California Environmental Protection Agency

Air Resources Board

Update: ARB Health Risk Assessment of the BNSF Richmond Railyard

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Bay Area Air Quality Management District

CARE Task Force Meeting

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Background

- Richmond BNSF Railyard HRA part of ARB/BNSF/UP Railroad Agreement (2005 MOU)
- District working with ARB to review results and discuss with community
- ARB presented findings of Richmond HRA at 3 community meetings (6/13, 7/11, 12/6/2007)
- Emissions estimates (year 2005) and preliminary health risk estimates available for railyard and nearby sources
- Discussions on mitigation strategies and future year emissions begun

Summary

- Diesel PM emissions from Richmond BNSF railyard: 4.5 tons/day
- Diesel PM emissions from 1-mile radius around railyard: 20 tons/day
  - Diesel trucks (~12 tons/day)
  - Diesel-fueled pumps at Chevron refinery (~8 tons/day)
- Cancer risk contours about 100/million around BSNF railyard (railyard emissions)
- Cancer risk contours about 250/million southwest of railyard (surrounding emissions)

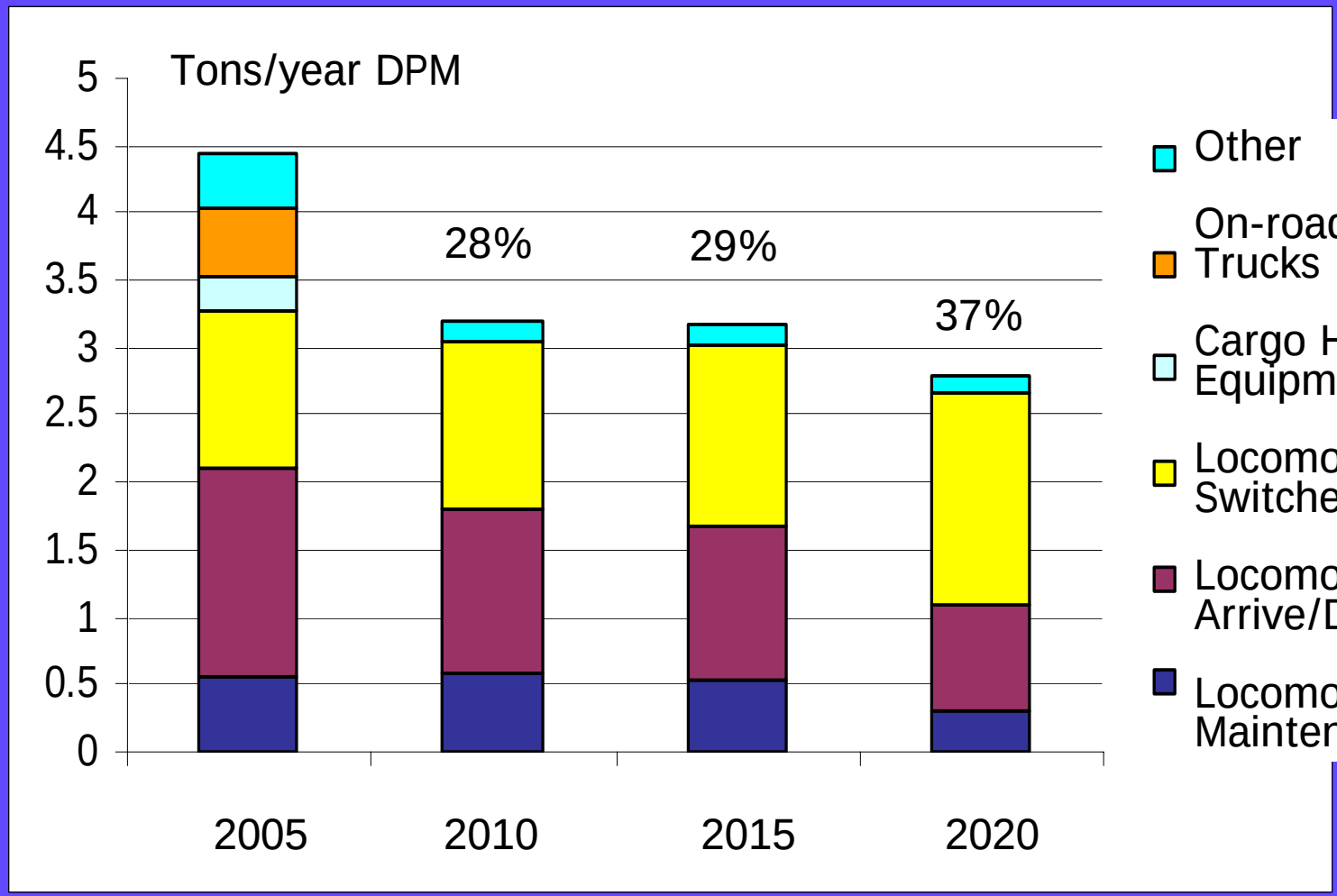
On-site & Off-site Emission Boundaries

Approach to Reducing Emissions

- ARB regulations
  - Fuels
  - Cargo handling equipment (CHE)
  - Transport refrigeration units (TRUs)
  - Heavy-duty diesel on-road trucks and off-road vehicles
- U.S. EPA regulation
  - Locomotives
- Voluntary agreements
  - 1998 South Coast/2005 Statewide
- Railroad yard locomotive replacement program
- Funding programs
  - Carl Moyer Incentives
- District mitigation programs

Richmond Yard: DPM Emissions by Source

Years 2005-2020, assuming 4% annual activity growth rate

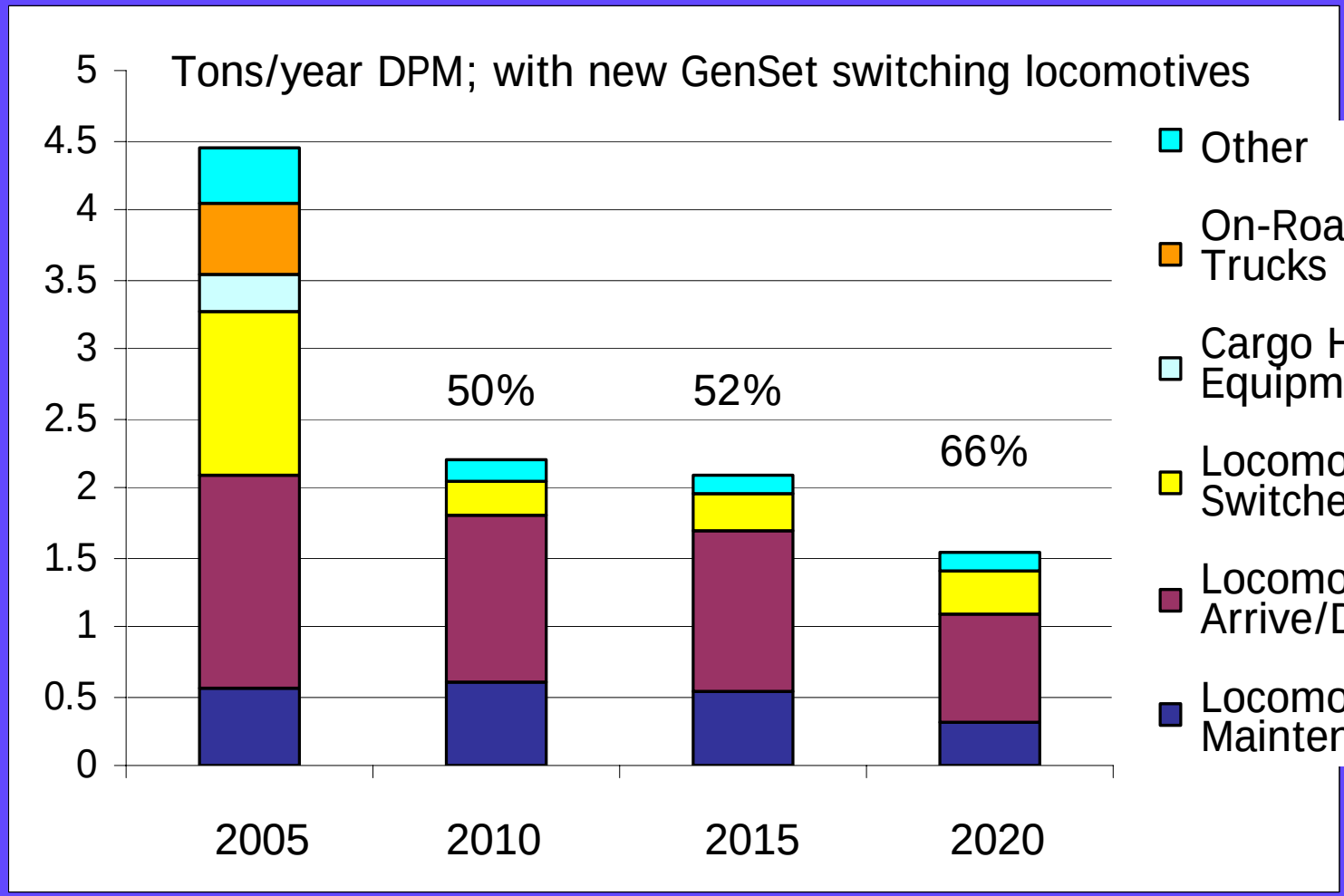


Carl Moyer Grant Program: New Switcher Locomotives

- Year 7 Carl Moyer Grant from Air District to fund $3.9M of $6.6M project to replace six switcher locomotives at BNSF Richmond
- Each locomotive has three Tier 3 off-road engines
- Results in 80% reduction in emissions from switcher locomotives

Richmond Yard: DPM Emissions by Source

Years 2005-2020, assuming 4% annual activity growth rate



Next Steps

- Another community meeting to discuss
  - mitigation measures
  - best estimate of growth at Richmond BNSF
- Revised estimates of non-cancer health effects using OEHHA methodology expected in spring 2008
- Community again requested a more comprehensive risk analysis for Richmond, including ports and refineries

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- **ARB Railyard HRA Website:**
  - **http://www.arb.ca.gov/railyard/hra/hra.htm**

Summary of Diesel PM Emissions at the BNSF Richmond Railyard

Diesel PM Emission Sources	Richmond Railyard	
	tons/year	percentage
Locomotives	**3.3**	**70 %**
Line Haul Locomotives	1.54	33%
Switch Locomotives	1.16	25%
Service/Maintenance	0.55	12%
Off-road Vehicles and Equipment	**0.6**	**12 %**
On-road Trucks and Vehicles	**0.5**	**11 %**
Cargo Handling Equipment	**0.3**	**6 %**
Stationary Sources	**< 0.01**	**< 1 %**
Total	**4.6**	**100 %**

Summary of Off-Site Non-Railyards Diesel PM Emission Inventory

Sources	tons/year	percentage
Mobile Sources	11.7	60%
Stationary Sources	8.1	40%
Total	20	100%

Estimated Potential Cancer Risks Associated with the BNSF Richmond Railyard Diesel PM Emissions

(chances per million exposed population)

Estimated Potential Cancer Risks from Off-Site Diesel PM Emissions

(chances per million exposed population)