

2016 AQMP Control Strategy Symposium
June 10-11, 2015

Cargo Handling Equipment

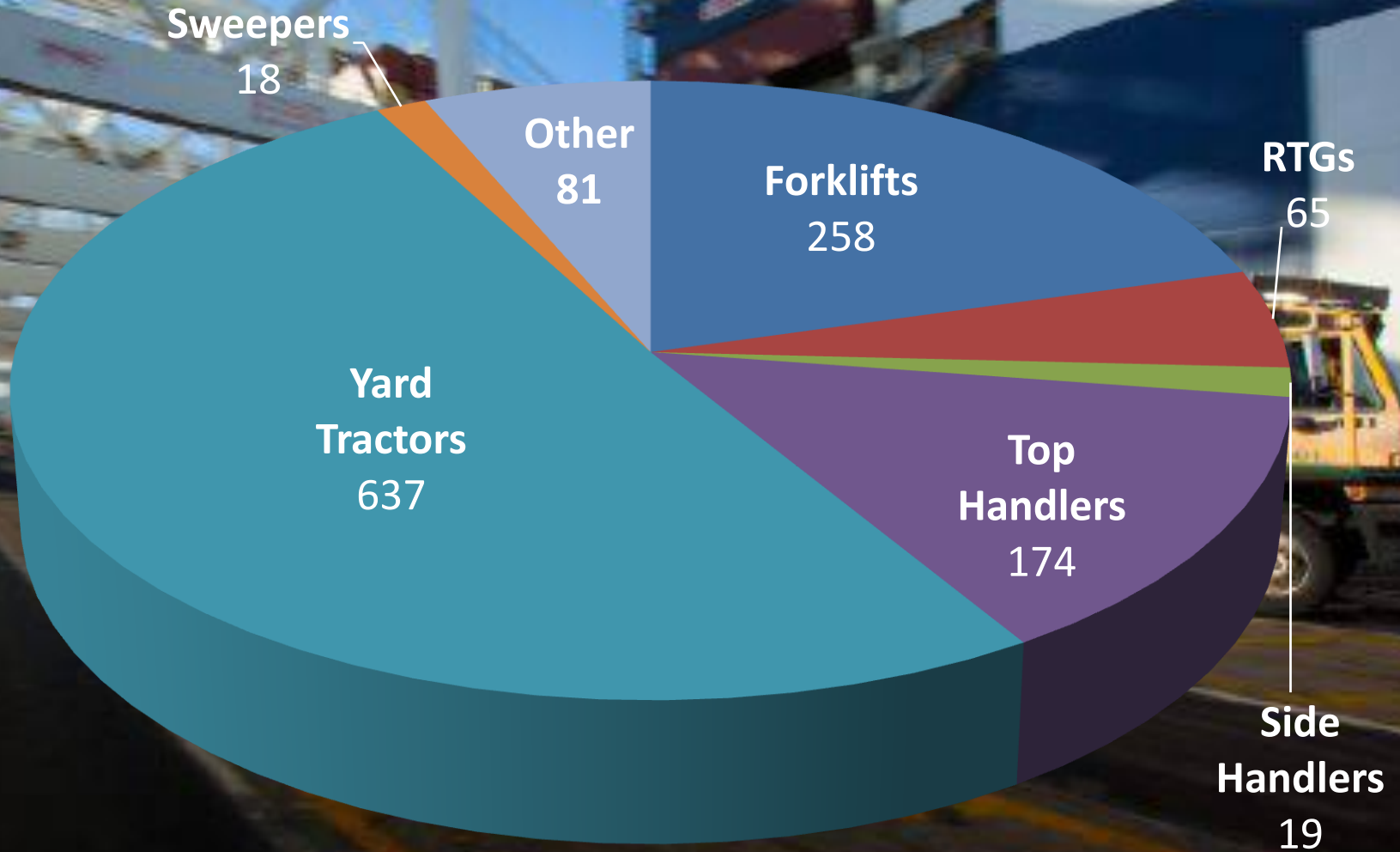


Port of
LONG BEACH
The Green Port

Heather Tomley

Director of Environmental Planning

2013 Distribution of CHE at POLB





Newer, Cleaner

Cargo Handling Equipment

State regulation

New equipment or retrofits

More equipment with cleaner on-road engines

**Diesel
Particulate
Matter**
Down

79%

**Nitrogen
Oxides**
Down

58%

**Sulfur
Oxides**
Down

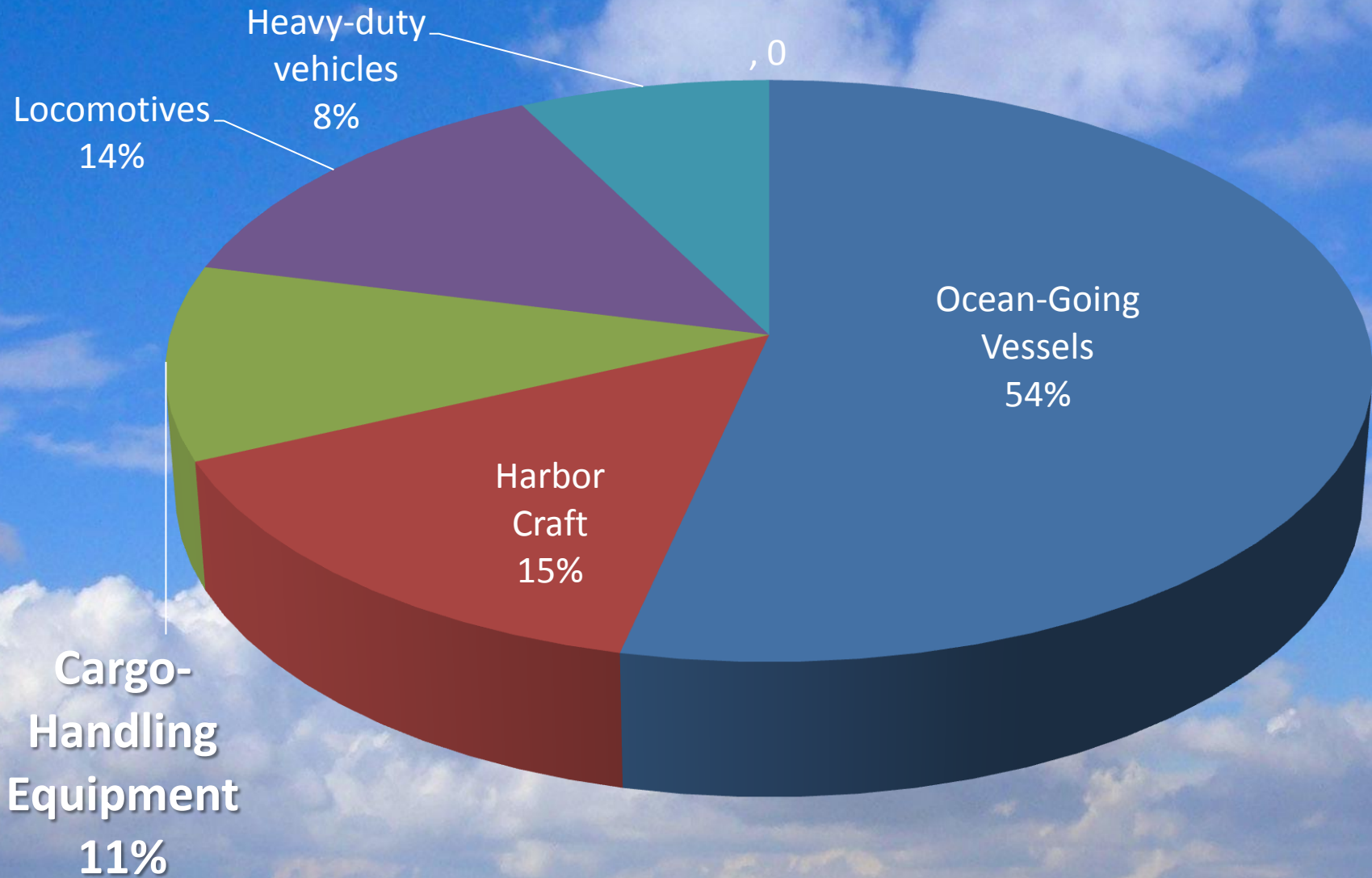
90%

2005-2013

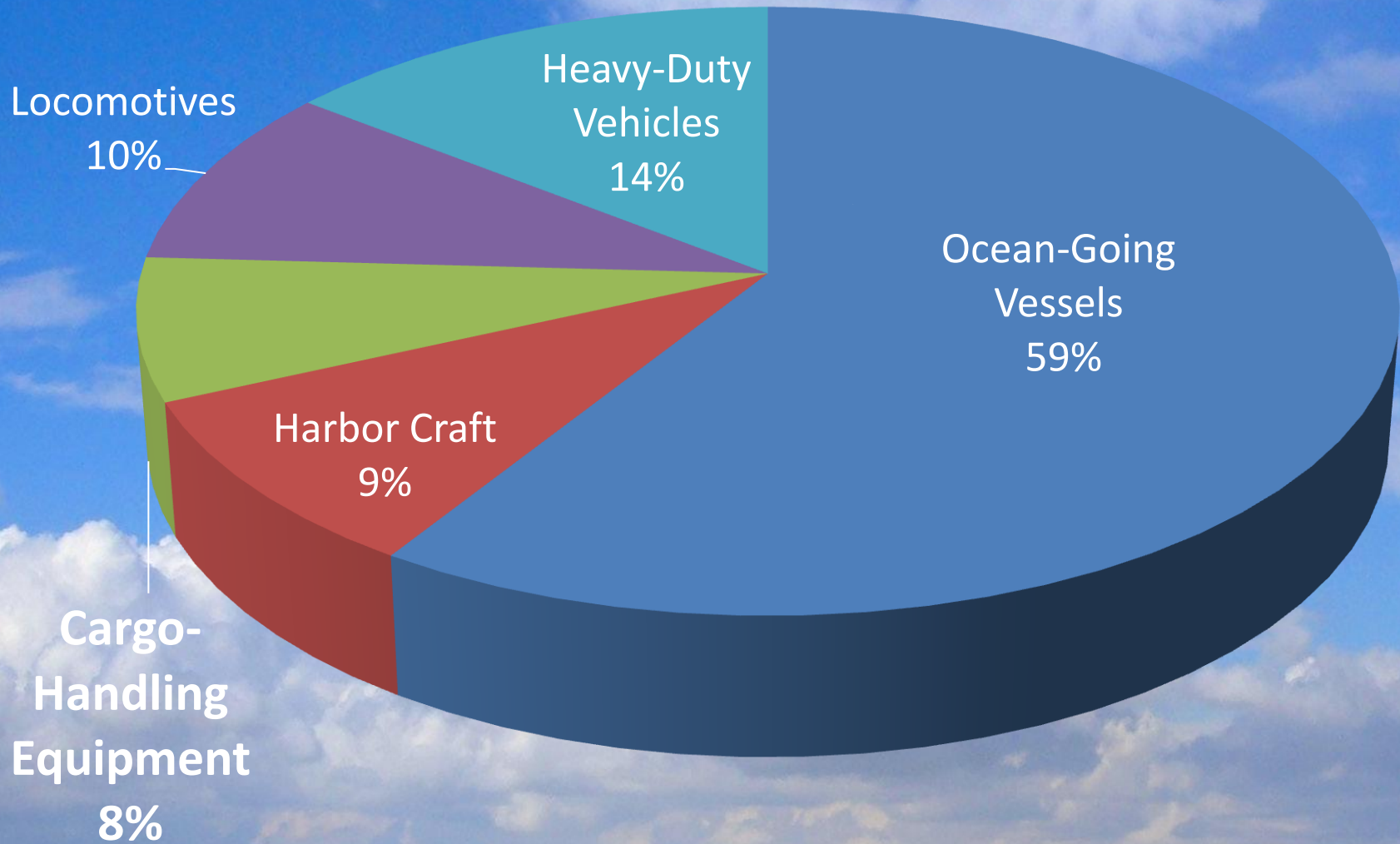
Cargo Handling Equipment Emissions

**TEUs
UP
3%**

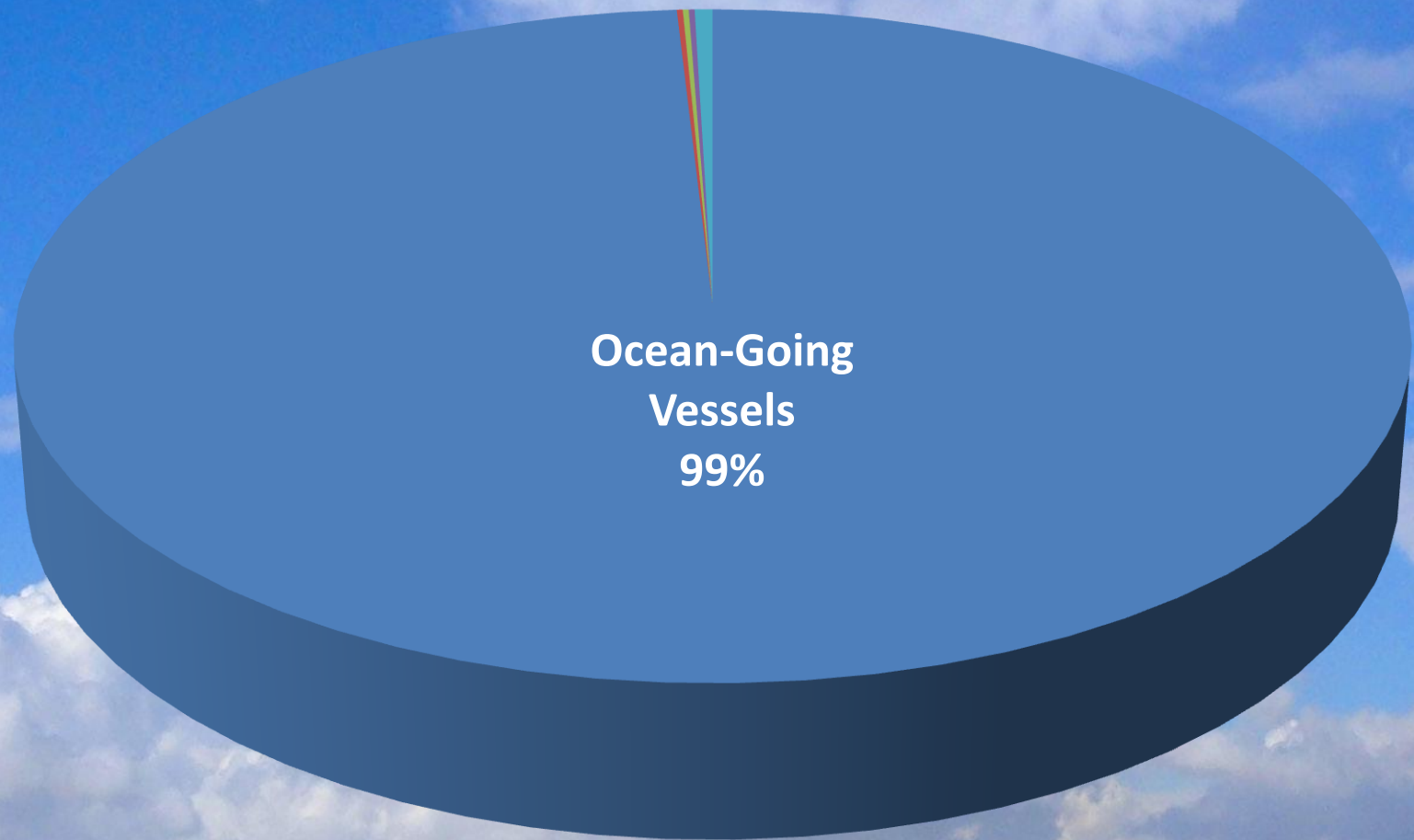
2013 Port-Related Sources of DPM



2013 Port-Related Sources of NOx



2013 Port-Related Sources of SOx



CHE Engines by Fuel Type in 2013

Equipment	Electric	Propane	Gasoline	Diesel
Forklifts	9	120	11	118
RTGs	0	0	0	65
Side Handlers	0	0	0	19
Top Handlers	0	0	0	174
Yard Tractors	0	8	83	546
Sweepers	1	7	1	9
Other	16	9	1	55

CHE Emissions Control Technologies

Equipment	DOC	DPF	Vycon Regen	Nett BlueCAT
Forklifts	12	34	NA	0
RTGs	0	28	6	0
Side Handlers	12	17	NA	0
Top Handlers	22	101	NA	0
Yard Tractors	93	0	NA	0
Sweepers	0	0	NA	0
Other	0	12	NA	6



Investing in the Port of the Future

Middle Harbor



Electrification

Automated Guided Vehicles (AGVs)
Rail Mounted Gantry Cranes (RMGs)