2015-2040 REGIONAL TRANSPORTATION PLAN

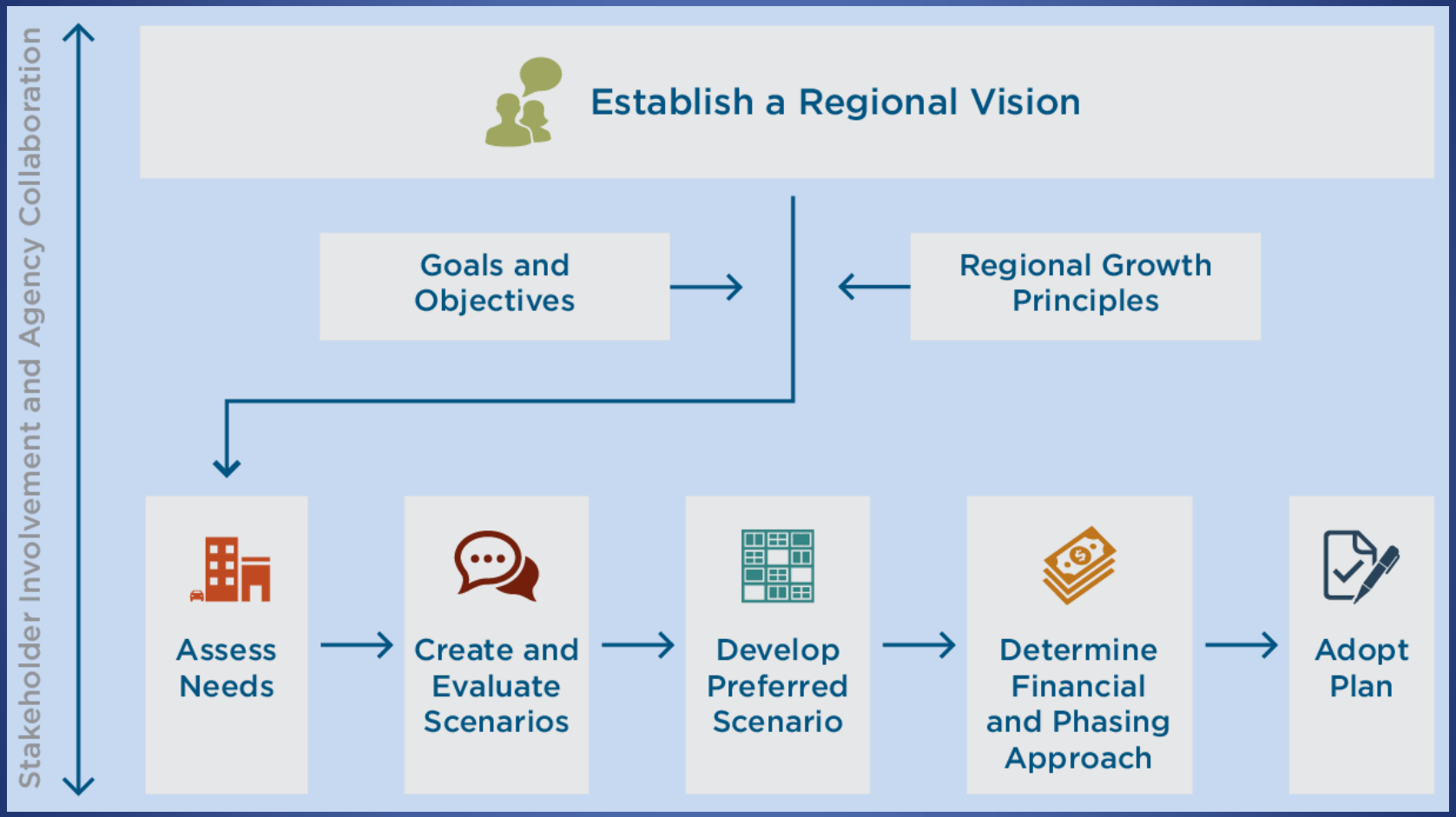
AIR QUALITY CONFORMITY

Kip Billings

WFRC

February 19, 2015

Regional Transportation Plan Process



Attainment vs Conformity

- **Attainment**
  - ***Is the air pollution exceeding federal health standards?***
    - **Air Quality Monitors**
    - **Pollution concentration (µg/m^3 or ppb)**
    - **State prepares SIP**

- **Conformity (transportation)**
  - ***Are mobile source emissions within SIP limits?***
    - **Modeling & Analysis**
    - **Emission quantity (tons/day)**
    - **WFRC prepares Conformity Analysis**

Consequences of a Conformity Lapse

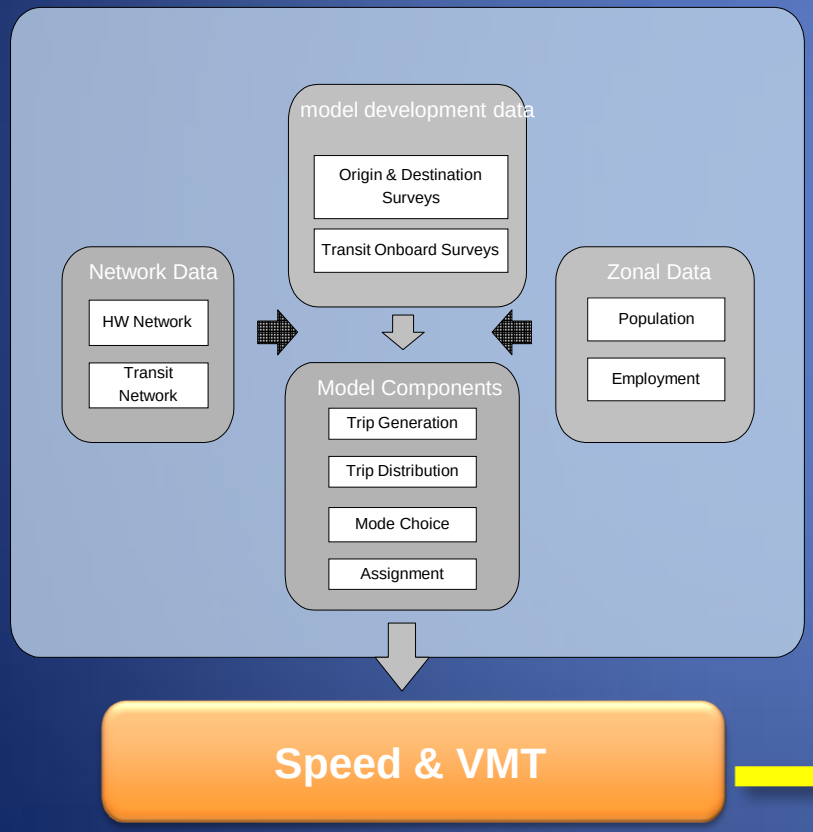
Transportation Funding Restrictions

- **Can…**
  - Safety improvements
    - Resurfacing, shoulders, guardrails, bridges, etc.
  - Transit operations
  - Planning & engineering
  - Individual intersections
  - Interchange upgrades

- **Can't…**
  - Freeway expansion
  - Major arterial expansion
  - Light rail or commuter rail expansion
  - Major bus fleet expansion

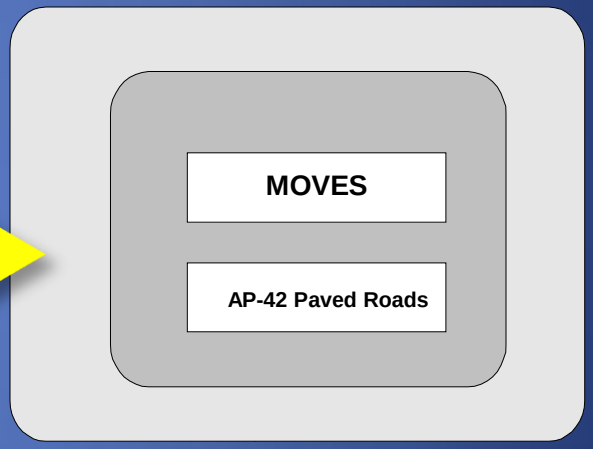
Travel Demand Model & Vehicle Emission Model

Travel Demand Model



Speed & VMT

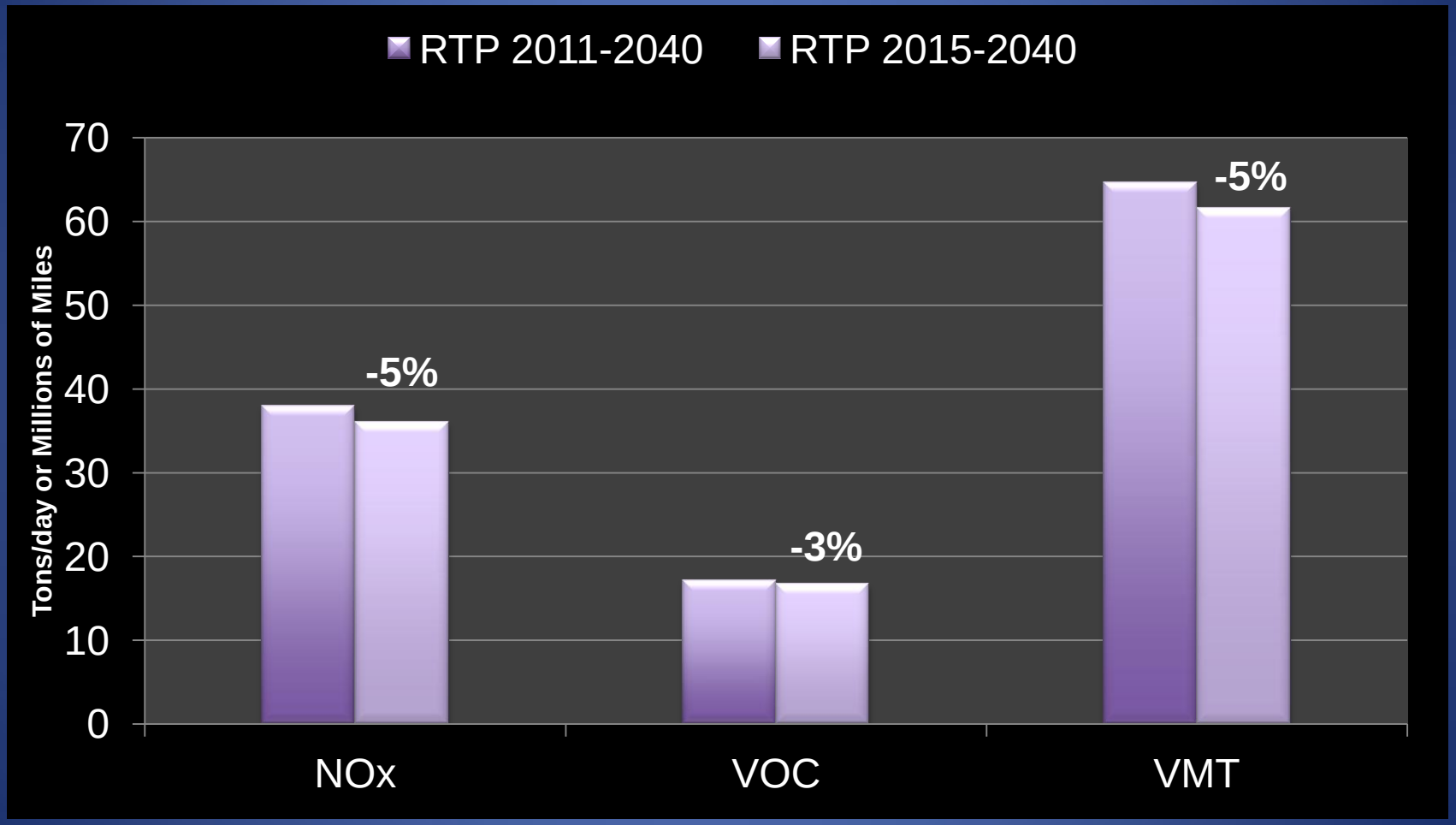
Vehicle Emission Model



Mobile Source Emissions

2040 RTP Comparison: Emissions & VMT

Version 2011 vs Version 2015



AIR QUALITY TRENDS

Kip Billings

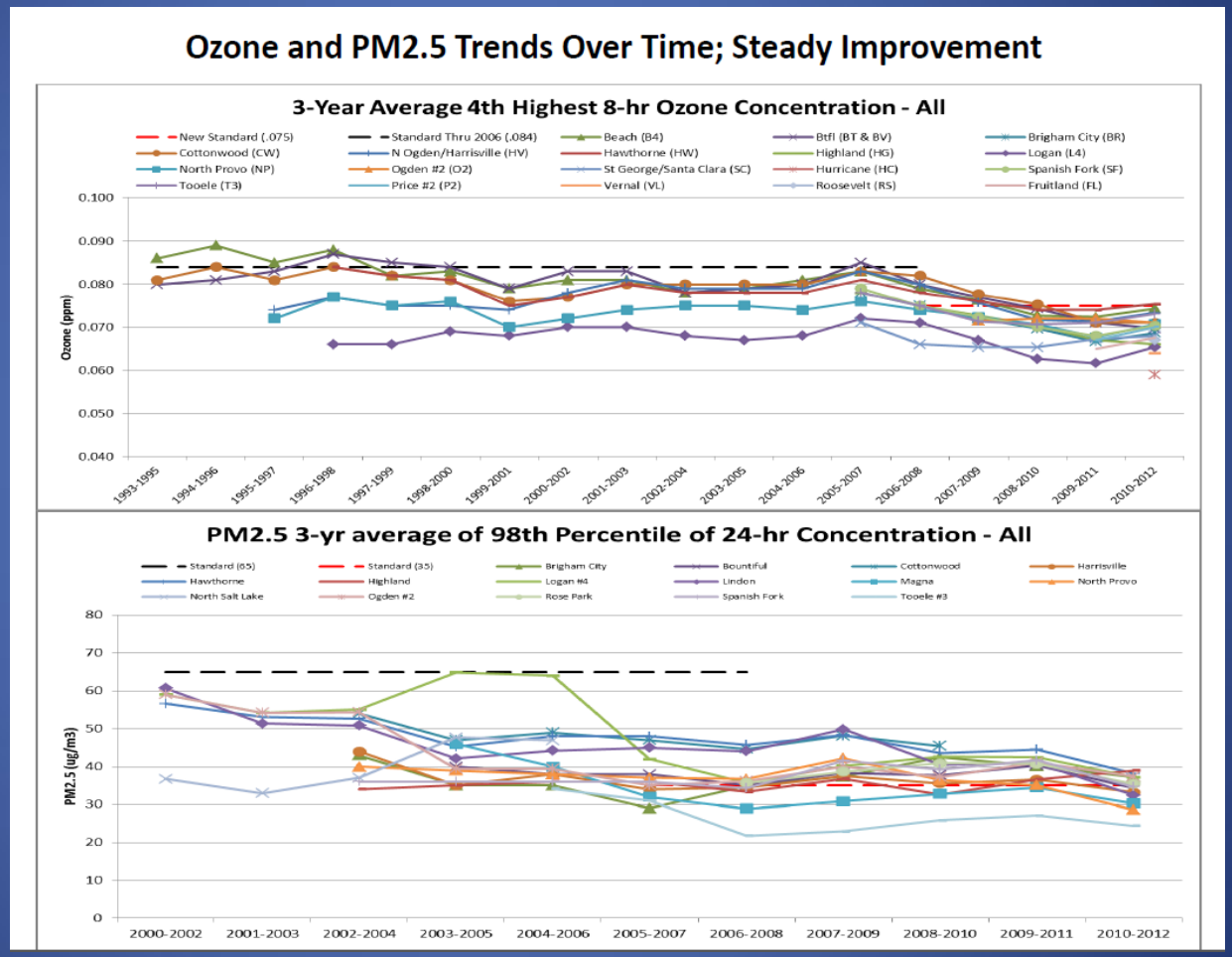
WFRC

February 18, 2015

Ozone & $PM_{2.5}$ Trends – Steady Improvement

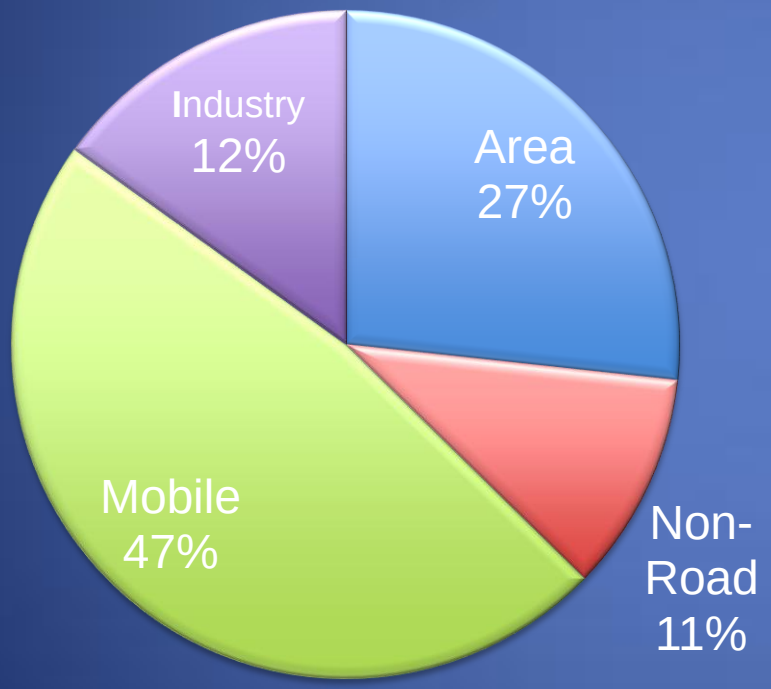
Ozone

$PM_{2.5}$

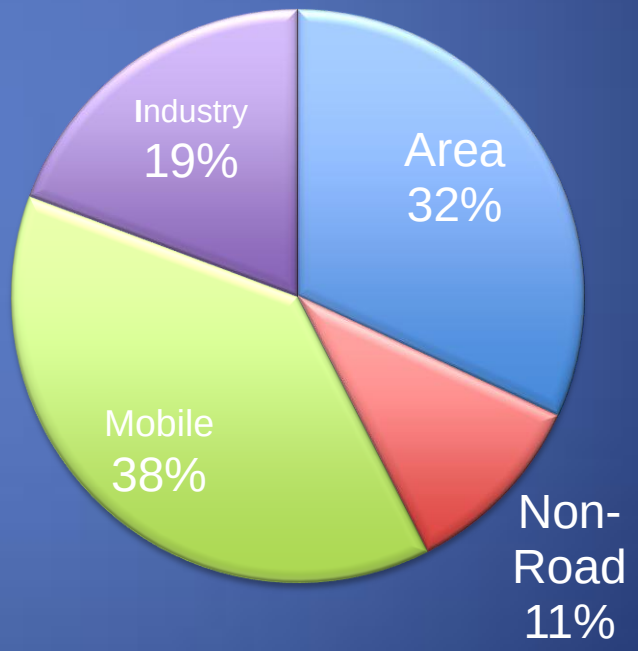


Where do Emissions Come From?

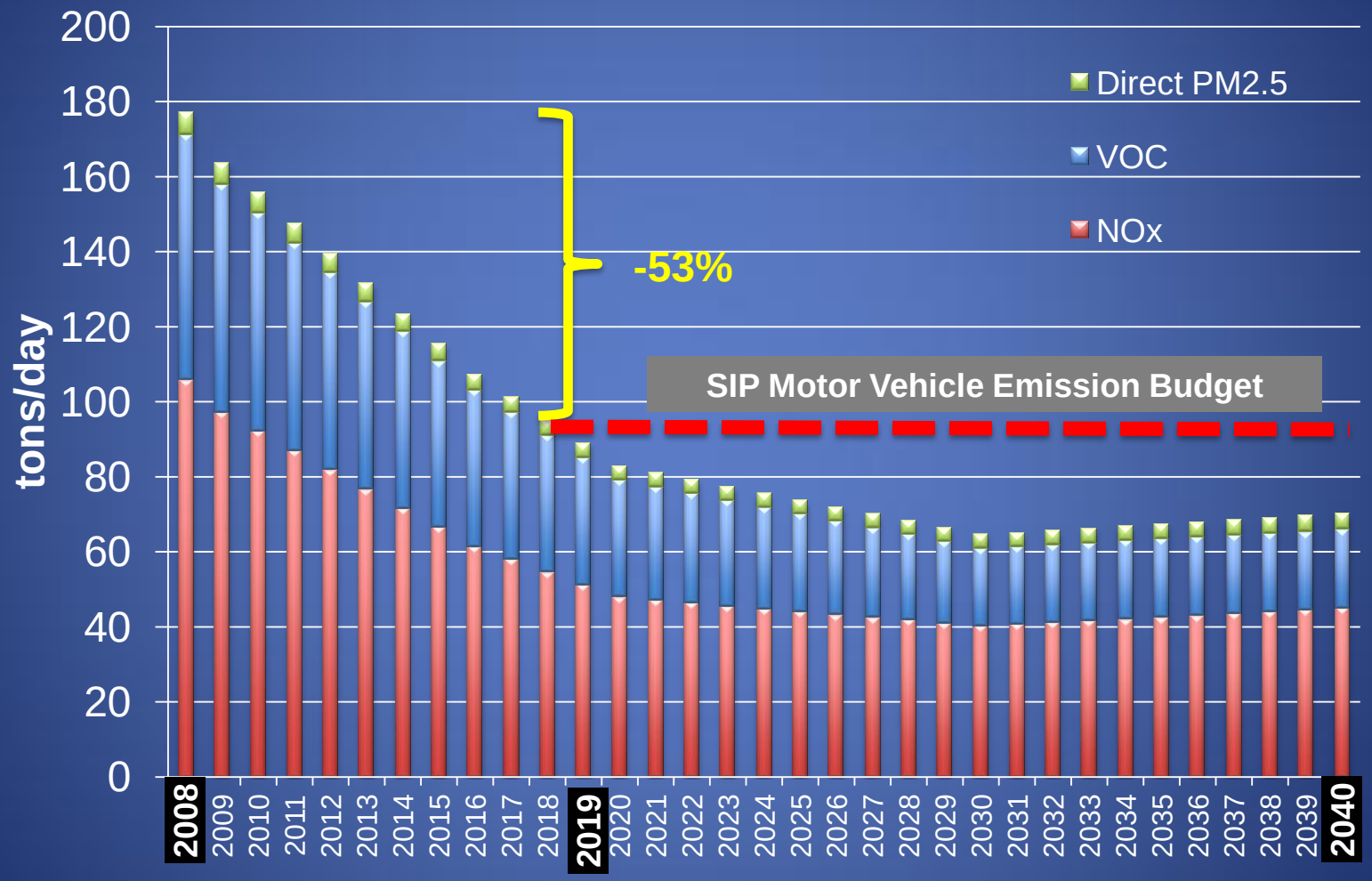
PM2.5 – 2014



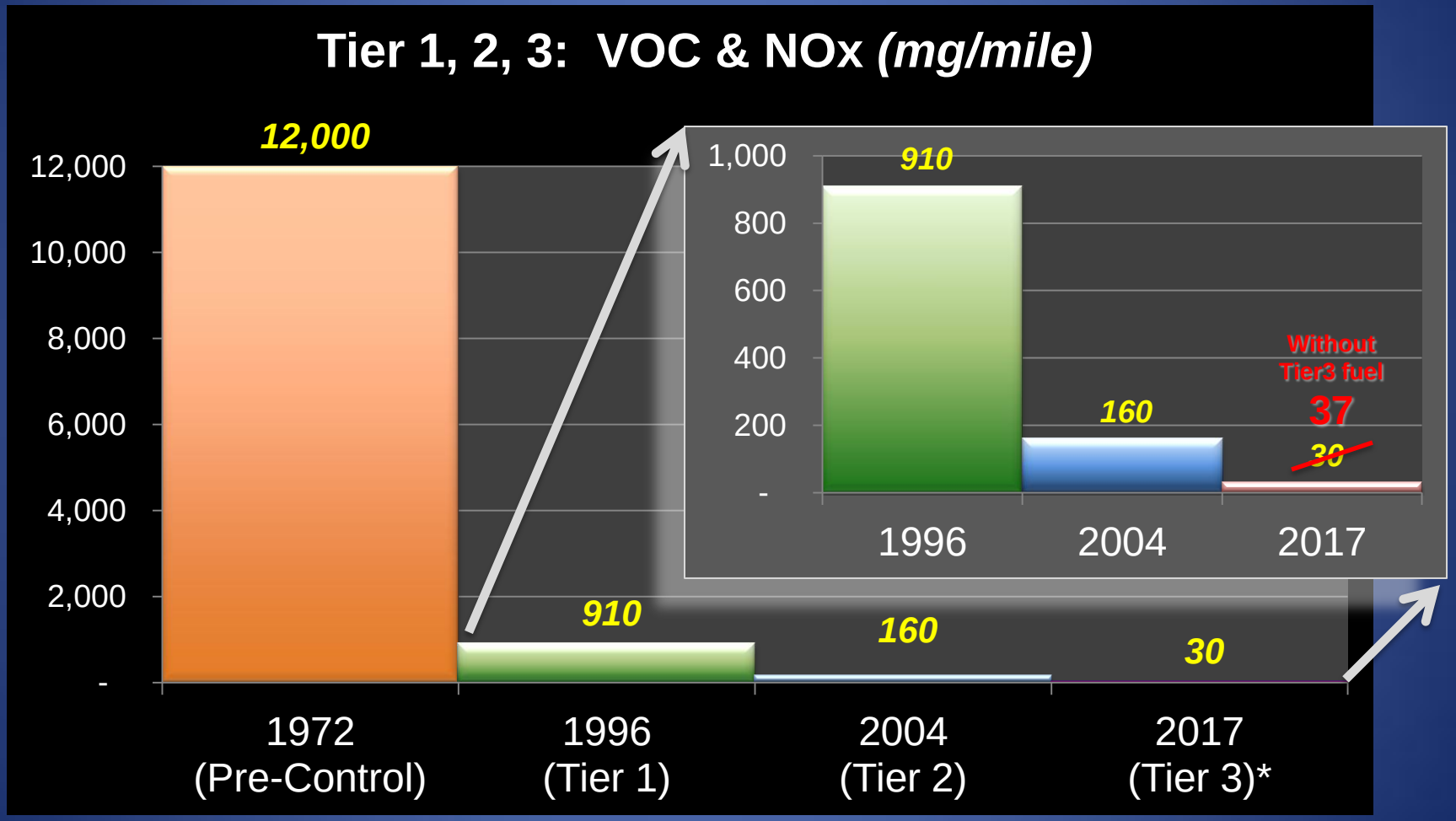
PM2.5 – 2019



Wasatch Front Area Vehicle Emission Trends - PM2.5
Unified Transportation Plan



Vehicle Emission Standards

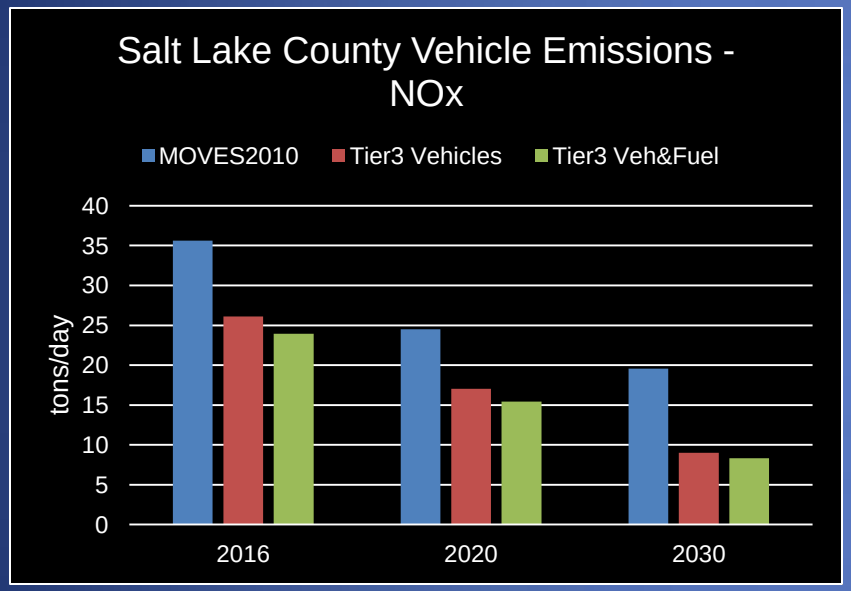


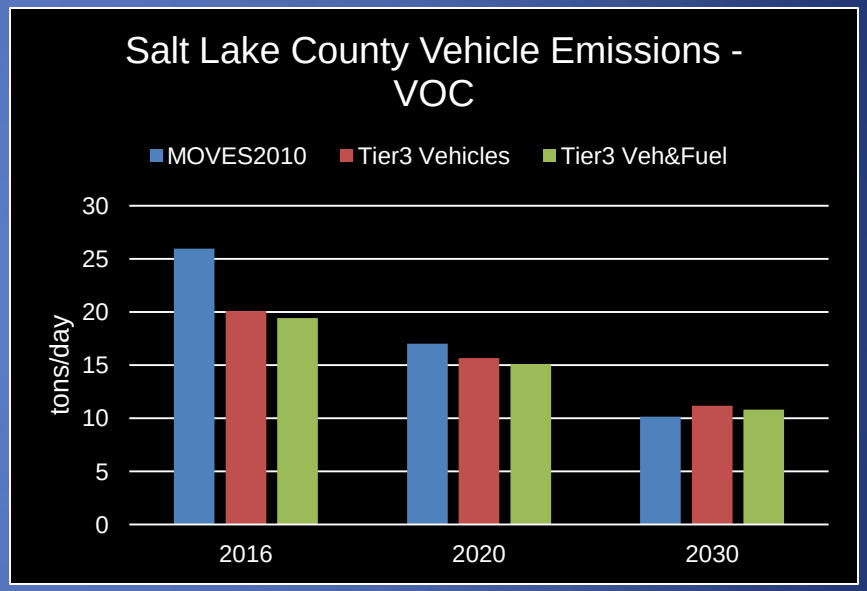
*30mg/mile is comparable to a Honda Civic CNG.

Utah is not guaranteed to receive Tier 3 fuel.

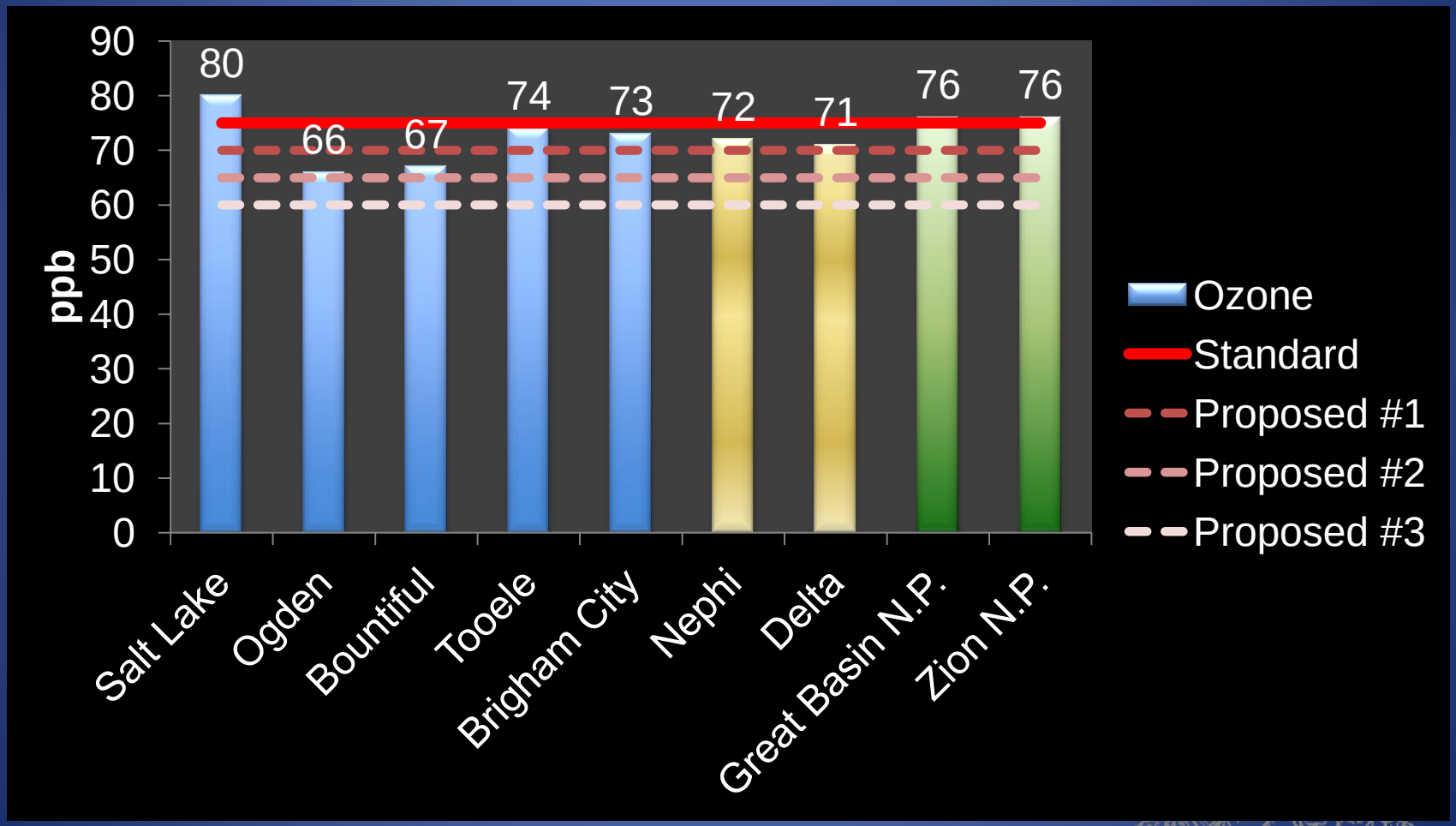
WASATCH FRONT REGIONAL COUNCIL

Emissions Impact of Tier3 Vehicles





Utah Ozone Measurements
4th Highest Value - 2012



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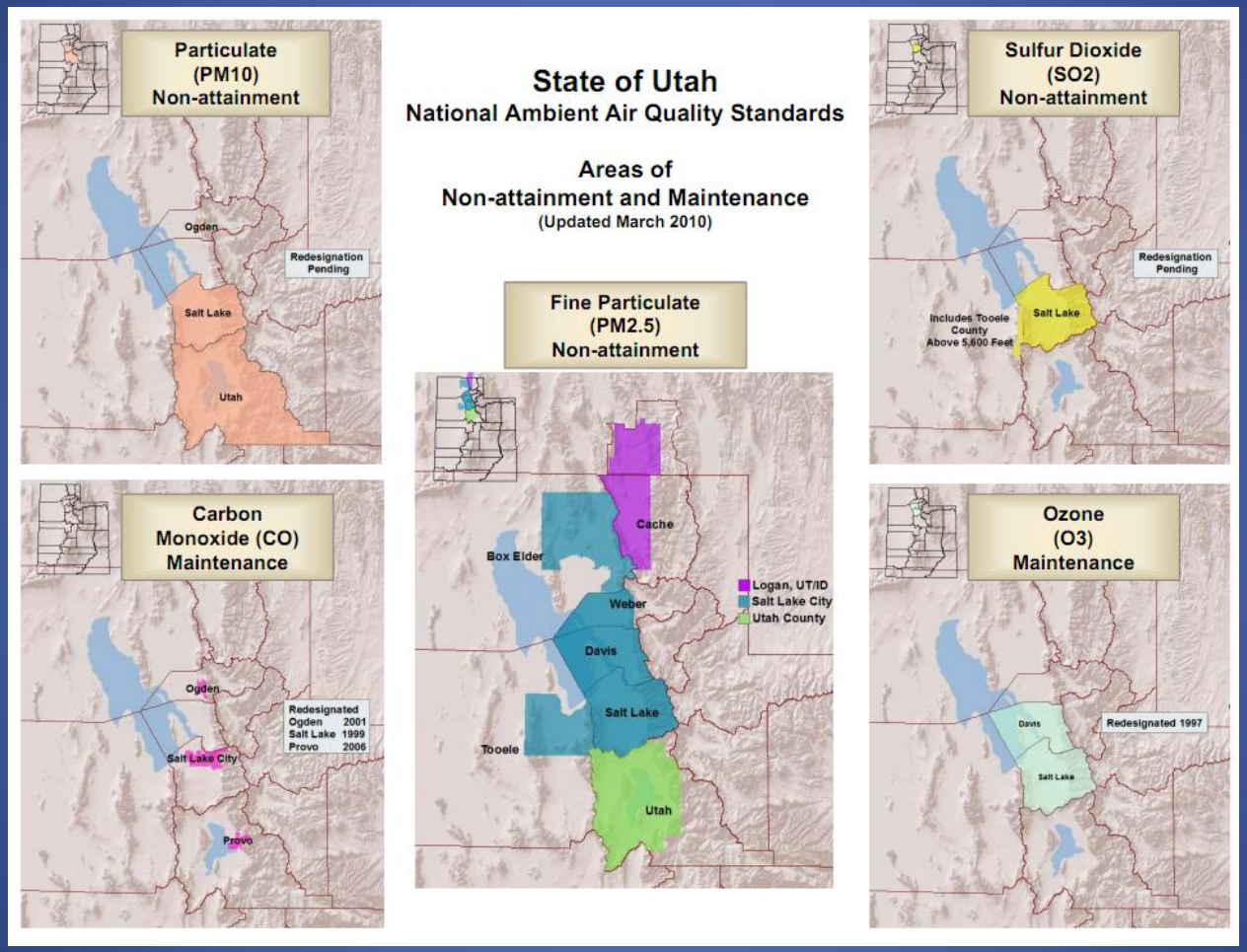
WFRC CMAQ Funded Projects

Salt Lake Area	CMAQ Funds	Emission Reduction (tons/year)
UTA - Vanpool	$ 263,733	101.5
UTA - Carpool	$ 55,000	5.1
Green Bike	$ 574,000	4.9
Cottownwood Park & Ride	$ 1,663,876	1.8
UTA - Depot District	$ 950,000	4.9
Park & Ride Smart Boards	$ 659,043	0.6
UDOT - Bangerter ATMS	$ 863,124	0.7
Bluffdale - Bike Path	$ 624,361	0.2
UDOT - Foothill ATMS	$ 431,562	0.1
UTA - Sugar House Trolley	$ 900,000	2.6
TOTAL	**$ 6,084,699**	**119.9**

Ogden-Layton Area	CMAQ Funds	Emission Reduction (tons/year)
UTA - Vanpool	$ 127,130	102.0
UTA - Carpool	$ 30,000	2.3
UDOT - Clearfield Intersection	$ 1,000,000	10.2
UDOT - Roy Intersection	$ 750,000	5.5
UTA - Ski Bus	$ 958,000	0.4
UDOT - US-89 ATMS	$ 431,562	0.1
TOTAL	**$ 3,296,692**	**120.6**

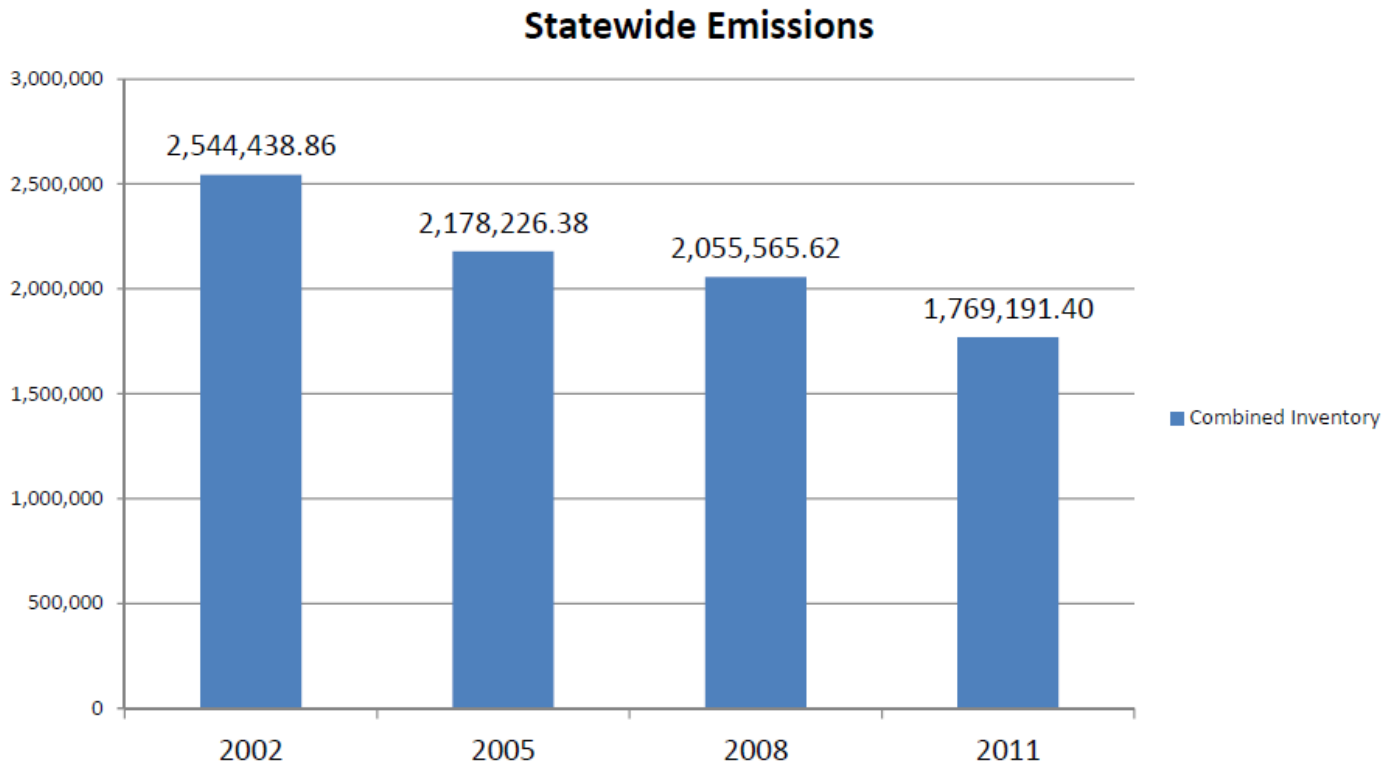
Utah Non-attainment Areas*



*** Areas not meeting National Ambient Air Quality Standards - NAAQS**

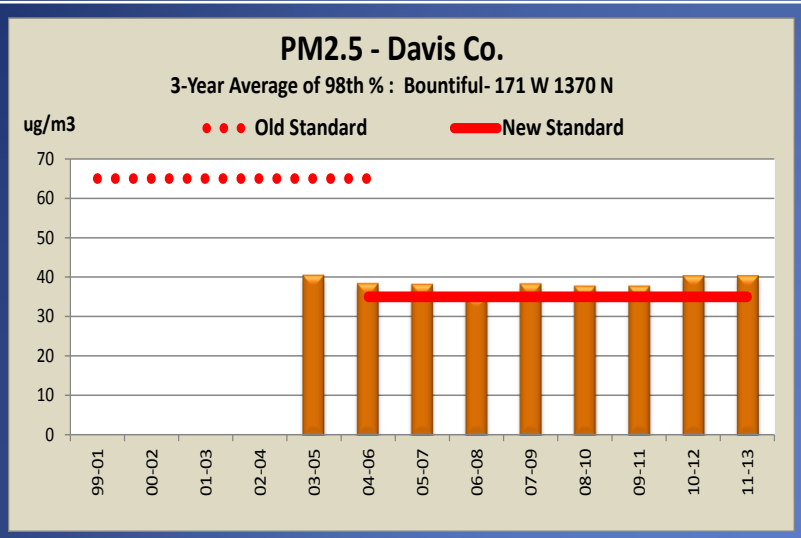
Utah Summary of State Air Emissions

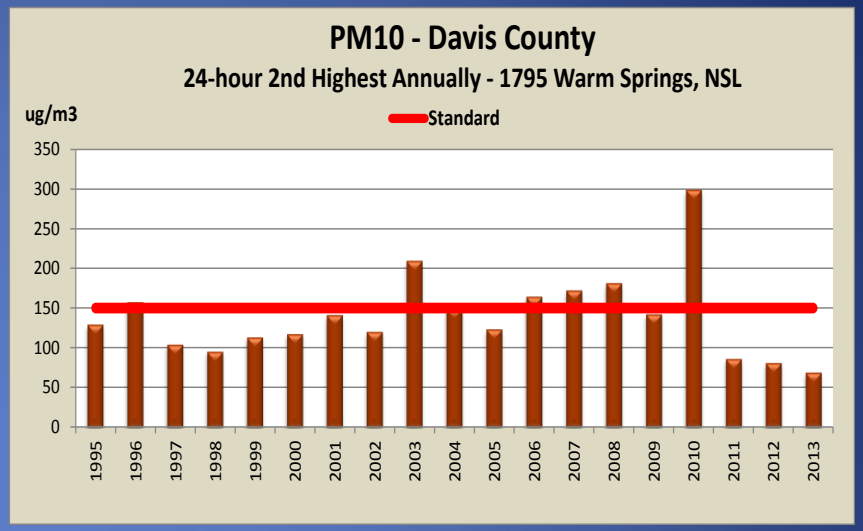
Total Tons Emitted

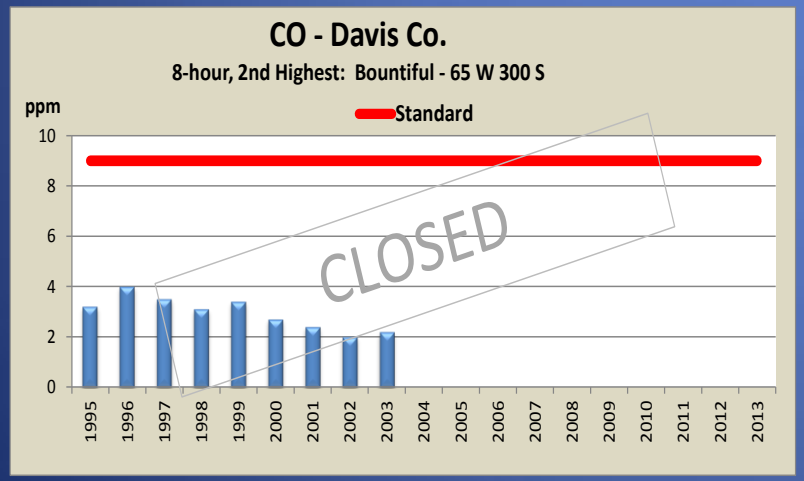


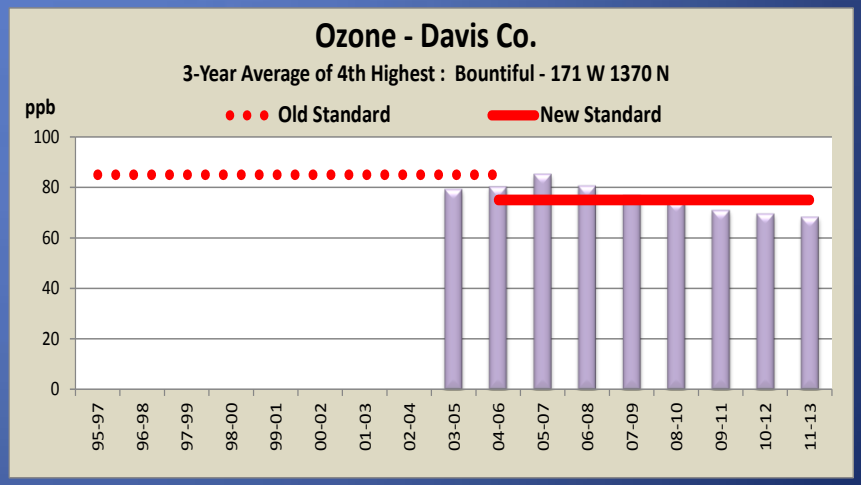
http://www.airquality.utah.gov/Planning/Emission-Inventory/Available_inventory.htm

Davis County Air Quality



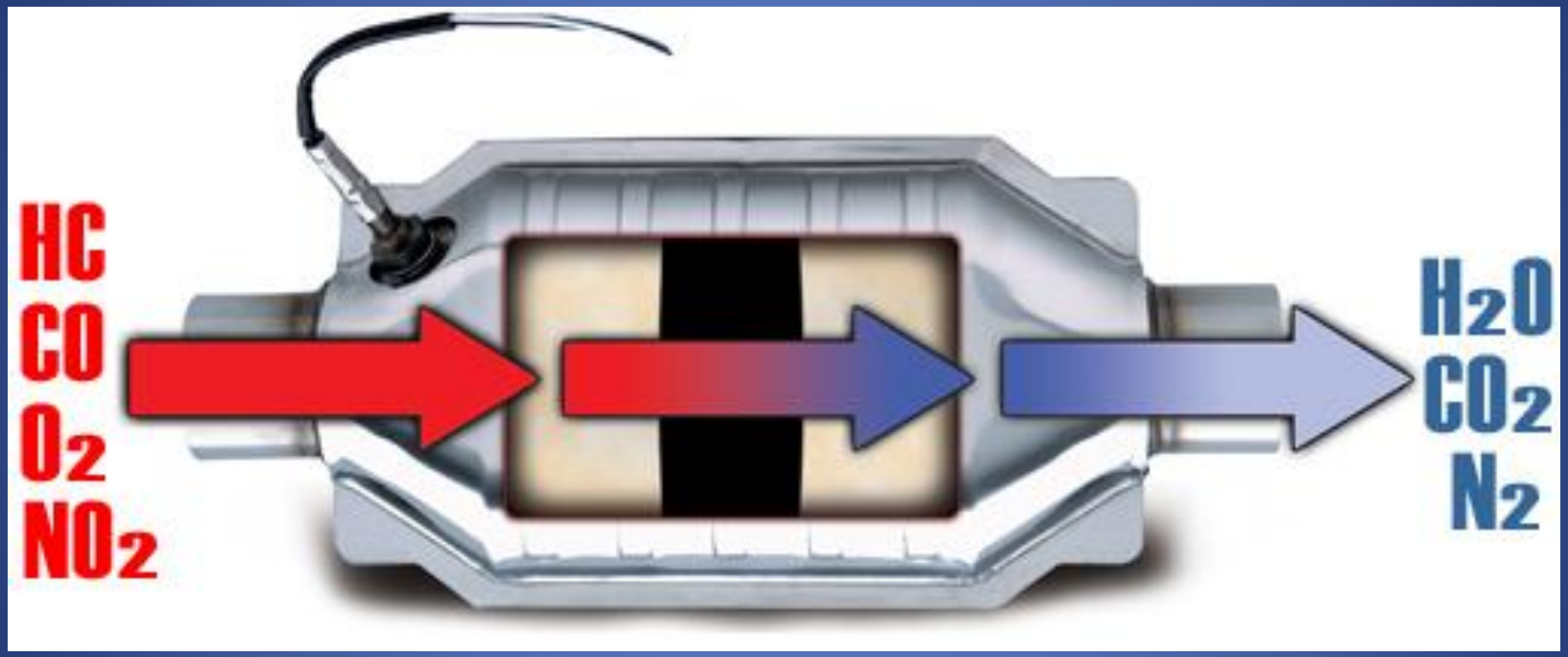




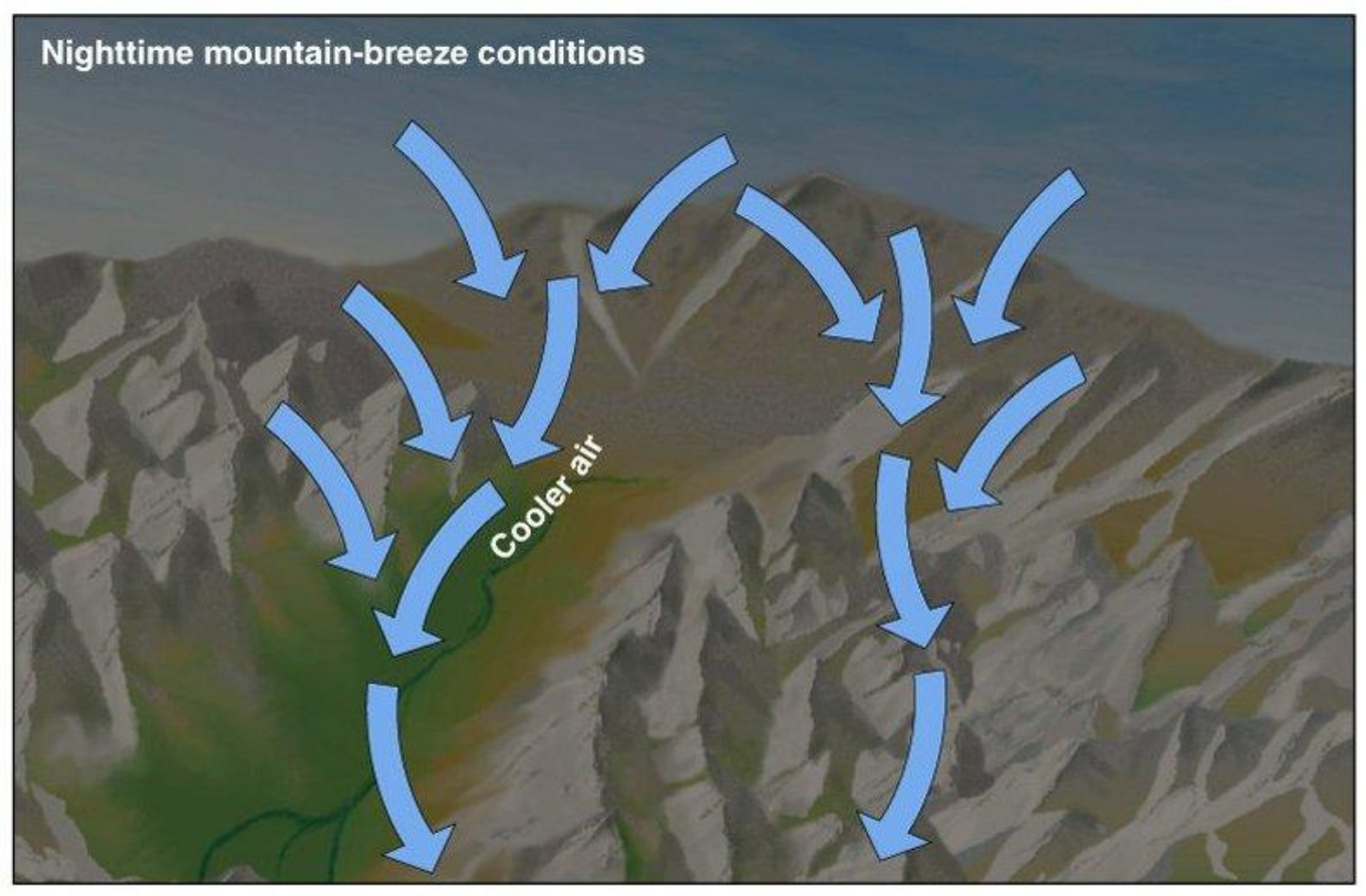


Catalytic Converter

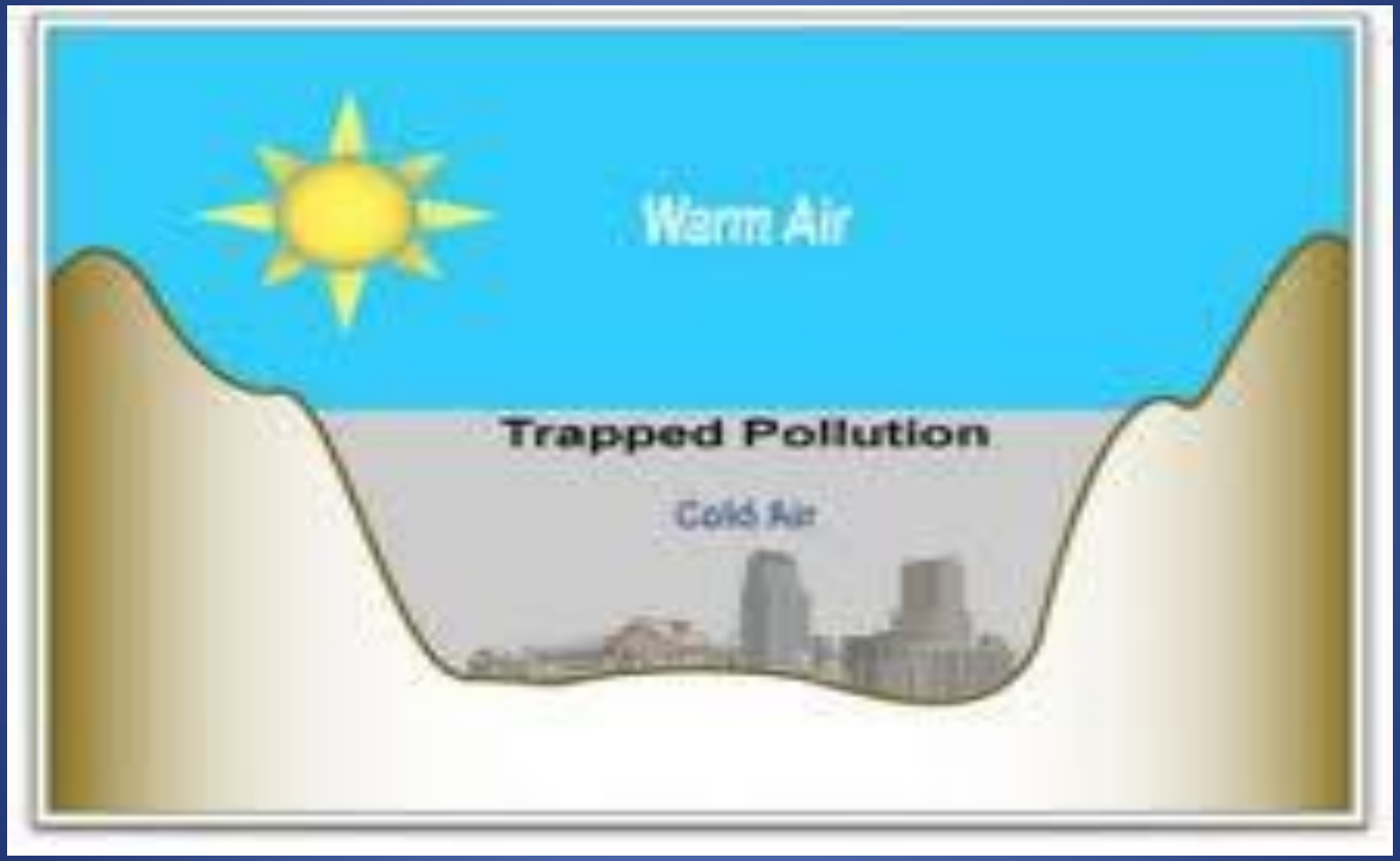
Vehicle Emission Technology



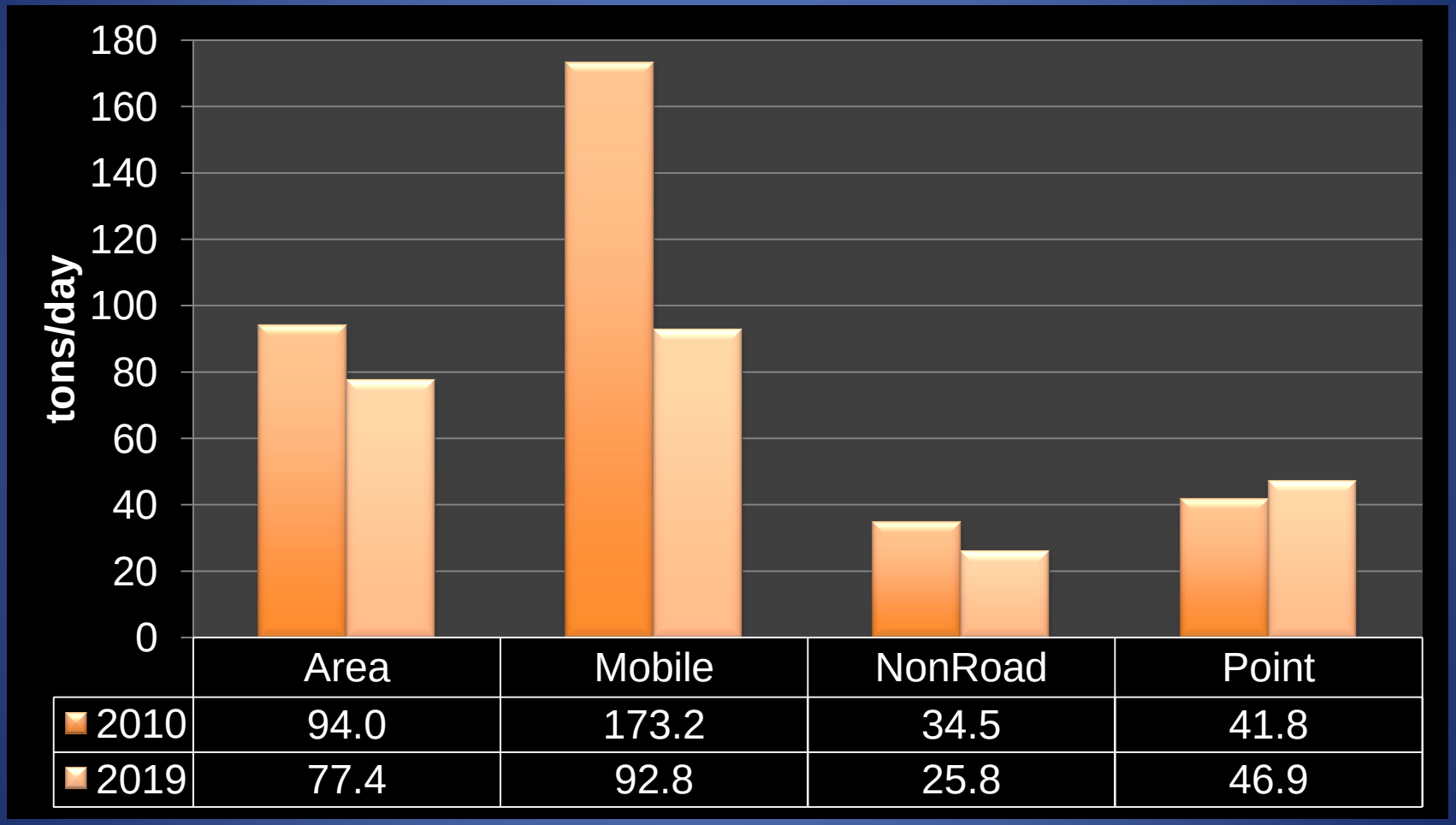
What is the source of the cold air for inversions?



Temperature Inversion

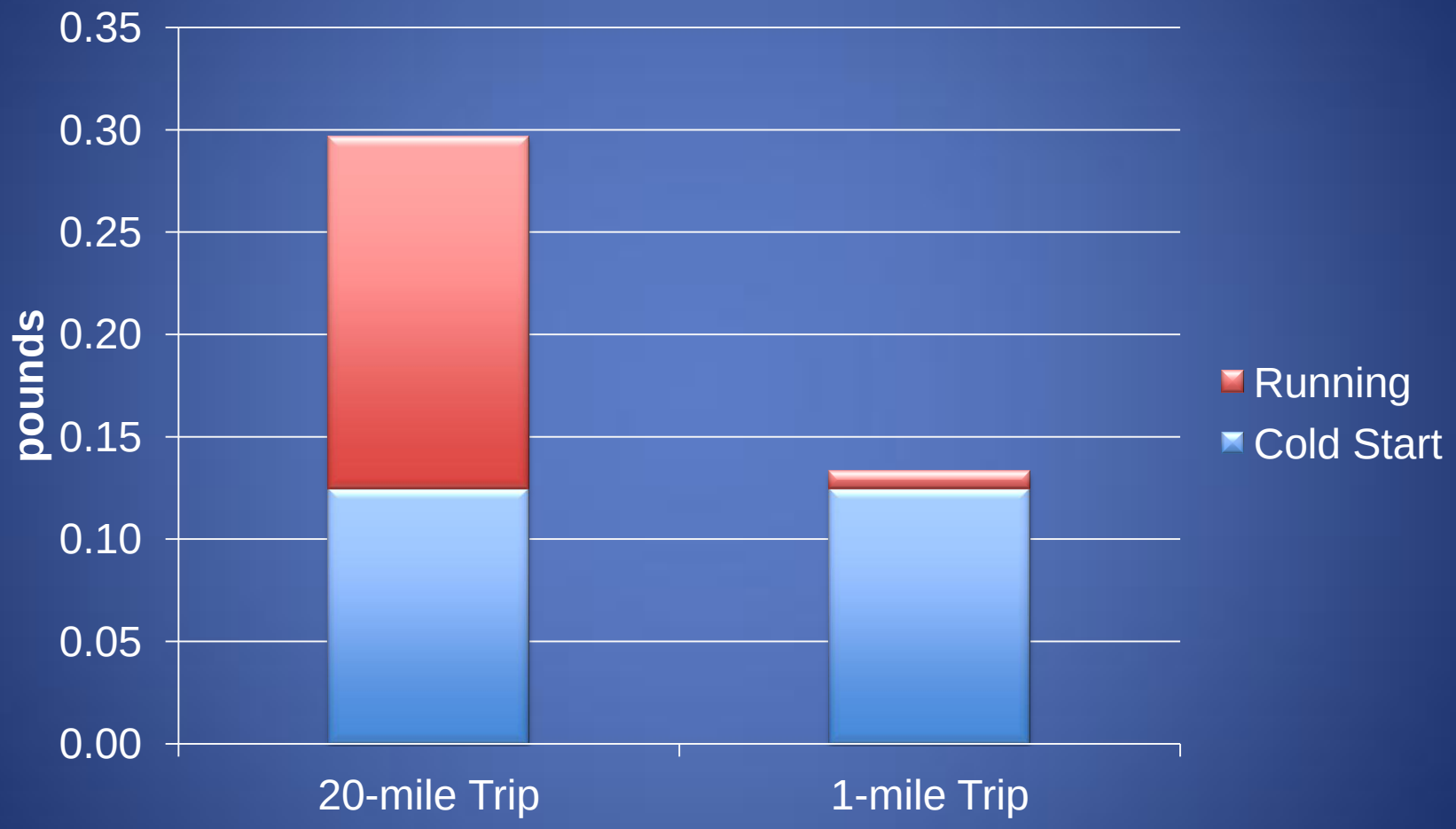


PM2.5 SIP Emission Reductions 2010 v 2019



	Area	Mobile	NonRoad	Point
2010	94.0	173.2	34.5	41.8
2019	77.4	92.8	25.8	46.9

Vehicle Cold Start Emissions



Air Quality Actions for Drivers

- **Buy a new car (2004)**
- **Reduce the number of "cold starts"**
  - Telecommute
  - Trip chain
  - Skip a trip
  - Walk to school/church
- **Reduce idling – Do NOT warm up your car!**
- **Carpool ("round-up" vs "rendez-vous")**
- **Flextime**
- **Cruise control**
- **Use public transit**

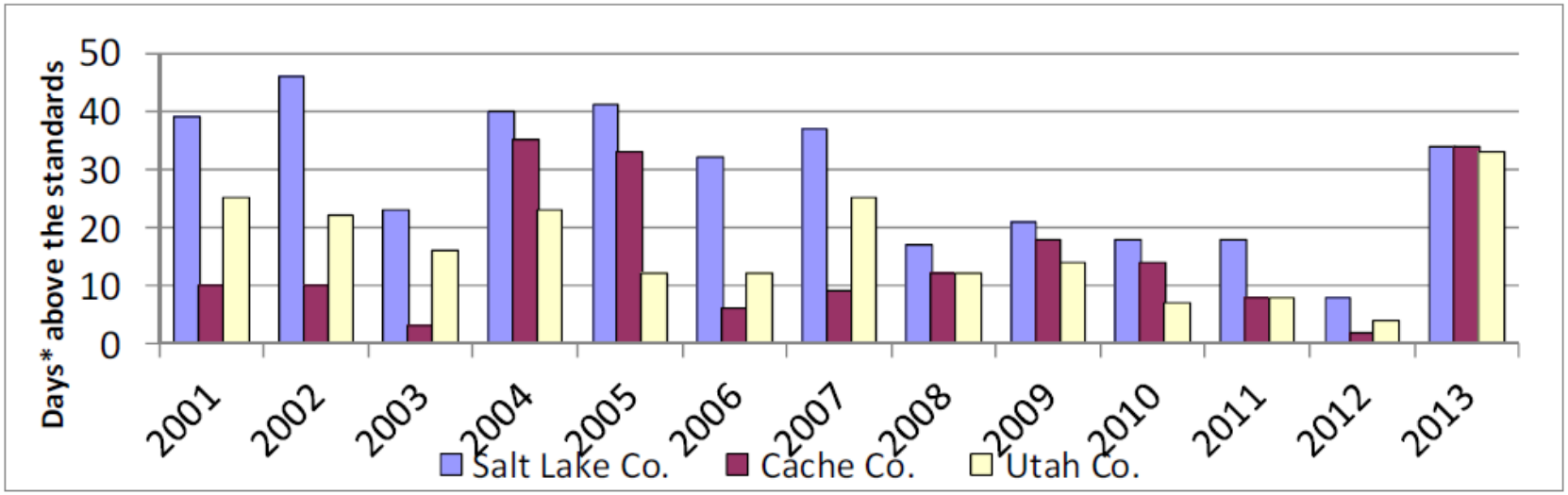
Air Quality Actions for Homeowners

- Switch from wood to gas fireplace
- Practice energy efficiency
- Avoid spray products
- Choose water based paints

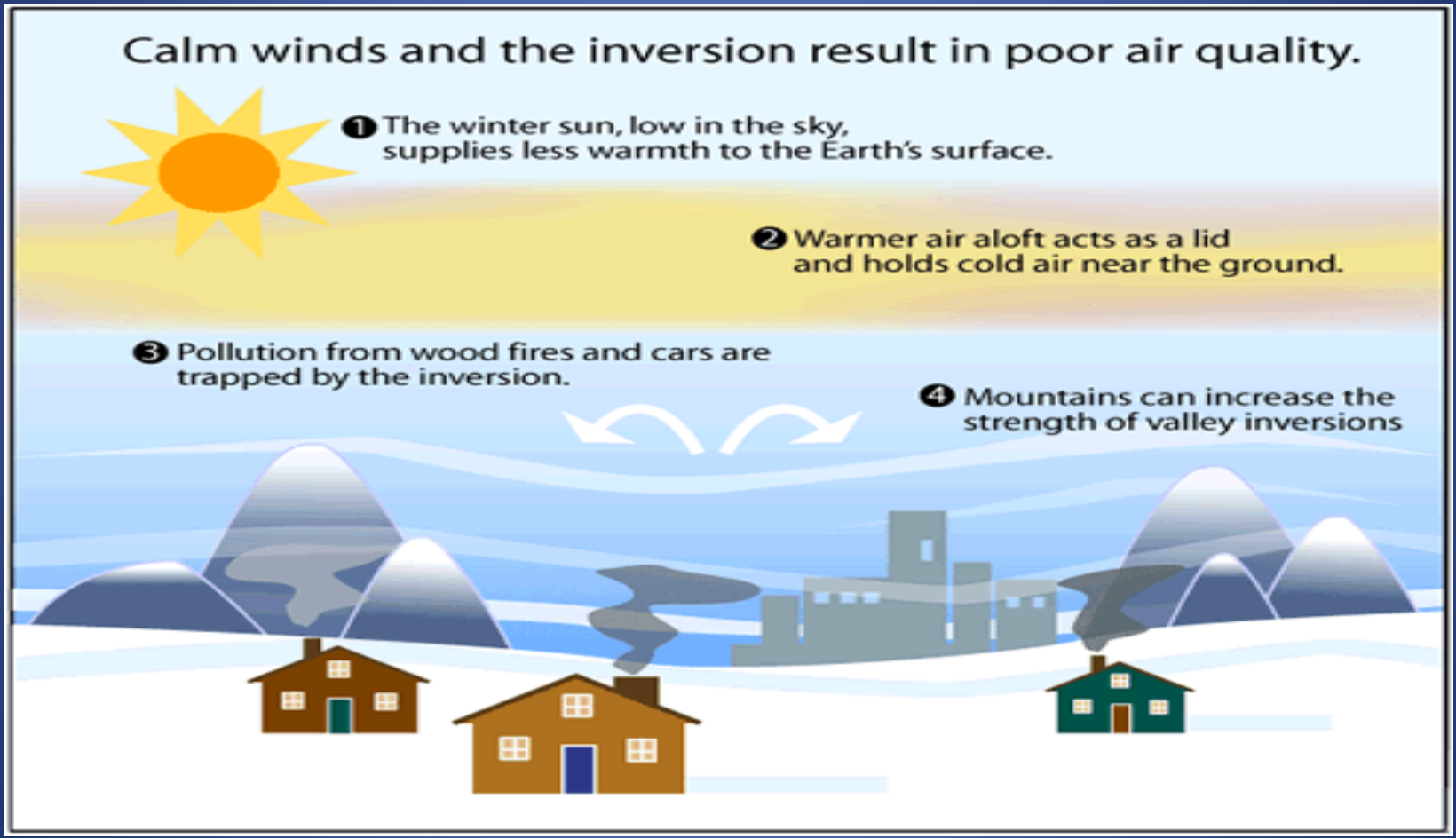
What is a Conformity Lapse?

Estimated future emissions from <u>vehicles</u> are greater than the limits that DAQ has determined are necessary to maintain clean air standards.

Number of Days That Are and Those That Would Have Been Above the Current Federal Standards
Salt Lake, Cache, and Utah County Areas

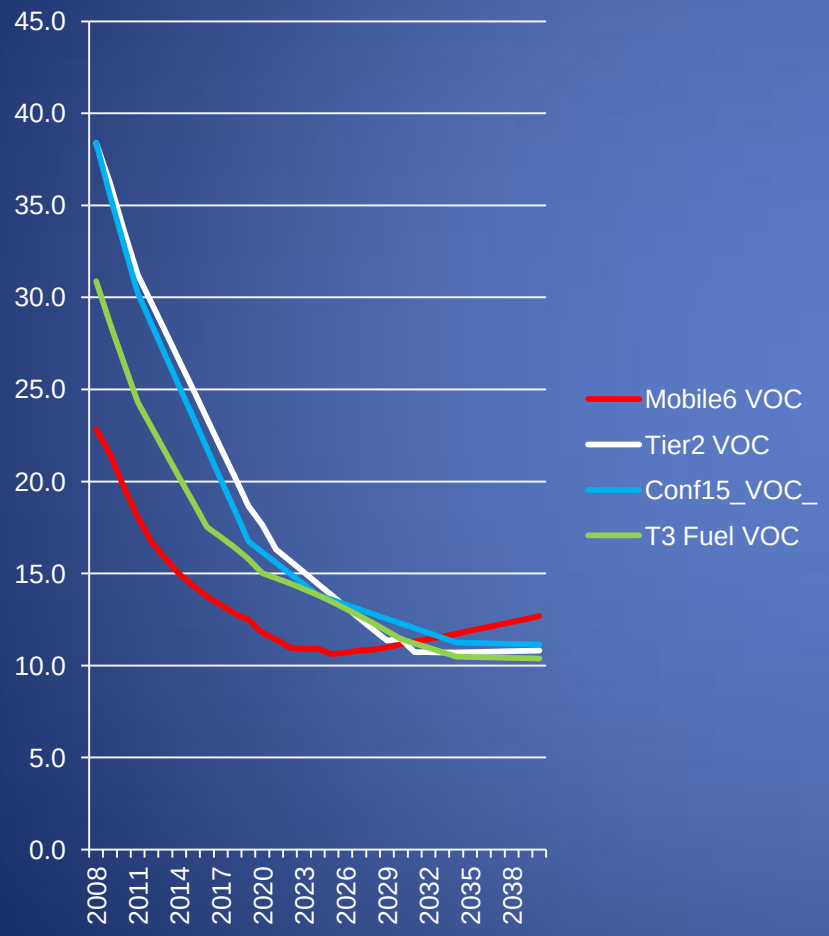


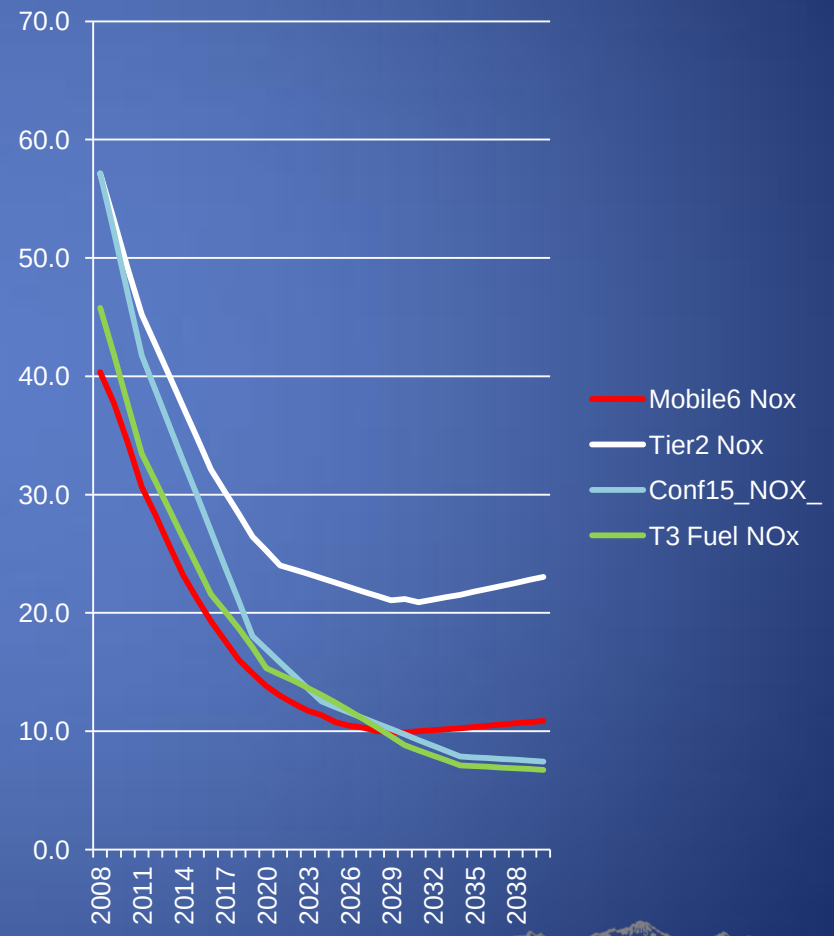
* Days with monitored values above the level of the ***current*** National Ambient Air Quality Standards combined for PM2.5 and ozone (PM2.5 standard revised in 2006, ozone standard revised in 2008)


Calm winds and the inversion result in poor air quality.
1 The winter sun, low in the sky, supplies less warmth to the Earth's surface.
2 Warmer air aloft acts as a lid and holds cold air near the ground.
3 Pollution from wood fires and cars are trapped by the inversion.
4 Mountains can increase the strength of valley inversions

Air Quality Actions for Local Governments

- **UCAIR.org**
  - Grants & loans for small business
- **TravelWise.utah.gov**
  - Community Resource Kit
  - Strategies
- **DEQ.utah.gov**
  - Utah DEQ Wood Burning brochure
  - Air quality resource
- **RideUTA.com**


45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
2008
2011
2014
2017
2020
2023
2026
2029
2032
2035
2038
Mobile6 VOC
Tier2 VOC
Conf15_VOC_
T3 Fuel VOC


70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
2008
2011
2014
2017
2020
2023
2026
2029
2032
2035
2038
Mobile6 Nox
Tier2 Nox
Conf15_NOX_
T3 Fuel NOx