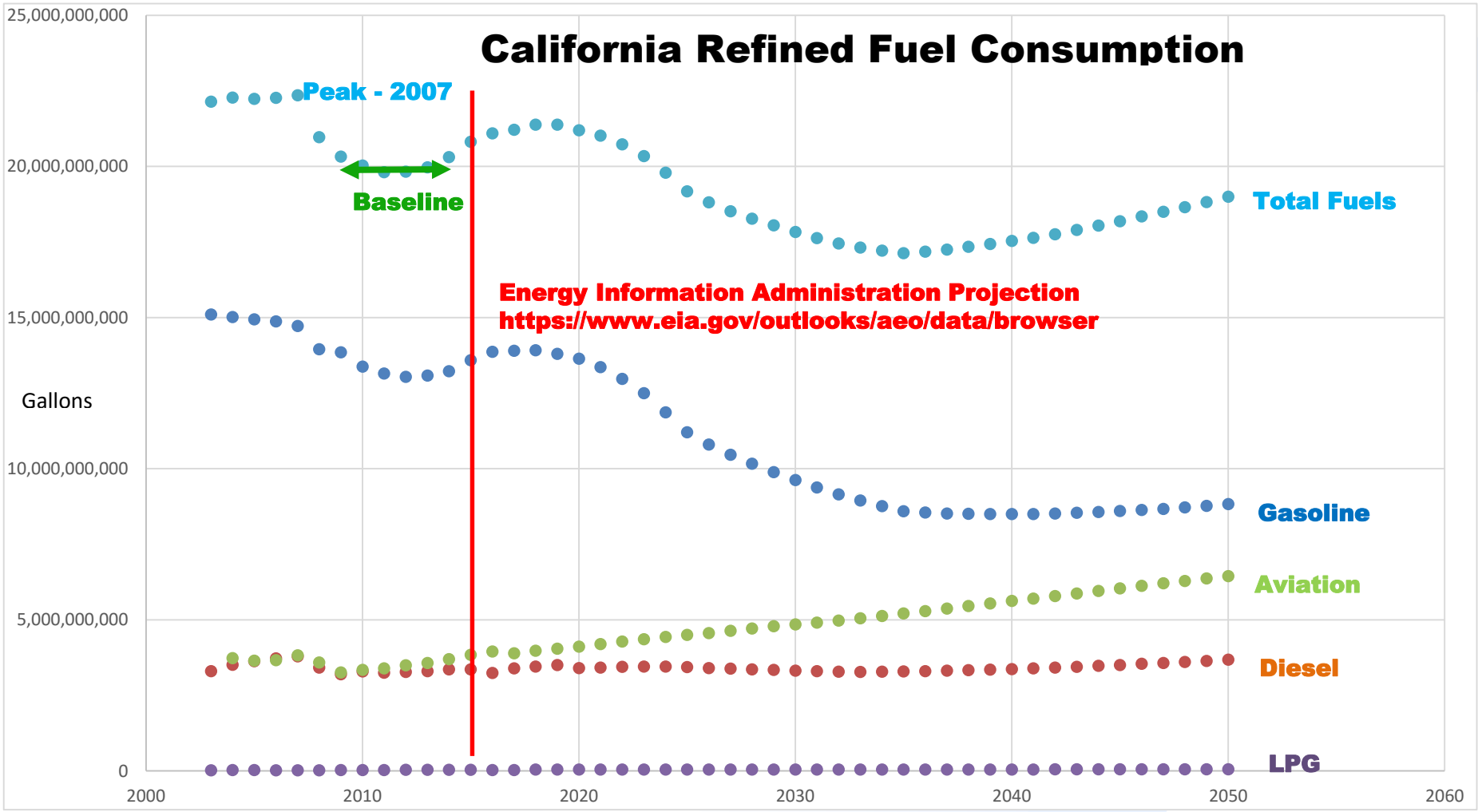


- 88% of CO_2 emissions
- 0.45% of Benzene emissions
- 0% of DPM emissions

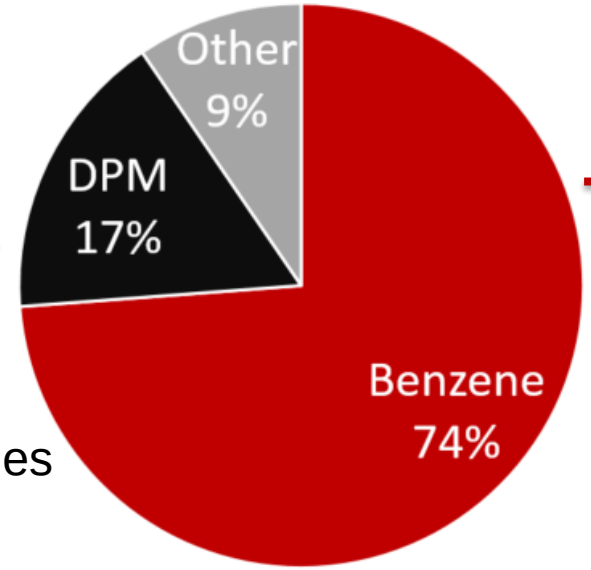
Impact of Stack Height at Refineries



Gasoline Consumption

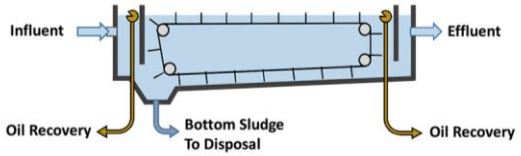


Cancer Risk Drivers for Typical Large Refinery



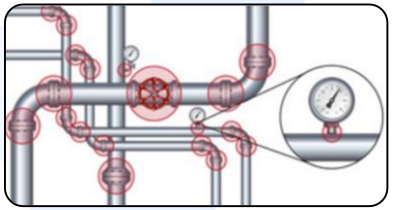
Diesel Engines
> 90%

- Wastewater Treatment



- Storage Tanks

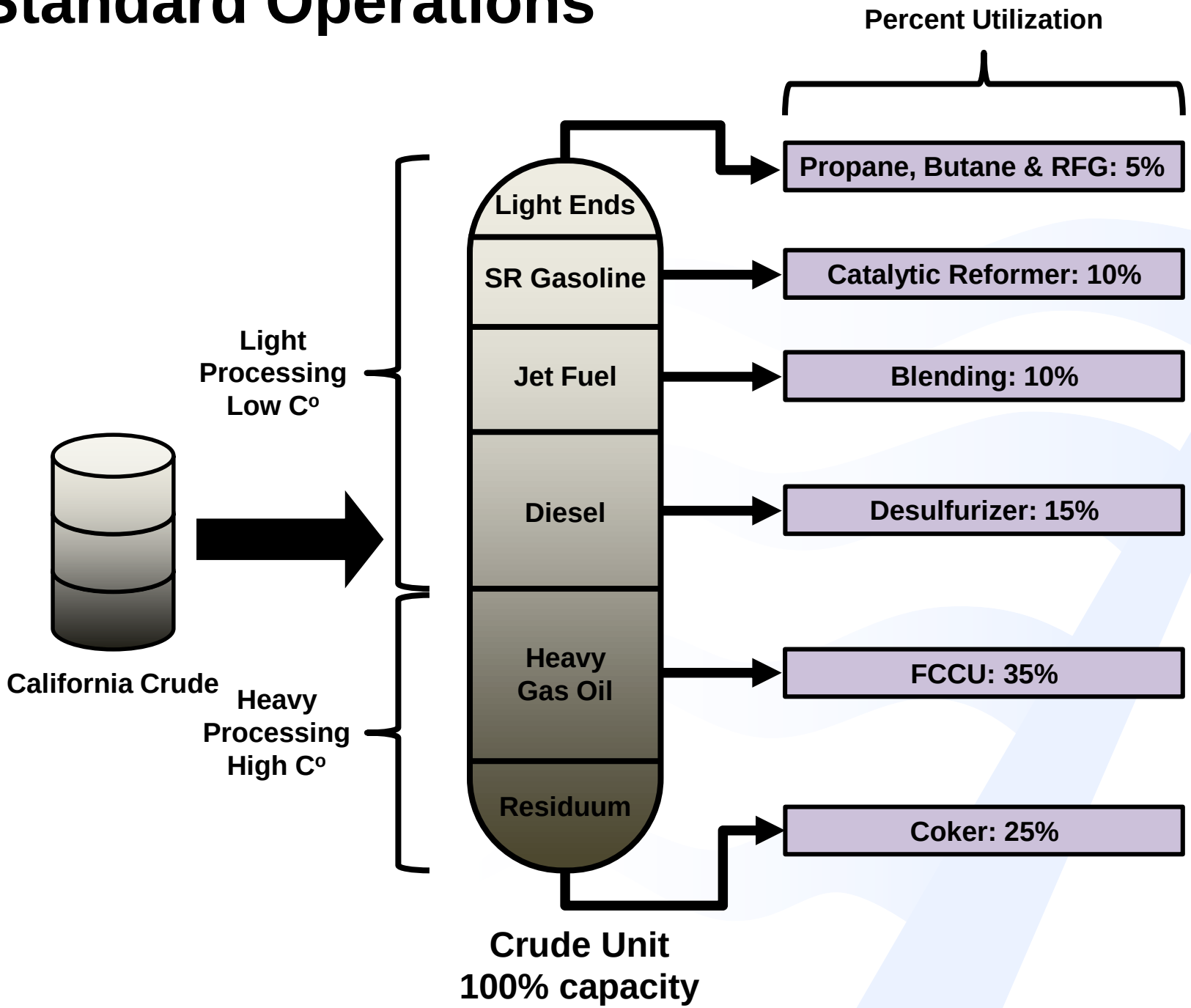
- Valves, Flanges, Connectors & Seals



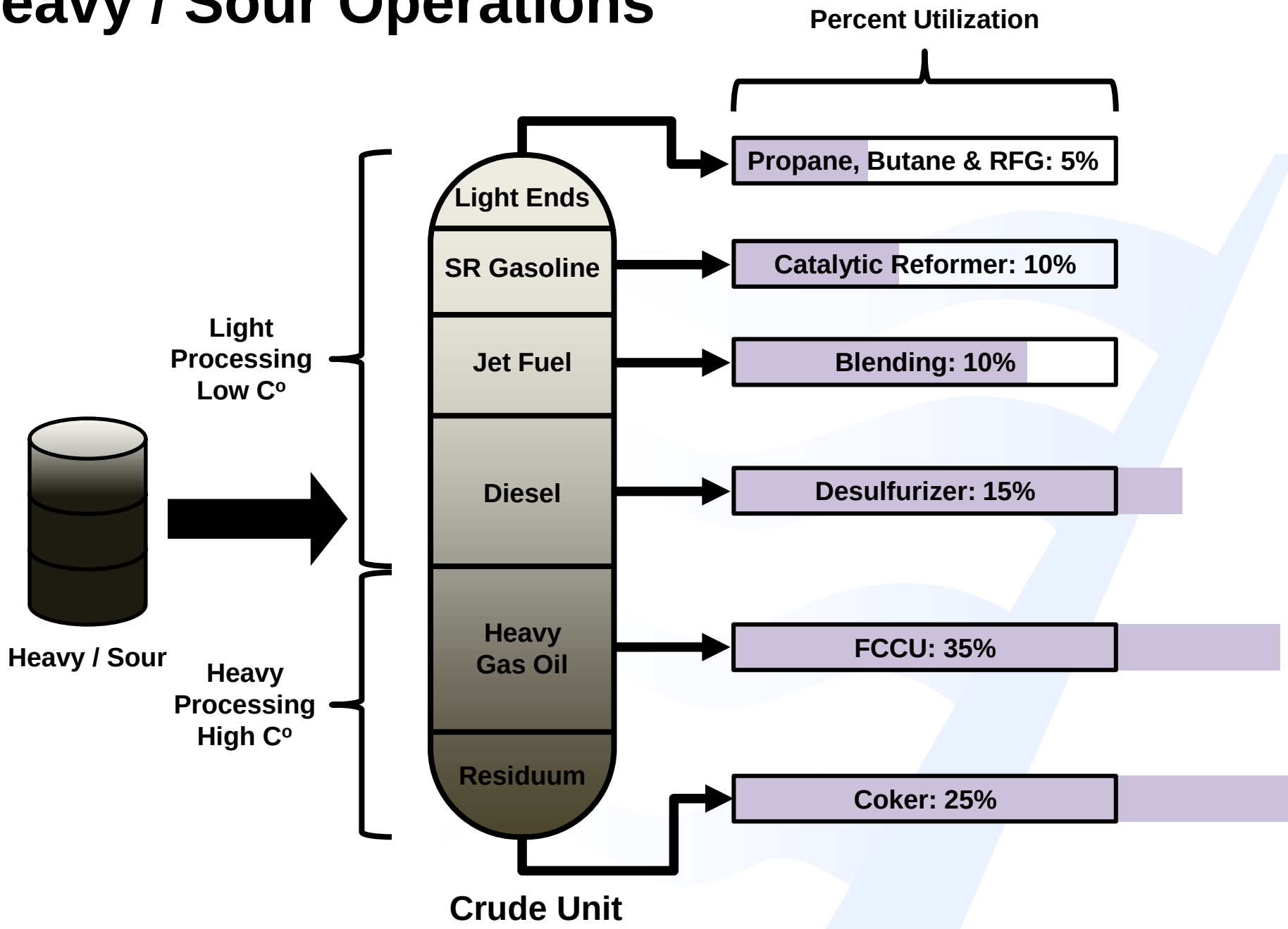
Implementation Resources

- Requires additional permitting & compliance staff (+5 FTEs) to maintain current level of service for permitting and compliance operations
- Resources are required to perform the following:
  - Evaluate all permit application emissions using existing and 12-16 methodologies
  - Determine and maintain facility potential to emit limits for GHGs using ARB's methodologies
  - Evaluate reported emission inventories and throughputs against existing limits and 12-16 caps annually

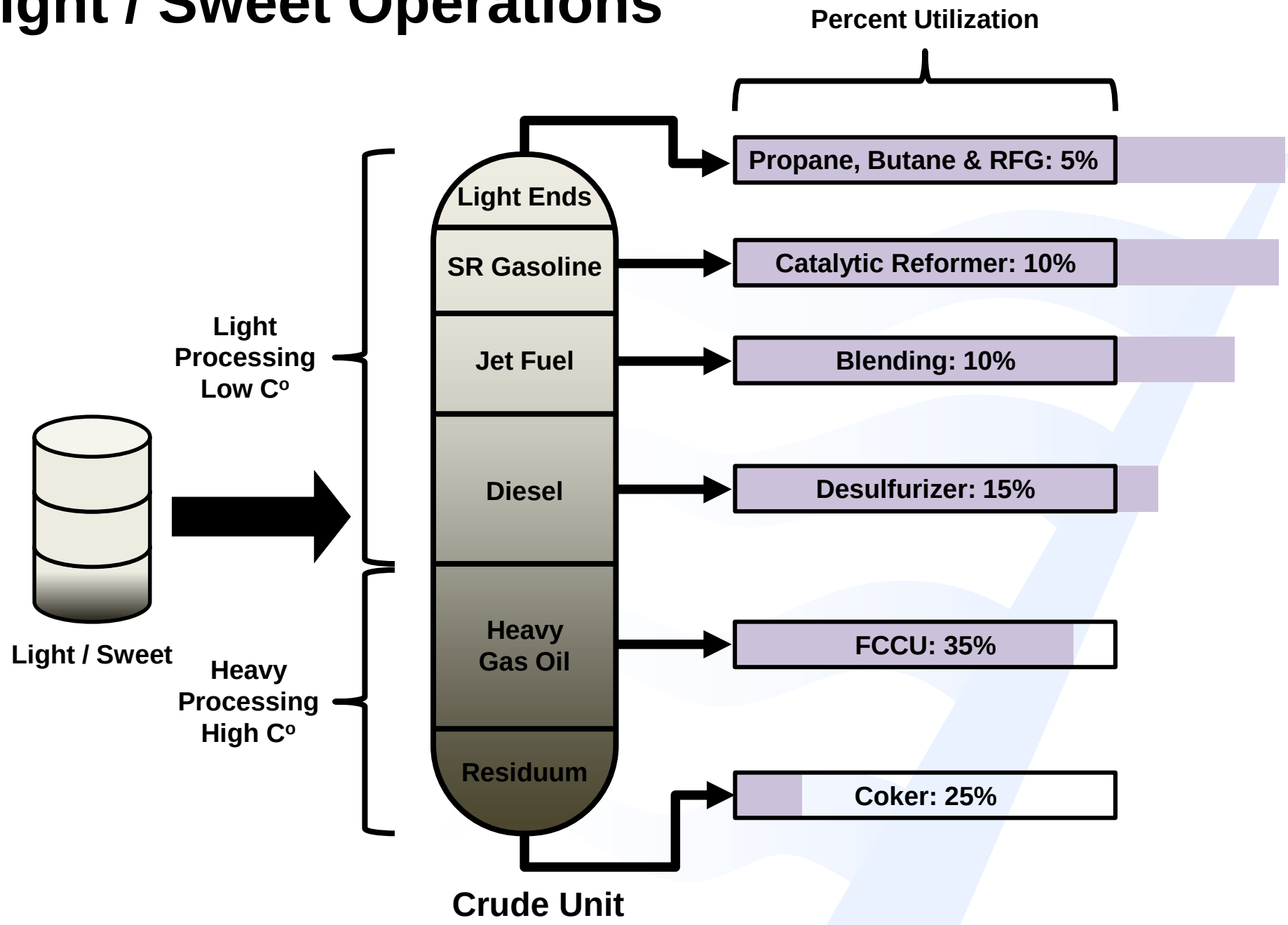
Standard Operations

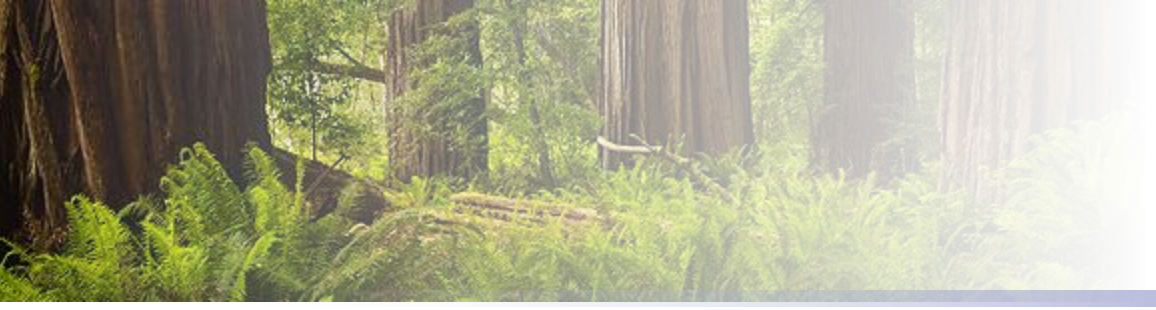


Heavy / Sour Operations



Light / Sweet Operations





Crude Oil Comparison

Crude Unit Cut	California (Kern River)	Alaska North Slope	Canadian Tar Sands (Albion Heavy Synthetic)	Fracked Crude (Eagle Ford Shale Oil)
LPG	1%	4%	2%	1%
Straight Run Gasoline	14%	23%	14%	37%
Jet Fuel	8%	19%	5%	12%
Diesel	12%	13%	9%	21%
Heavy Gas Oil	30%	29%	11%	24%
Residuum	34%	12%	59%	4%

11-18 Details

Rule 11-18 Planned *Implementation Approach*

1. Prioritize Facilities
2. Conduct Health Risk Assessments
   - Setup Model
   - Validate Model
   - Conduct Health Risk Assessments
3. Public Comment on HRAs
4. Publish HRA Results to Air District website & email subscription list
5. Risk Reduction Plan
   - Publish Requirement, Submission and Implementation Status to Air District website & email subscription list
   - Public Review & Comment on Plan
   - 3-year implementation timeline

AGENDA: 13

Chevron Presentation

June 21, 2017

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

NEWS

FOR IMMEDIATE RELEASE
May 4, 2017

CONTACT: Tom Flannigan
415.749.4900

Bay Area achieves federal particulate matter air quality standard

Significant milestone in long-term Bay Area air quality improvement

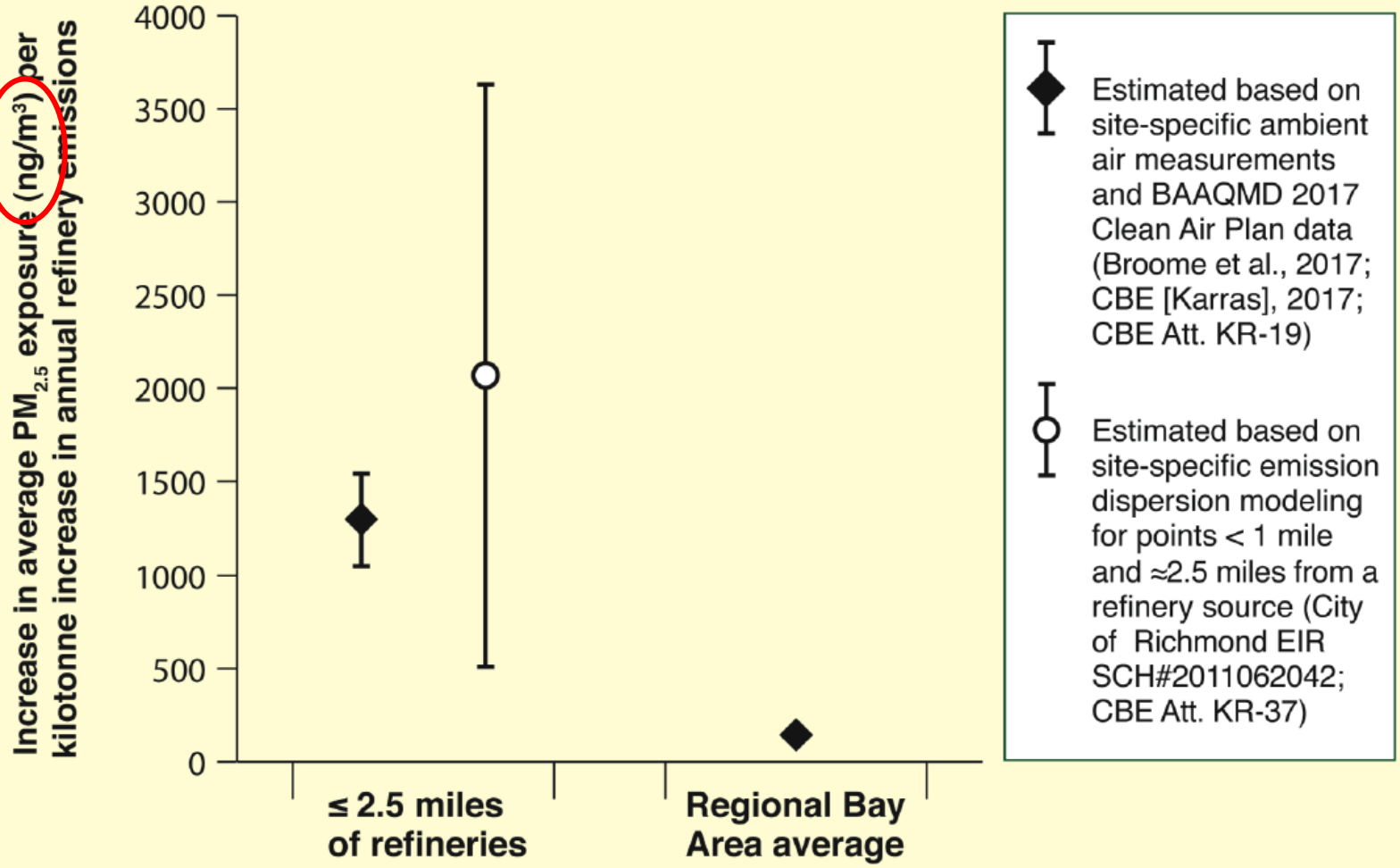
SAN FRANCISCO - The Bay Area Air Quality Management District has achieved a significant air quality milestone – successfully attaining the fine particulate matter standard by the federal December 2015 deadline.

Eleven years after the U.S. Environmental Protection Agency adopted ~~the more stringent health~~-based requirement, the Bay Area has achieved the air quality standard of 35 micrograms per cubic meter. The Air District learned this week that the US EPA found that regionally, the nine counties meet the current health protective standard for fine particle pollution.

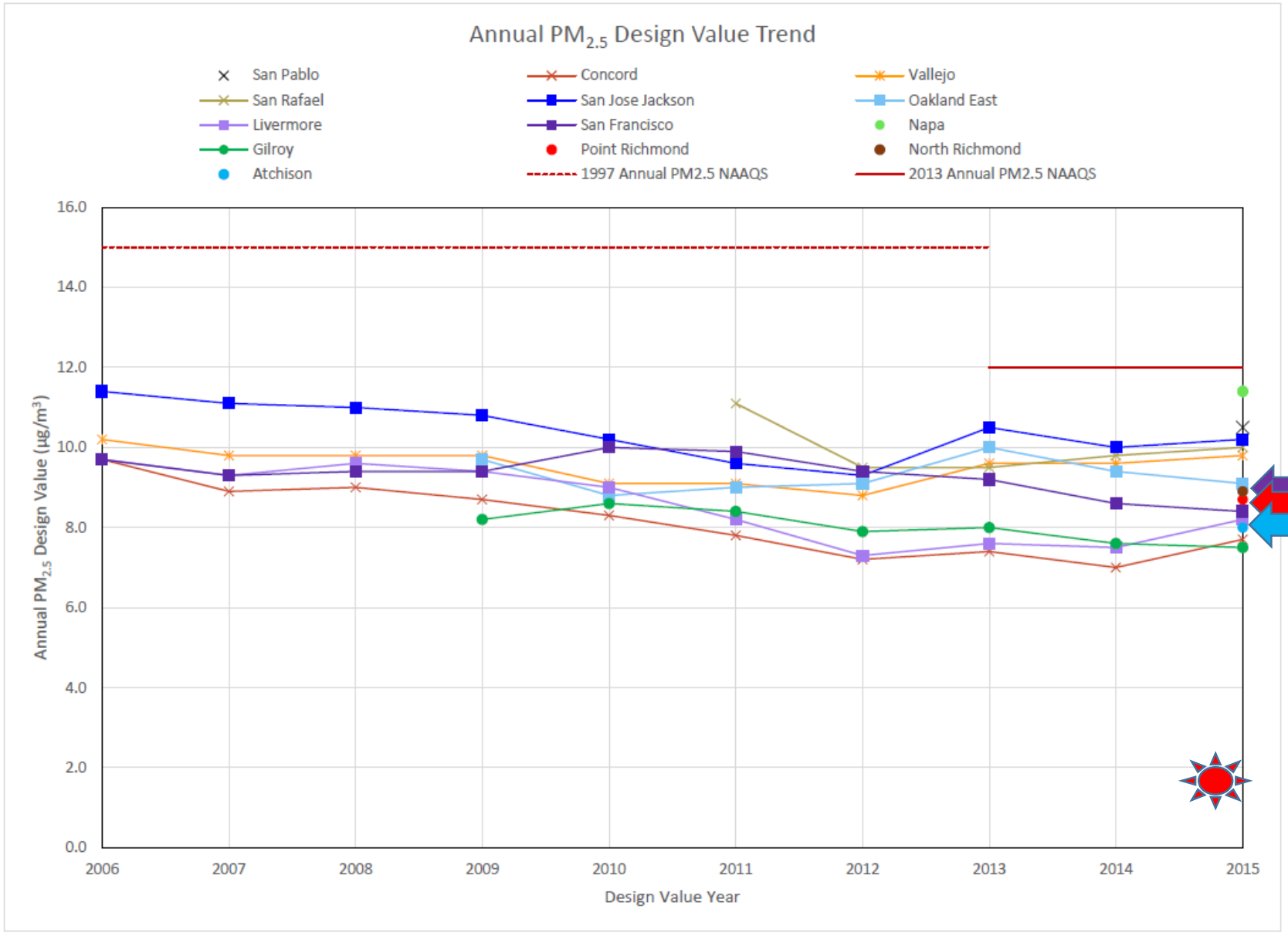
"Meeting this air quality milestone is truly a clean air success story for the Bay Area – and the Air District's 2008 Wood Burning Rule has played a significant role helping us meet the standard," said Jack Broadbent, executive officer of the Air District. "Residents have stepped up and have stopped burning wood. Now we can work at further reducing pockets of pollution in neighborhoods and toxic diesel emissions so that everyone in the Bay Area benefits from cleaner air."

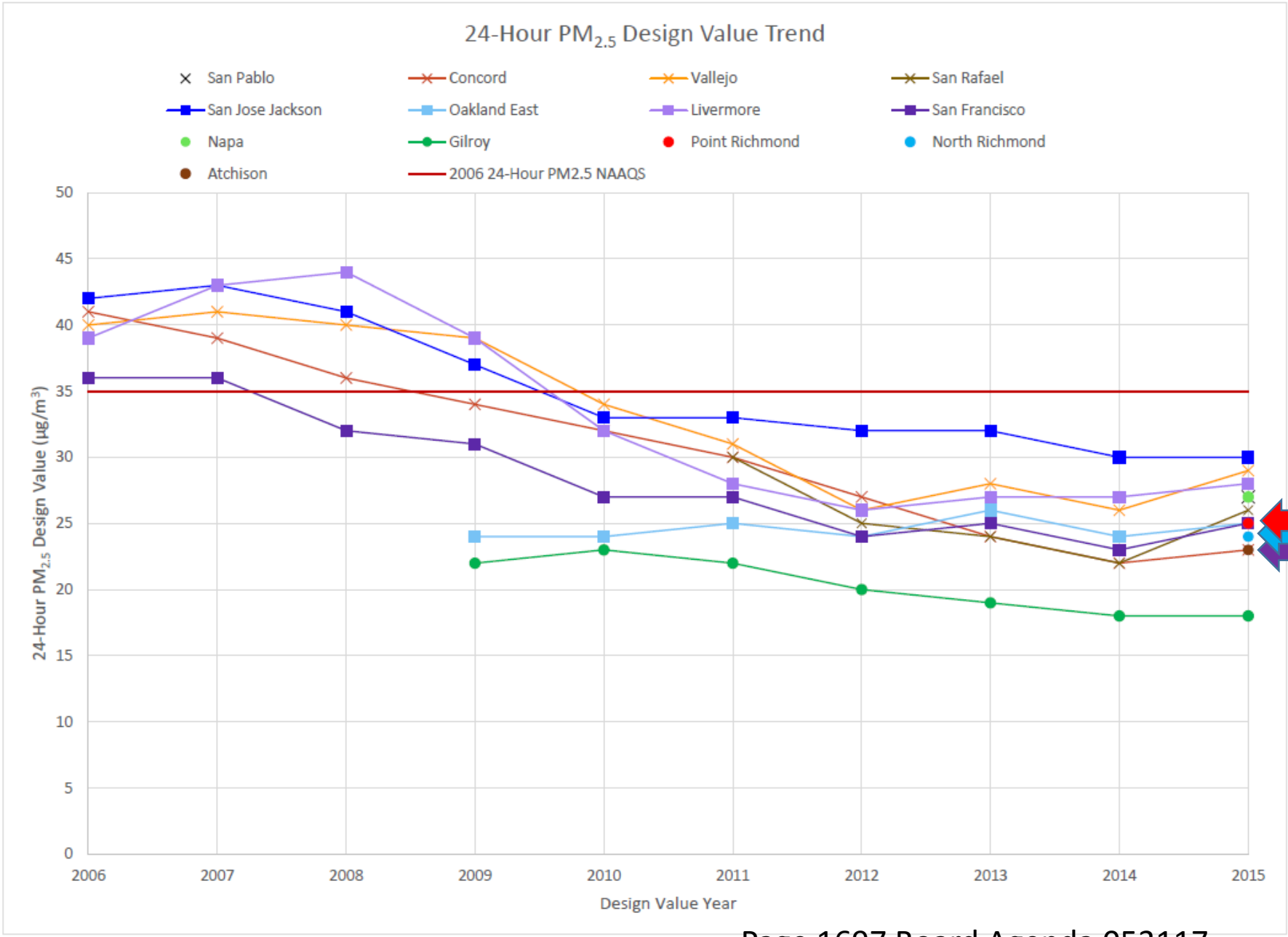
The Air District's actions, such as the 2008 Wood Burning rule and controls on stationary diesel engines have helped reduce fine particle pollution. Since 2009 the Air District directed over $100 million in grant funding to reduce pollution around the ports by cleaning up or replacing older, dirtier trucks and electrifying shipping berths. The Air District will continue to work at further reducing particulate matter in impacted communities such as inland valleys and along major roadways.

PM2.5, consists of microscopic sized solid particles or liquid droplets that can either be emitted directly into the air, or formed by reacting to chemicals in the atmosphere. Particulate matter is emitted during the combustion of automobile and diesel truck fuels, smoke from power generation and residential wood burning. PM2.5 is a serious health concern because these microscopic particles can evade the body's natural defenses and penetrate deep into the lungs where they cause serious health effects.



Increasing $PM_{2.5}$ exposure caused by increasing refinery emissions: Broome et al.'s estimate (bracketed diamonds) appears reasonable compared with refinery dispersion modeling (bracketed circle) that BAAQMD air permitting has relied upon.


Annual PM2.5 Design Value Trend
San Pablo
Concord
Vallejo
San Rafael
San Jose Jackson
Oakland East
Livermore
San Francisco
Napa
Gilroy
Point Richmond
North Richmond
Atchison
1997 Annual PM2.5 NAAQS
2013 Annual PM2.5 NAAQS
Annual PM2.5 Design Value (µg/m3)
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Design Value Year


24-Hour PM2.5 Design Value Trend
San Pablo
Concord
Vallejo
San Rafael
San Jose Jackson
Oakland East
Livermore
San Francisco
Napa
Gilroy
Point Richmond
North Richmond
Atchison
2006 24-Hour PM2.5 NAAQS
24-Hour PM2.5 Design Value (µg/m3)
0
5
10
15
20
25
30
35
40
45
50
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Design Value Year

Worst Cities with Asthma

Asthma and Allergy Foundation of America

Memphis, TN, is the #1 Asthma Capital this Year

Several significant factors contributed to Memphis' #1 spot this year such as poor air quality, inadequate public smoking bans, high reliance on asthma medications and many emergency room visits for asthma. The top twenty-five most challenging cities to live in with asthma this year are:

1. Memphis, TN
2. Richmond, VA
3. Philadelphia, PA
4. Detroit, MI
5. Oklahoma City, OK
6. Augusta, GA
7. Knoxville, TN
8. Chattanooga, TN
9. New Orleans, LA
10. Chicago, IL
11. Indianapolis, IN
12. New Haven, CT
13. Fresno, CA
14. Providence, RI
15. Tulsa, OK
16. Atlanta, GA
17. McAllen, TX
18. Dayton, OH
19. Allentown, PA
20. Cleveland, OH
21. Louisville, KY
22. Milwaukee, WI
23. Springfield, MA
24. Toledo, OH
25. Jacksonville, FL

To view the full list of 100 Asthma Capitals and the ranking methodology, visit www.AsthmaCapitals.com.

AsthmaCAPITALS 2015

Asthma and Allergy Foundation of America

"The Most Challenging Places to Live with Asthma"

The Asthma Capitals™ is an annual research project of the Asthma and Allergy Foundation of America® (AAFA) to identify "the most challenging places to live with asthma." This report provides a summary of factors used to compare and rank the 100 largest U.S. metro areas. Visit us online to learn how to manage your asthma better no matter where you live. Go to www.AsthmaCapitals.com, call 1-800-7-ASTHMA or write to info@aafa.org for more information. This year's report is sponsored by QVAR® (beclomethasone dipropionate HFA) Inhalation Aerosol and Teva Pharmaceuticals. (See Important Safety Information page 7.)

● Worse than Average
◖ Average*
○ Better than Average

Factors are not weighted equally

					Prevalence Factors			Risk Factors						Medical Factors			
2015 national rank		Total score	Rank last year	Metro area	Estimated asthma prev-alence	Self-reported asthma prev-alence	Crude death rate for asthma	Annual pollen score ▲	Air quality	"100%" public smoke-free laws △	Poverty rate	Un-insured rate	School inhaler access law ▼	ER visits for asthma ◤	Use of quick relief meds	Use of control meds	Number of special-ists
1	●	100.00	2	Memphis, TN	○	○	●	●	◖	●	●	●	○	●	●	●	○
2	●	96.21	1	Richmond, VA	◖	◖	●	●	◖	●	●	●	○	●	◖	●	◖
3	●	95.23	5	Philadelphia, PA	●	●	●	◖	●	●	●	◖	○	●	●	◖	●
4	●	94.53	10	Detroit, MI	●	●	●	○	●	◖	●	◖	○	●	●	◖	●
5	●	93.22	4	Oklahoma City, OK	●	◖	◖	●	◖	●	◖	●	○	◖	●	●	◖
6	●	92.20	14	Augusta, GA	◖	◖	●	○	◖	●	●	●	○	●	●	●	○
7	●	90.25	41	Knoxville, TN	○	○	○	●	◖	●	◖	◖	○	◖	●	●	○
8	●	90.14	6	Chattanooga, TN	○	○	◖	◖	◖	●	◖	◖	○	●	●	●	○
9	●	88.68	22	New Orleans, LA	○	○	●	●	◖	◖	●	●	○	●	●	●	○
10	●	88.62	9	Chicago, IL	◖	○	●	◖	●	◖	◖	●	○	●	◖	◖	◖
11	●	88.33	32	Indianapolis, IN	◖	●	●	○	●	◖	●	●	○	●	●	◖	◖
12	●	87.81	11	New Haven, CT	●	●	○	●	◖	●	○	○	○	●	●	●	○
13	●	87.64	7	Fresno, CA	◖	◖	●	◖	●	◖	●	●	○	◖	●	◖	◖
14	●	87.56	33	Providence, RI	●	●	○	●	◖	◖	●	◖	○	●	●	●	●
15	●	87.00	8	Tulsa, OK	●	◖	◖	●	◖	●	◖	●	○	○	●	◖	◖
16	●	86.88	13	Atlanta, GA	◖	◖	●	○	◖	●	●	●	○	●	◖	○	●

2015 national rank		Total score	Rank last year	Metro area	Prevalence Factors			Risk Factors						Medical Factors			
					Estimated asthma prev-alence	Self-reported asthma prev-alence	Crude death rate for asthma	Annual pollen score ▲	Air quality	"100%" public smoke-free laws △	Poverty rate	Un-insured rate	School inhaler access law ▼	ER visits for asthma ◤	Use of quick relief meds	Use of control meds	Number of special-ists
85	○	67.66	67	San Diego, CA	◖	◖	○	○	●	◖	○	●	○	○	○	○	○
86	○	67.05	93	Des Moines, IA	○	○	○	●	○	◖	○	○	○	○	●	●	○
87	○	66.46	72	Minneapolis, MN	◖	○	●	●	○	◖	○	○	○	○	◖	◖	◖
88	○	65.39	89	Colorado Springs, CO	◖	◖	◖	◖	○	●	○	○	○	○	○	○	◖
89	○	65.11	96	Rochester, NY	◖	●	○	◖	○	◖	◖	○	○	○	●	●	○
90	○	65.03	92	Portland, OR	●	●	●	○	○	○	●	◖	○	○	○	○	●
91	○	65.01	88	Austin, TX	○	○	○	●	○	◖	◖	●	○	○	◖	◖	◖
92	○	64.84	81	Raleigh, NC	◖	◖	○	○	○	●	◖	●	○	●	○	◖	○
93	○	64.56	75	Sarasota, FL	◖	◖	○	◖	○	●	○	●	○	◖	○	○	●
94	○	63.74	82	Cape Coral, FL	◖	◖	○	◖	○	●	◖	●	○	○	○	◖	◖
95	○	63.41	76	Palm Bay, FL	◖	◖	○	○	○	●	○	●	○	◖	○	◖	◖
96	○	62.53	74	Abilene, TX	○	○	◖	●	◖	◖	◖	●	○	○	○	○	●
97	○	62.33	84	San Jose, CA	◖	◖	○	○	◖	○	○	○	○	○	○	○	○
98	○	61.81	99	Seattle, WA	◖	●	○	○	○	◖	○	○	○	○	○	○	◖
99	○	61.38	98	Boise, ID	◖	◖	○	○	◖	◖	○	◖	○	○	○	○	◖
100	○	60.28	100	San Francisco, CA	◖	◖	◖	○	○	○	○	○	○	◖	○	○	●

● Worse than Average
◖ Average*
○ Better than Average

* *2015 LIST AVERAGES*

	Prevalence Factors			Risk Factors						Medical Factors			
	Estimated asthma prev-alence	Self-reported asthma prev-alence	Crude death rate for asthma	Annual pollen score ▲	Air quality	"100%" public smoke-free laws △	Poverty rate	Un-insured rate	School inhaler access law ▼	ER visits for asthma ◤	Use of quick relief meds	Use of control meds	Number of special-ists
2015 LIST AVERAGES	8.90%	8.70%	1.20 per 100,000 deaths	12.60% pollen-affected popu la-tion	Avg. C- on A to F scale	Avg. 2.44 on 0 to 4 scale	17.30%	16.86%	All states have an access law	195.22 ER visits per 10,000 est. Patients*	2.31 Rx per est. patient	2.50 Rx per est. patient	3.29 spcl per 10,000 est. patients
Last Year's List Averages	8.78%	8.70%	1.28 per 100,000 deaths	13.38% pollen-affected popula-tion	C- on A to F scale	2.39 on 0 to 4 scale	17.76%	17.12%	All states had an access law	141.32 ER visits per 10,000 est. Patients*	2.15 Rx per est. patient	2.27 Rx per est. patient	4.86 spcl per 10,000 est. patients

Take the time to do it Right

Involve the right people to make decisions

Use Good Information to make decisions

- 12-16 Socioeconomic Analysis 6/5
- 12-16 Rule came out 6/5
- 12-16 Revised Rule Comment period – Due 6/12
- 12-16 Revised again – 6/16
- 12-16 Revised again – 6/20

AGENDA: 13

Supplemental Evidence and Comment

Regarding Late Changes in BAAQMD Staff's Proposal

For Refinery-level GHG Caps

Greg Karras, Senior Scientist,
Communities for a Better Environment
21 June 2017

Refinery emission increase allowed by staff's 15 June 2017 proposal

CO_2e	Emissions [a] (tonnes/yr)	Allowance [b] (tonnes/yr)	Emission Increase Allowed (tonnes/yr)	Emission Increase Allowed (percent)
Chevron refinery	4,463,000	5,430,000	967,000	21.7 %
Phillips 66 refinery[c]	2,249,000	3,240,000	991,000	44.1 %
Shell refinery	4,262,000	4,560,000	298,000	7.0 %
Tesoro refinery[c]	3,103,000	3,719,000	616,000	19.8 %
Valero refinery	2,940,000	4.110,000	1,170,000	39.8 %
Total	16,591,000	21,059,000	4,042,000	24.4 %

a. Maximum annual emissions from 2011–2015 reported by Air Resources Board. Plant-specific maxima occurred in different years and do not sum to the total.

b. Allowances proposed in § 301 of 15 June 2017 staff proposal for Rule 12-16.

c. Phillips 66 includes Air Liquide; Tesoro includes Martinez Cogen, Air Products.

Each affected facility emitted below the "May" caps during 2014.

CO_2e	Emissions [a] (tonnes 2014)	May Cap [b] (tonnes/yr)	Emissions % of Cap (percent)
Chevron refinery	4,121,000	4,770,000	86 %
Phillips 66 refinery	1,277,000	1,610,000	79 %
Shell refinery	3,969,000	4,560,000	87 %
Tesoro refinery	2,334,000	2,610,000	89 %
Valero refinery	2,710,000	3,150,000	86 %
Air Liquide	815,700	947,000	86 %
Air Products	255,200	290,000	88 %
Martinez Cogen	411,600	450,000	91 %

a. Emissions during calendar year 2014 reported by Air Resources Board.

b. Limits in § 301 of Rule 12-16 as proposed in this hearing on 31 May 2017.

Bay Area refiners' emissions as a percentage of each facility's "May" emission cap in 2014: 86–91 %

Bay Area refinery crude throughput as a percentage of total refinery capacity that year: 97.7 %

Emissions percent of "May" caps from CARB and BAAQMD; *see* slide 3. Capacity utilization from CEC (292,347,000 barrels/year; 25 Jan 2017 Email from G. Schremp to G. Nudd) and USEIA capacity data (819,871 barrels/day; CBE 28 Feb 2017 and 5 Mar 2017 reports to BAAQMD).

Deaths from chronic exposure to $PM_{2.5}$ air pollution that could be averted by preventing the refinery emission increases allowed by staff's 15 June proposal

For fine particulates ($PM_{2.5}$)	Regional (nine counties)			Within 2.5 miles of refineries		
	Low	Medium	High	Low	Medium	High
Parameters						
Adult population		5,144,345			81,666	
Baseline deaths/year		42,905			751	
$PM_{2.5}$ risk factor per $\mu g/m^3$	0.8 %	1.0 %	1.2 %	0.8 %	1.0 %	1.2 %
Refining exposure baseline ($\mu g/m^3$)	0.285	0.285	0.285	2.55	2.55	2.55
Refining emissions increment (%)	24.4%	24.4%	24.4%	24.4%	24.4%	24.4%
Exposure/emission ratio	0.5	0.5	0.5	0.4	0.5	0.6
Impact						
$PM_{2.5}$ exposure averted ($\mu g/m^3$)	0.035	0.035	0.035	0.249	0.311	0.373
Annual deaths averted per million	2.32	2.90	3.48	18.3	28.6	41.2
Cumulative deaths averted (40 yrs.)	480	600	720	60	93	130

Adapted from independent health experts' assessment provided to BAAQMD on 8 May 2017. The only differences between the estimate in this table and the estimate therein (*see* Table KR-2 in the 8 May 2017 expert report of G. Karras) result from replacing the emissions increase *potential* estimated in the 8 May reports (*Id.*) with the emissions increase *allowed* by the BAAQMD staff's 16 June 2017 proposal (+ 24.4 %). Figures may not sum due to rounding.

AGENDA: 13

Shell Presentation

Myth

Refineries do not have restrictions on GHG emissions

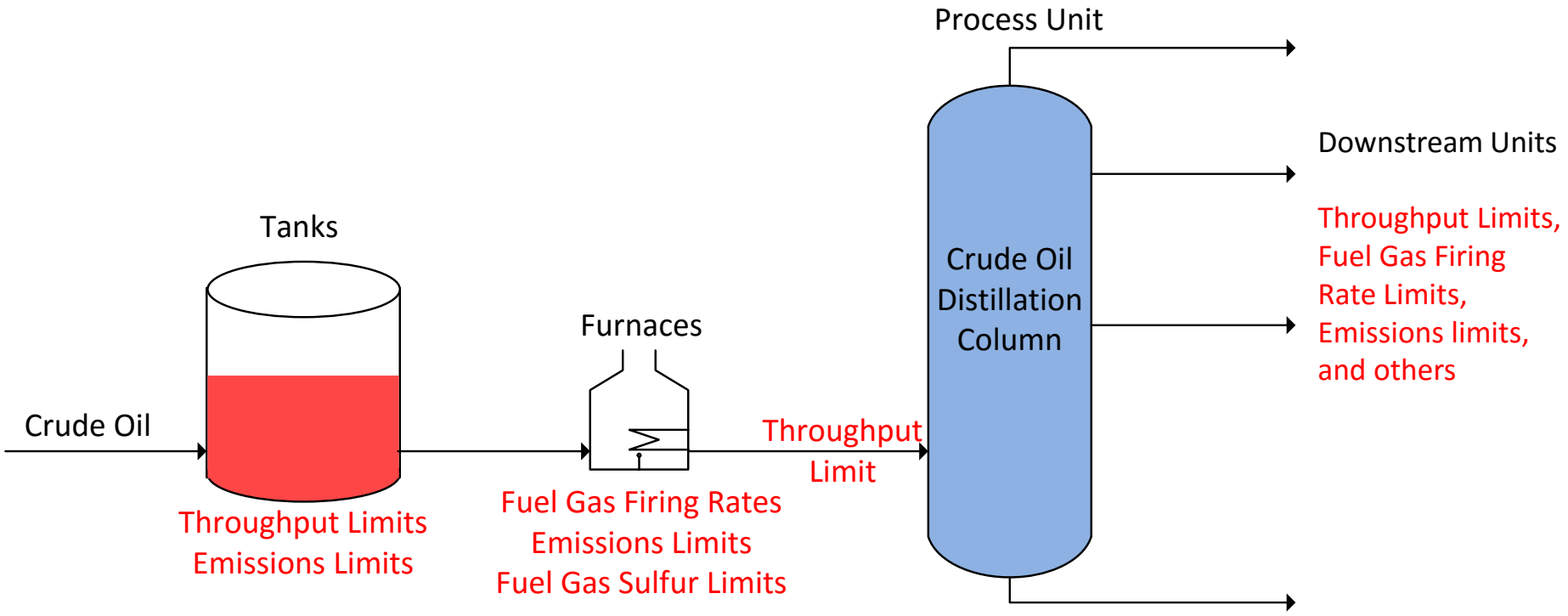
Equipment (Emission Sources)	District Regulatory Equipment Capacity Limits
Furnaces	Fuel Gas Firing Rate Limits
Steam Producing Units (Boilers)	Fuel Gas Firing Rate Limits
Process Units (Crude Unit, Cat Cracker, etc)	Unit Throughput Limits
Hydrotreaters	Throughput Limits
Sulfur Recovery Units	Sulfur Production Limits
Hydrogen Plants	Hydrogen Production Limits
Storage Tanks	Throughput Limits

Fact:

Refineries have many constraints that restrict GHG Emissions.

Myth

Refineries do not have restrictions on GHG emissions



Fact:

Refineries have many constraints that restrict GHG Emissions.

Myth:

Existing regulations allow refinery projects to increase emissions

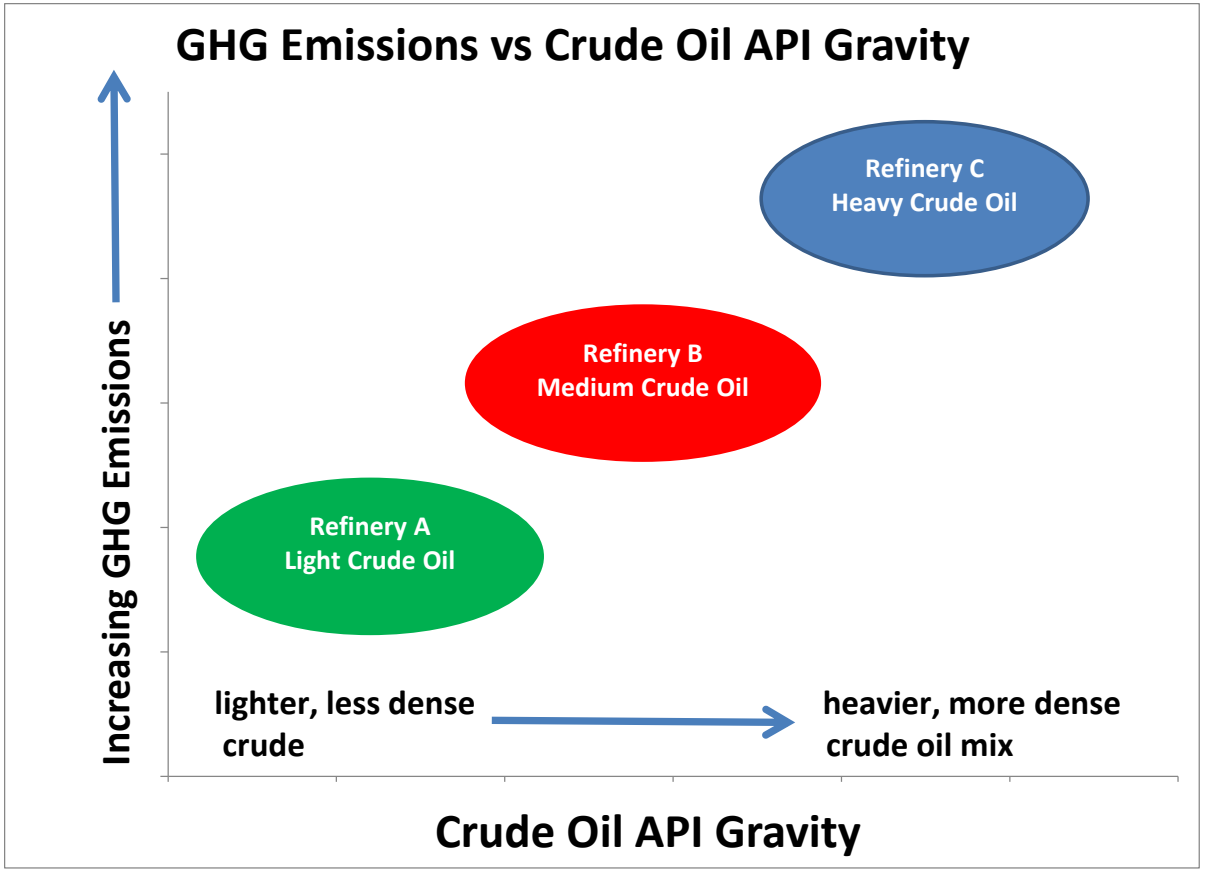
Regulation	Requirement
District Permitting New Project Triggers	Any physical or operational change that potentially could increase emissions above permitted limits OR any changes that could "affect emissions"
District Requirements	Do not allow emission increases over baseline emissions (BACT and Offsets reqd)
EPA Requirements	Do Not allow emission increases over baseline emissions (BACT and Offsets reqd)
CEQA (EIR)	Do not allow emission increases over baseline (CEQA thresholds) emissions.
All Requirements	Cannot become less restrictive due to CA anti-backsliding rule.

Fact:

Existing regulations do not allow refinery projects to increase emissions

Myth:

A refinery can dramatically increase GHG Emissions through crude oil feed quality changes without modifications



Fact:

Once constructed, a refinery has very limited ability to change the type of crude processed.

Myth:

Refineries can dramatically increase GHG Emissions through crude oil feed quality changes

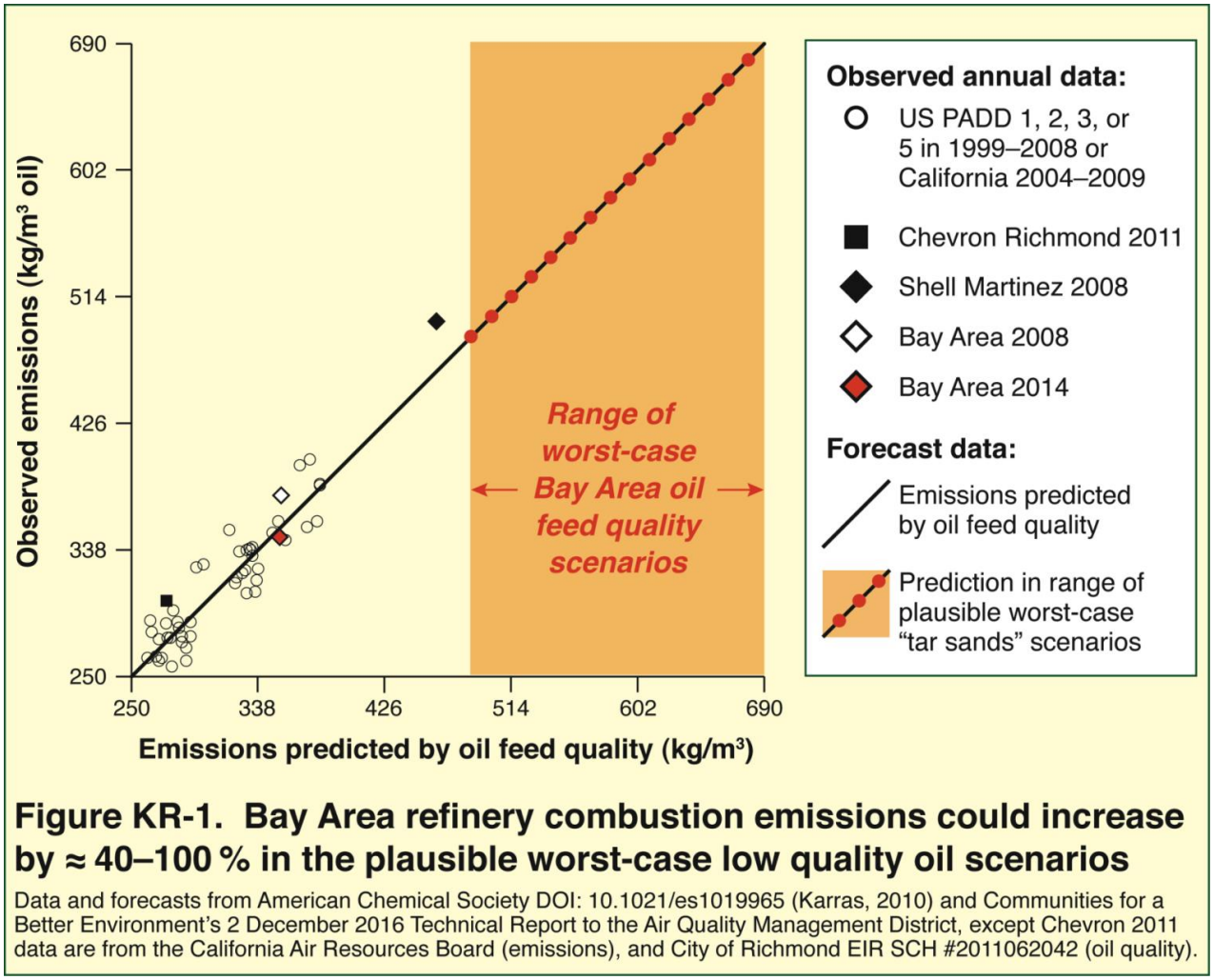


Figure KR-1. Bay Area refinery combustion emissions could increase by ≈ 40–100 % in the plausible worst-case low quality oil scenarios

Data and forecasts from American Chemical Society DOI: 10.1021/es1019965 (Karras, 2010) and Communities for a Better Environment's 2 December 2016 Technical Report to the Air Quality Management District, except Chevron 2011 data are from the California Air Resources Board (emissions), and City of Richmond EIR SCH #2011062042 (oil quality).

Fact:

Next Page

Myth:

Refineries can dramatically increase GHG Emissions through crude oil feed quality changes

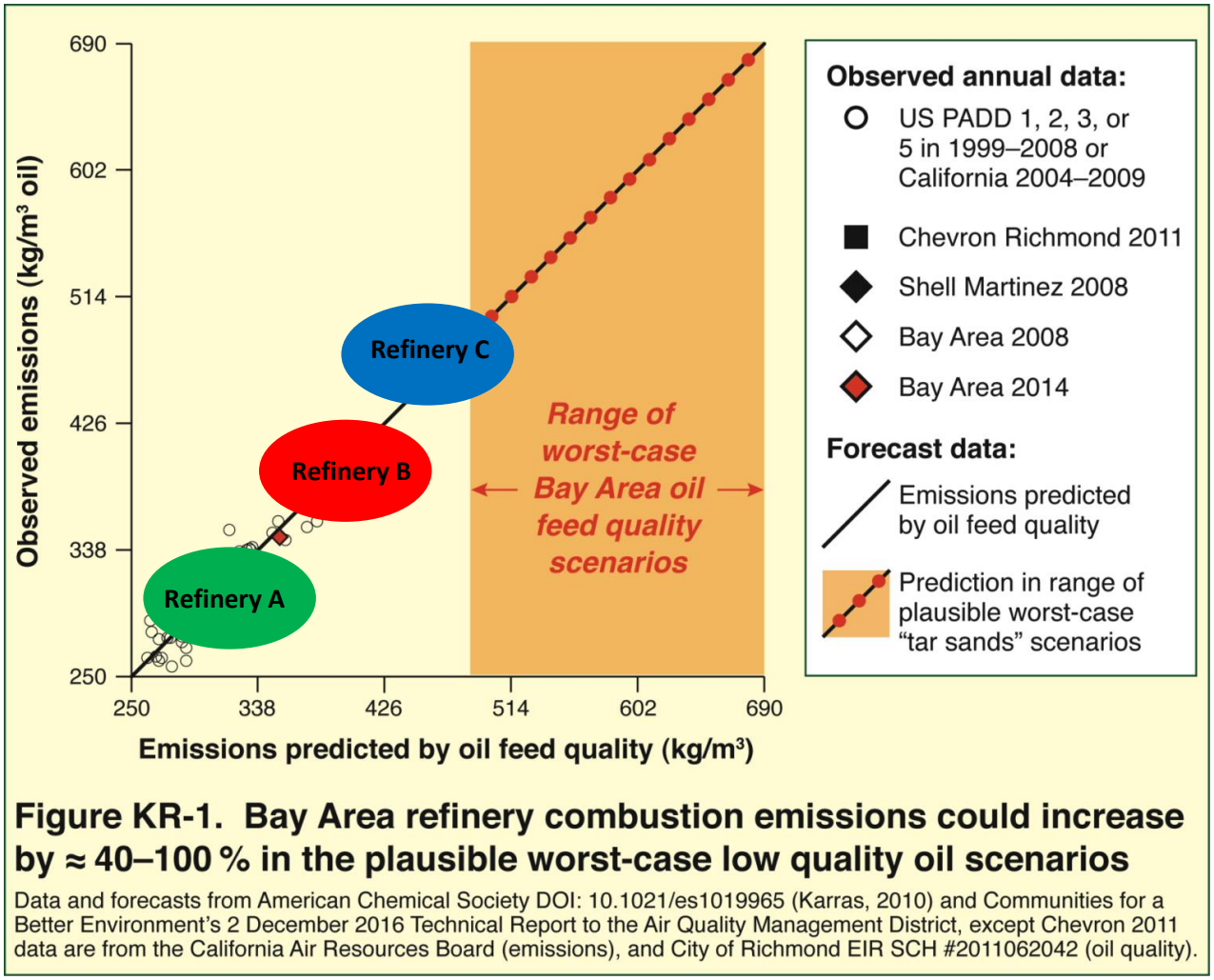


Figure KR-1. Bay Area refinery combustion emissions could increase by ≈ 40–100 % in the plausible worst-case low quality oil scenarios

Data and forecasts from American Chemical Society DOI: 10.1021/es1019965 (Karras, 2010) and Communities for a Better Environment's 2 December 2016 Technical Report to the Air Quality Management District, except Chevron 2011 data are from the California Air Resources Board (emissions), and City of Richmond EIR SCH #2011062042 (oil quality).

Presenter added oval shapes

Fact:

To significantly change crude oil feed quality, equipment modifications are required, which triggers permitting, which triggers "no net increase" regulations

Summary

- Refineries have existing restrictions on GHG emissions
- Existing regulations do not allow refinery projects to significantly increase emissions
- Refineries cannot dramatically increase GHG Emissions through crude oil feed quality changes

Summary of Ozone Seasons

Year	National 8-Hour	State 1-Hour	State 8-Hour
2014*	5	3	10
2015*	5	4	11
2016	15	5	15
2017	0	0	0

Spare the Air Alerts: 5/3/17, 5/22/2017, 6/18/2017

Days > 0.070 ppm 8-hour NAAQS:

***Based on NAAQS of 0.075 ppm that was in place during those years**