

MATES IV Study Plan Overview

Clean Fuels Program Advisory Group

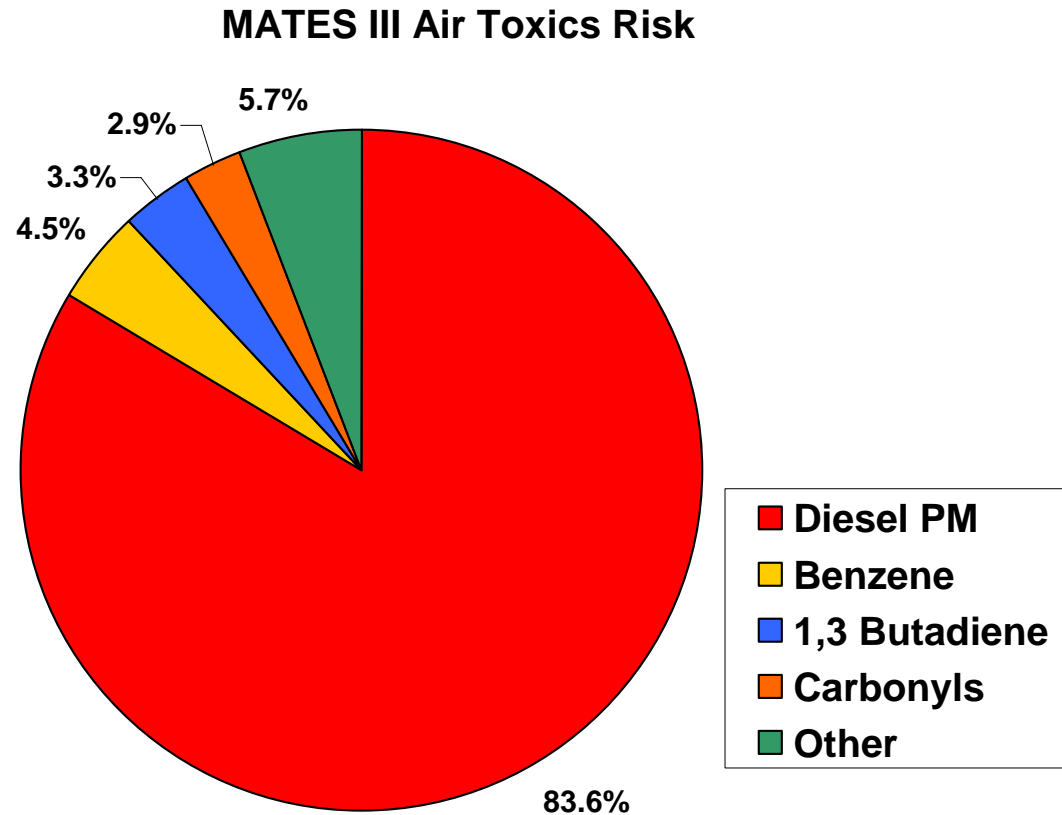
February 8, 2012

Previous MATES Studies

- MATES I conducted in 1987
- MATES II conducted 1998-99
 - Downward trend for certain air toxics
 - Diesel exhaust - 71% of cancer risks from air toxics
- MATES III conducted 2004-2006
 - Continuing downward trend other than Diesel PM
 - Diesel PM risk up near ports
 - Hexavalent chromium from cement plants

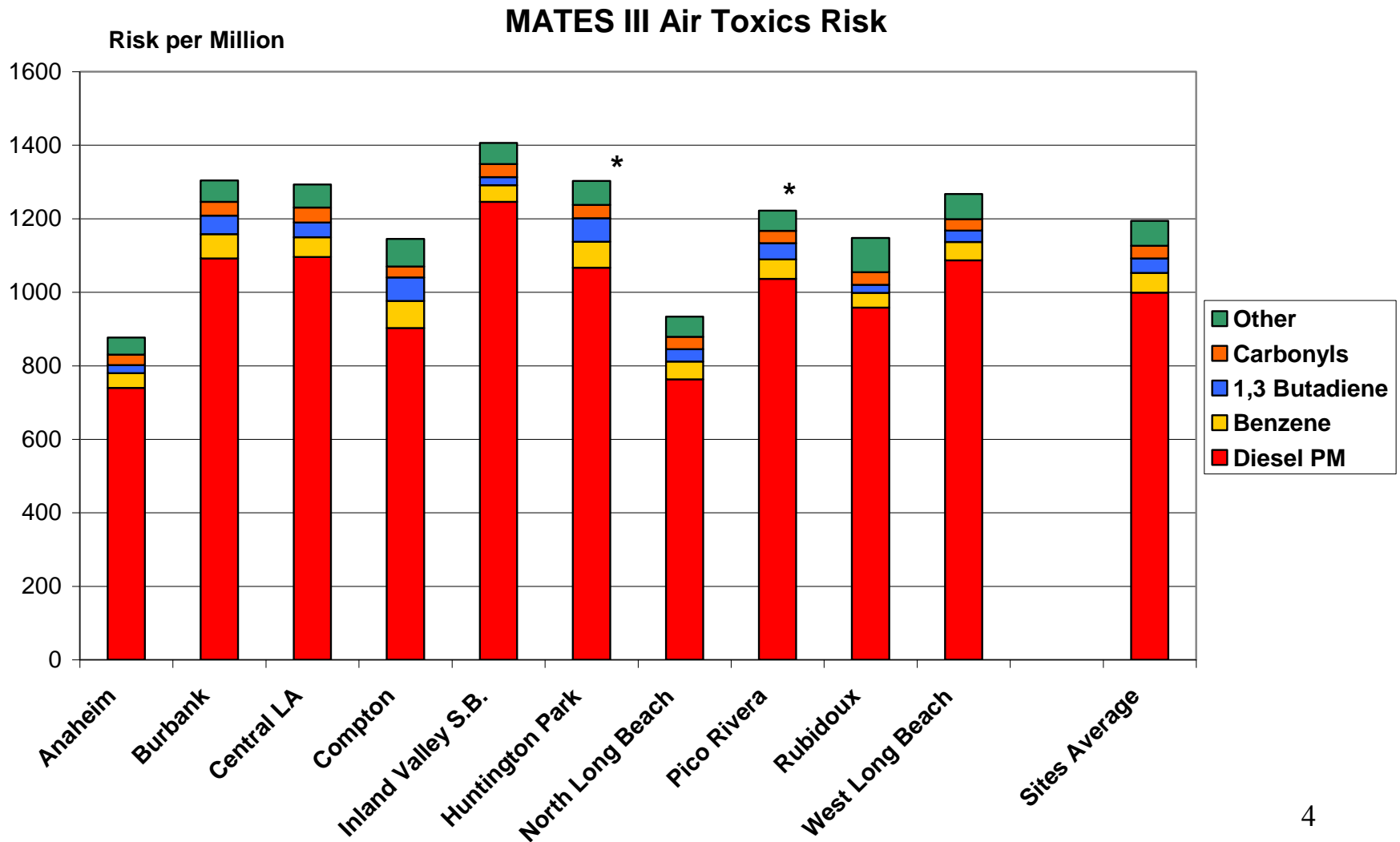
MATES III Monitoring

- General trend is down for air toxics risk
- Estimated basin wide lifetime risk 1,200 per million
- Mobile source toxics account for 94% of risk
- Diesel accounts for 84% of air toxics risk
- Non-diesel risk lower by 50% from MATES II



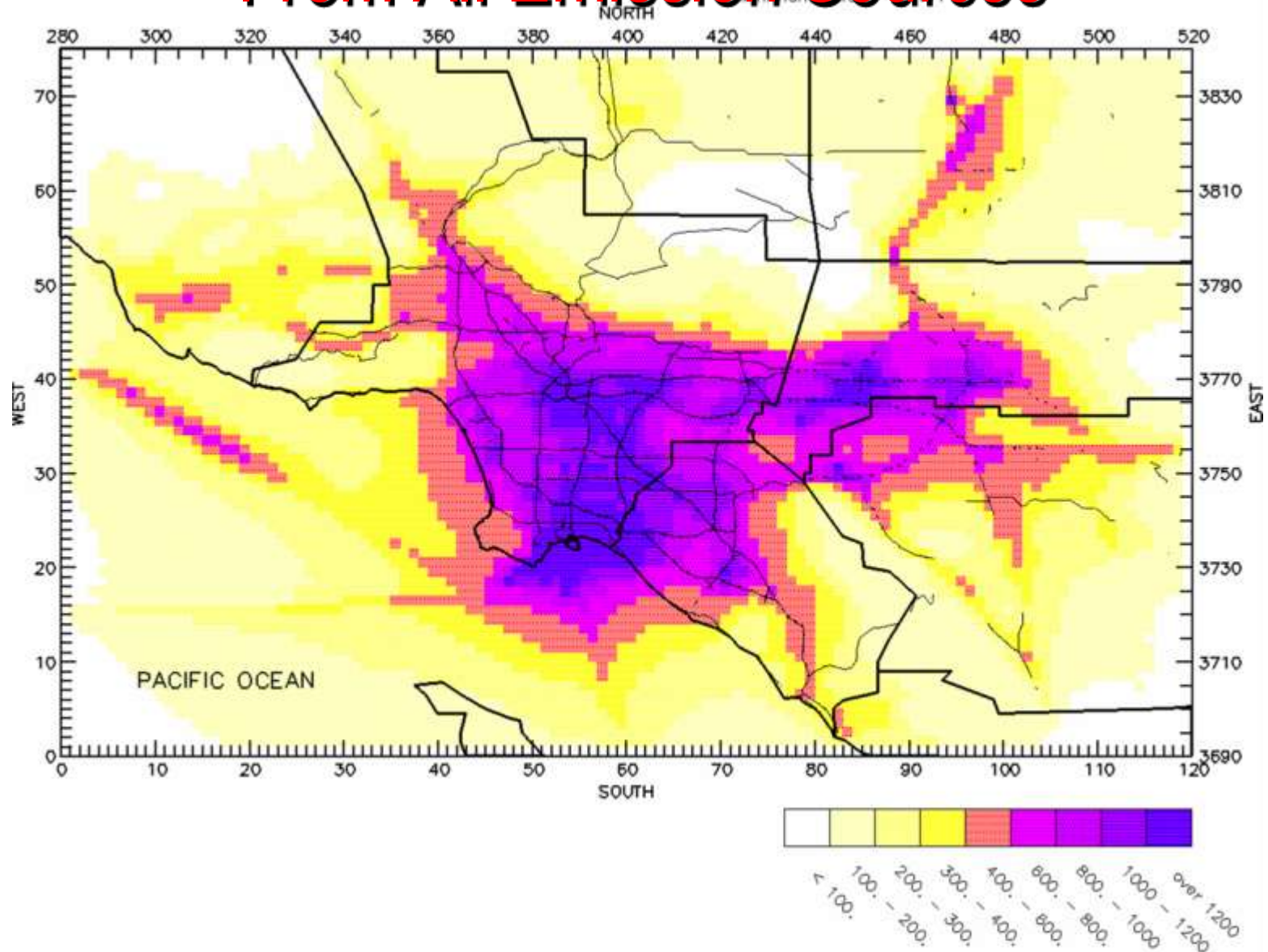
Basinwide Risk: 1194 per million
Based on Average at Fixed Monitoring sites

MATES III Monitoring Risk

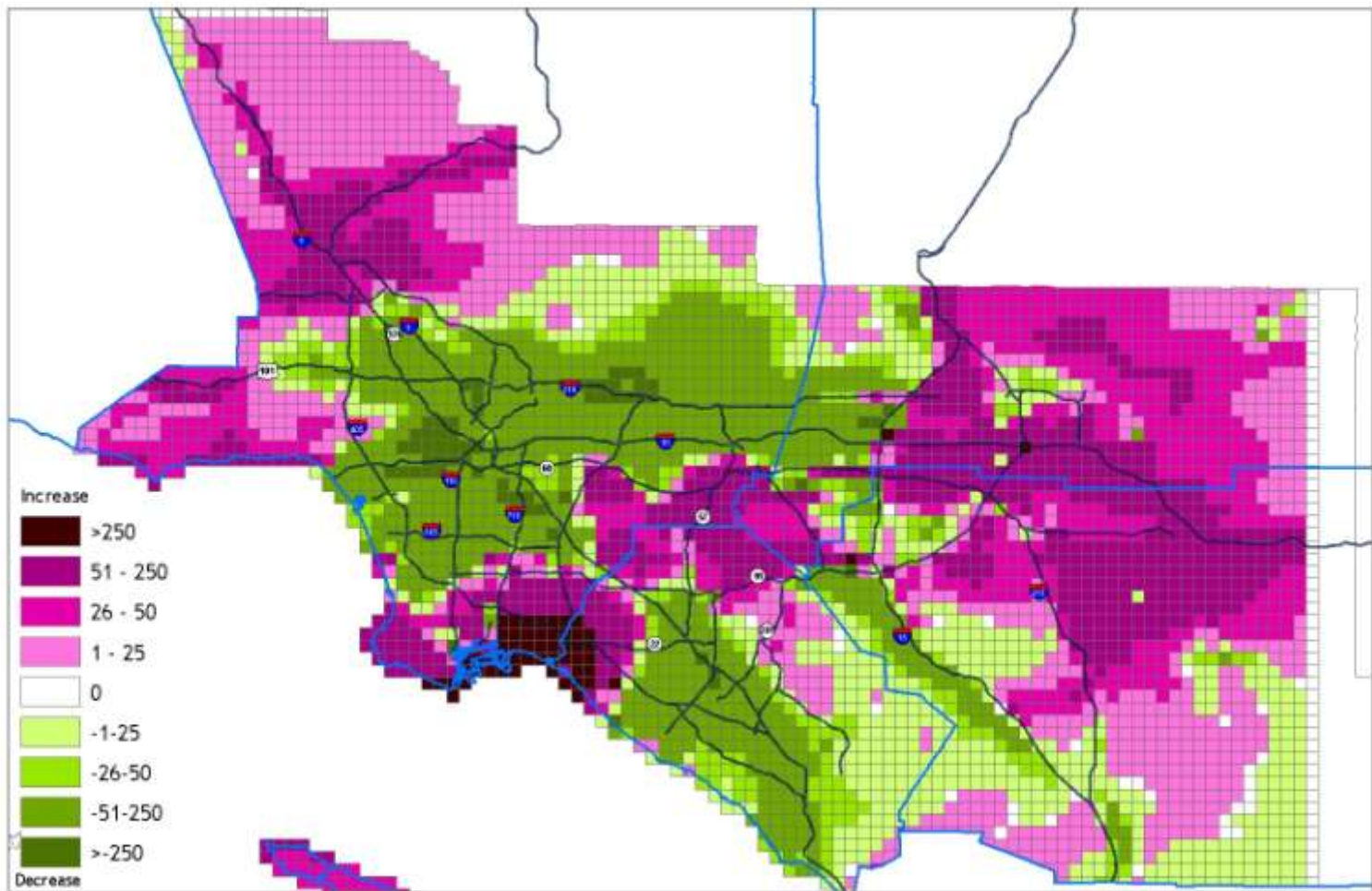


* Note: One year of data at Huntington Park and Pico Rivera

MATES-III Model Estimated Risk From All Emission Sources



Modeled Air Toxics Risk Difference Between 2005 & 1998-99



Change in CAMx RTRAC Air Toxics Simulated Risk (per million) from 1998-99 to 2005
Using Back-Cast 1998 Emissions and 1998-99 MM5 Generated Meteorological Data Fields

MATES IV Overview

Goals

- Assess air toxics levels
- Update risk characterization
- Add ultrafine PM monitoring
- Determine gradients from selected sources

Components

- Technical Advisory Group
- Ambient Measurements
- Emissions Inventory Update
- Dispersion Modeling
- Risk Characterization

MATES IV Monitoring

- Continuation of MATES III sites for trends
 - 10 sites, 1-in-6 day, 24-hr sampling
 - Utilize ongoing toxics monitoring programs
- Add UFP and Black Carbon (BC)
- Local exposures to mobile source emissions
 - UFP and BC using mobile platform

Monitoring Sites

Site	Address
Anaheim	1010 S. Harbor Blvd.
Burbank	228 W. Palm Ave.
Compton	720 N. Bullis Rd.
Inland Valley San Bernardino	14360 Arrow Highway
Huntington Park	TBD
North Long Beach	3648 N. Long Beach Blvd.
Central Los Angeles	1630 N. Main St., Los Angeles
Pico Rivera	3713B San Gabriel River Parkway
Rubidoux	5888 Mission Blvd.
West Long Beach	Hudson School

MATES IV Monitoring Substances

- VOCs
- Carbonyls
- TSP metals
- Cr ⁺⁶
- Lead
- BC
- PM_{2.5} speciation
 - Metals
 - EC
 - OC
- Ultrafine PM

MATES IV Additional Focus

- Local-scale impacts from mobile sources – 2-4 weeks at sites
- Ultrafine (UFP) particles and Diesel PM (black carbon)
- Mobile monitoring platforms
 - Freeways
 - Roadways
 - Busy intersections
 - Rail lines, rail yards
 - Airports
 - Impacted schools, residences
 - EJ Areas
 - Clean Communities Plan coordination



Emissions Inventory Update

- Inventory based on 2012 AQMP
- Projected to 2012/13 using growth and control factors from the 2012 AQMP
- Point source emissions based on current activity
- 2 km by 2 km gridded inventory

Modeling

- Consistent with MATES III – CAMx ??
 - Regional model on 2 km x 2 km grid
 - 2012/13 meteorology data
- Output:
 - Concentration by substance for each grid
 - Estimated risk by grid
 - Comparison with MATES III

Risk Characterization

- Methodology: URF (or 1/REL) X concentration
 - Ambient Monitored
 - Modeled
- Use most current URFs & RELs
 - OEHHA/CARB
- Output
 - Average from monitoring sites
 - Grid visualization for modeled concentrations
 - Population weighted risk for modeled concentrations

Toxics for Risk Characterization

1,3-Butadiene	Chloroform	Lead
Acetaldehyde	Chromium VI	Manganese
Arsenic	Diesel PM	Methylene Chloride
Benzene	Dichlorobenzene	Nickel
Beryllium	Dichloroethane	Tetrachloroethylene
Cadmium	Ethyl benzene	Trichloroethylene
Carbon Tetrachloride	Formaldehyde	Vinyl Chloride

Risk estimated for 70 year exposure and applying OEHHA risk factors

PAH Measurements

- MATES III monitored for Naphthalene and other PAHs at 3 sites
- Minor contributors to risk
 - Naphthalene: 6.1 per million risk
 - All PAHs: 6.4 per million
- Propose not to include PAHs in MATES IV

Proposed Diesel PM Estimation

- MATES III – PM_{2.5} speciation and Chemical Mass Balance apportionment
- Lack speciation profiles for current fleet
- Use EC as surrogate
 - MATES III EC based estimate similar to CMB

CMB method	3.2 – 3.5 ug/m ³
EC emissions method	3.5 ug/m ³

Current Programs Supporting MATES IV

- EPA Community-Scale Grant for monitoring at LAX and Long Beach Airports
- Two mobile monitoring trailers
- Summer 2011 studies on UF and BC measurement technologies at I-710 freeway
- EPA funded National Air Toxics Trends Sites (NATTS)
- EPA and AQMD PM_{2.5} Speciation Networks
- AQMP modeling framework
- Research projects on near-roadway exposure mitigation

Project Review

- Establish Technical Advisory Group
- Stakeholders & interested parties public meetings
- Materials posted on AQMD website

Potential Issues

- Compounds sampled
- Diesel estimation method
- Local scale site selection
- Presentation of UFP
- Expand modeling to Coachella Valley?

Proposed Schedule

- Draft workplan – 3/12
- Technical Advisory Group meetings - TBD
- Finalize monitoring & analytical protocol – 5/12
- Begin Monitoring at all fixed sites – 6/12
- Finalize Inventory protocol - 5/12
- Finalize Modeling protocol - 12/12
- Complete Modeling and risk estimates – 8/13

Schedule (cont.)

- Advisory Group or Sub-Group review for specific issues – as needed
 - Diesel PM methodology
 - Gradient measurements site selection
 - Inventory methodology/interim results
 - Modeling methodology/interim results
- Draft report – 11/13
- Draft report for public review – 1/14
- Final draft to Board – 3/14

