

Fuels Workshop on Regulatory and Non-Regulatory Fuels Activities for 2006

July 24, 2006

California Environmental Protection Agency



Air Resources Board

Agenda

- Introductions and Schedule
- Suggested Biodiesel Policy
- California Predictive Model
 - Statistical SubGroup
 - Reactivity Factors
 - Emissions Inventory
 - Formation of additional SubGroups
- Presentations by Others
- Open Discussions
- Closing Remarks

Future 2006 Workshops

- ➡ Aug. 11 9:00-12:30 Byron Sher Auditorium
 - ➡ Aug. 25 9:00-12:30 Byron Sher Auditorium
- These workshops will be webcast; conference call phone number and pass code will be the same as today.

Discussion Topic: Suggested Biodiesel Policy

Discussion Topic: Predictive Model

New Website

- ☞ To facilitate communications with stakeholders, the ARB staff has created a new webpage for Predictive Model development activities
 - The new webpage may be found at:
www.arb.ca.gov/fuels/gasoline/premodel/pmdevelop.htm

Predictive Model

- Committed to the Board to review need for update about every 5 years – last updated 1999
- Currently slated to go to the Board on December 7-8, 2006
 - Hearing notice package filed with OAL on 10/10
 - Staff Report release no later than 10/20

Predictive Model - Hydrocarbons

☞ Four Parts

- Exhaust HC% * IWF * RF +
- Evap HC% * IWF * RF +
- CO% * IWF * RF +
- Permeation% * IWF * RF

☞ Evap HC - Hot Soak, Diurnal, Resting Loss, and Running Loss

Predictive Model – Weighting Factors

- Staff will change how the emission categories are weighted.
- Each hydrocarbon emissions category will be weighted based on the entire fleet rather than just Tech 3,4, and 5.

Tech Group Weighting Factors

Statewide, LDV (GVW < 5750 lbs.)

Exh Pollutant**	New Model (CY 2010)*			Current Model (CY 2005)		
	Tech 3 ('81-'85)	Tech 4 ('86-'95)	Tech 5 ('96-'10)	Tech 3 ('81-'85)	Tech 4 ('86-'95)	Tech 5 ('96-'05)
TOG/THC	0.109	0.536	0.356	0.166	0.540	0.294
NOx	0.091	0.466	0.443	0.122	0.348	0.530
Toxics	0.019	0.145	0.836	0.021	0.180	0.799

*EMFAC2007 Working Draft, CA 8-Hr O3 Temp. Profile and Rel. Humidity

**Based on emissions, except Toxics (VMT)

Tech Group Weighting Factors

Statewide, LDV (GVW < 5750 lbs.)

Exh Pollutant**	New Model (CY 2015)*			Current Model (CY 2005)		
	Tech 3 ('81-'85)	Tech 4 ('86-'95)	Tech 5 ('96-'10)	Tech 3 ('81-'85)	Tech 4 ('86-'95)	Tech 5 ('96-'05)
TOG/THC	0.110	0.446	0.443	0.166	0.540	0.294
NOx	0.094	0.390	0.516	0.122	0.348	0.530
Toxics	0.013	0.074	0.913	0.021	0.180	0.799

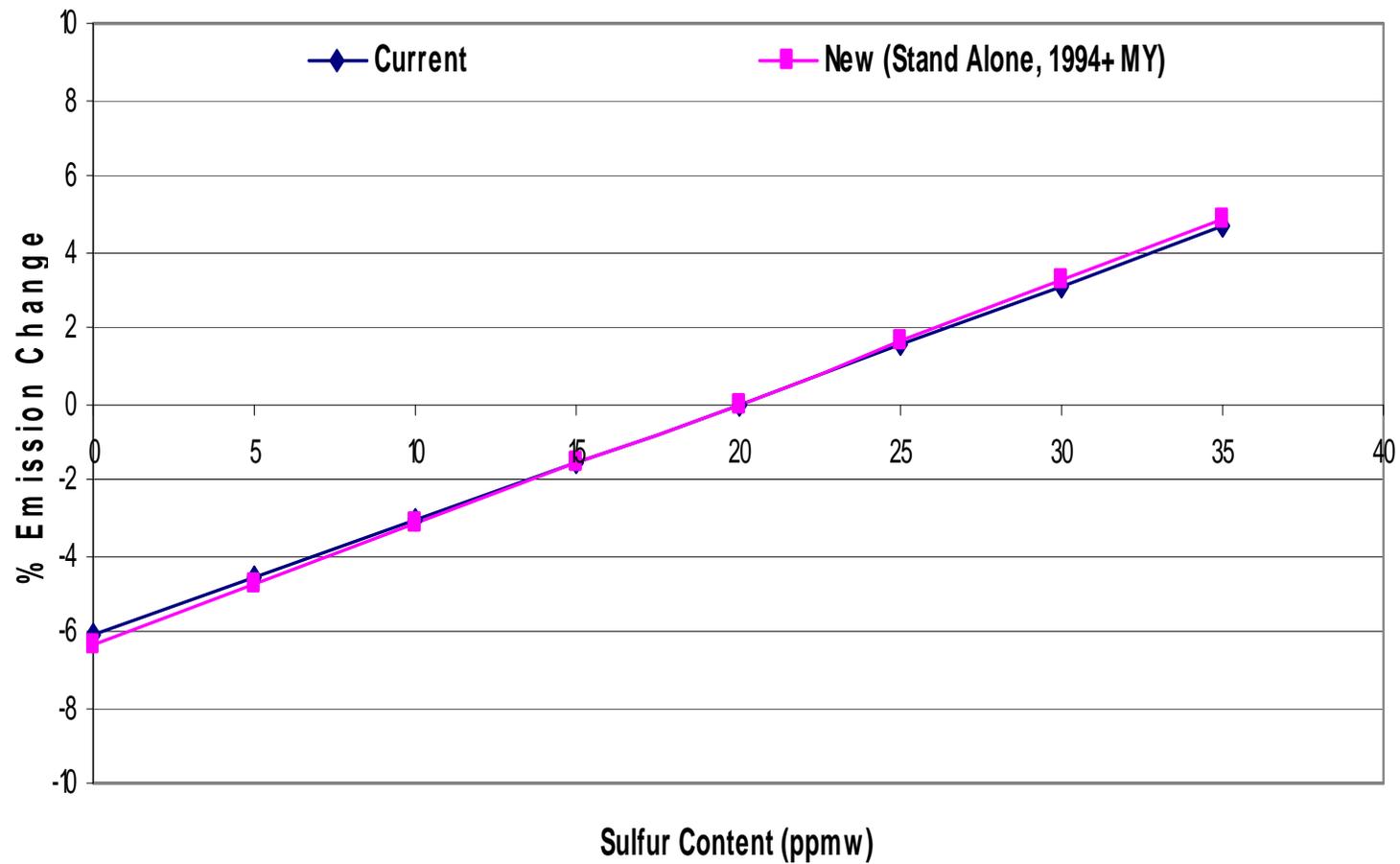
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**Based on emissions, except Toxics (VMT)

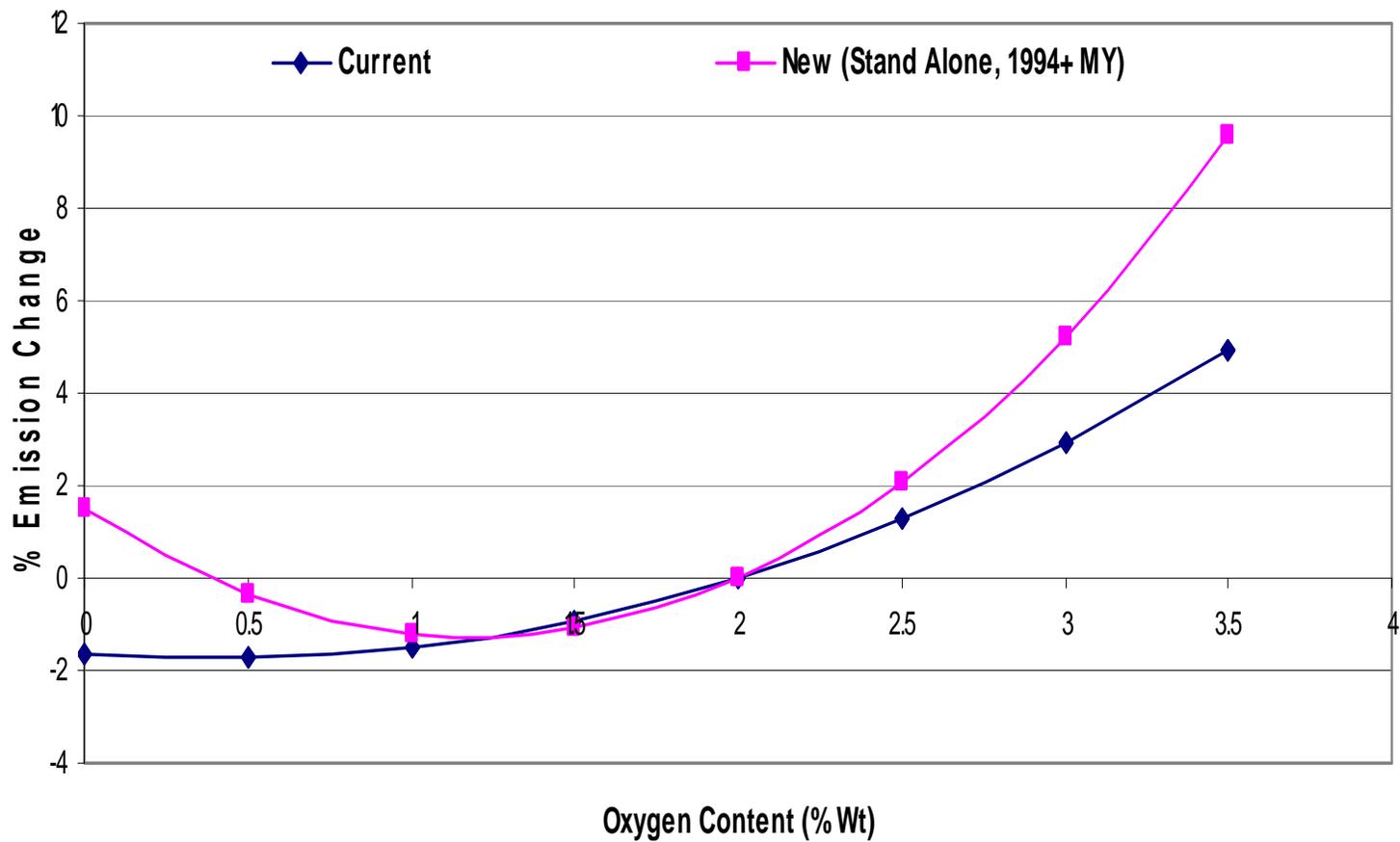
Statistics Subgroup

- Group was asked to investigate the merits of building a standalone Tech 5 model
- Group proposes that Auto/Oil #17 and #18 vehicles in Tech 5 be moved back to Tech 4
- Averaging repeats question been posed to David Rocke
- Group is now evaluate alternative methods to construct the Tech 5 offset model.

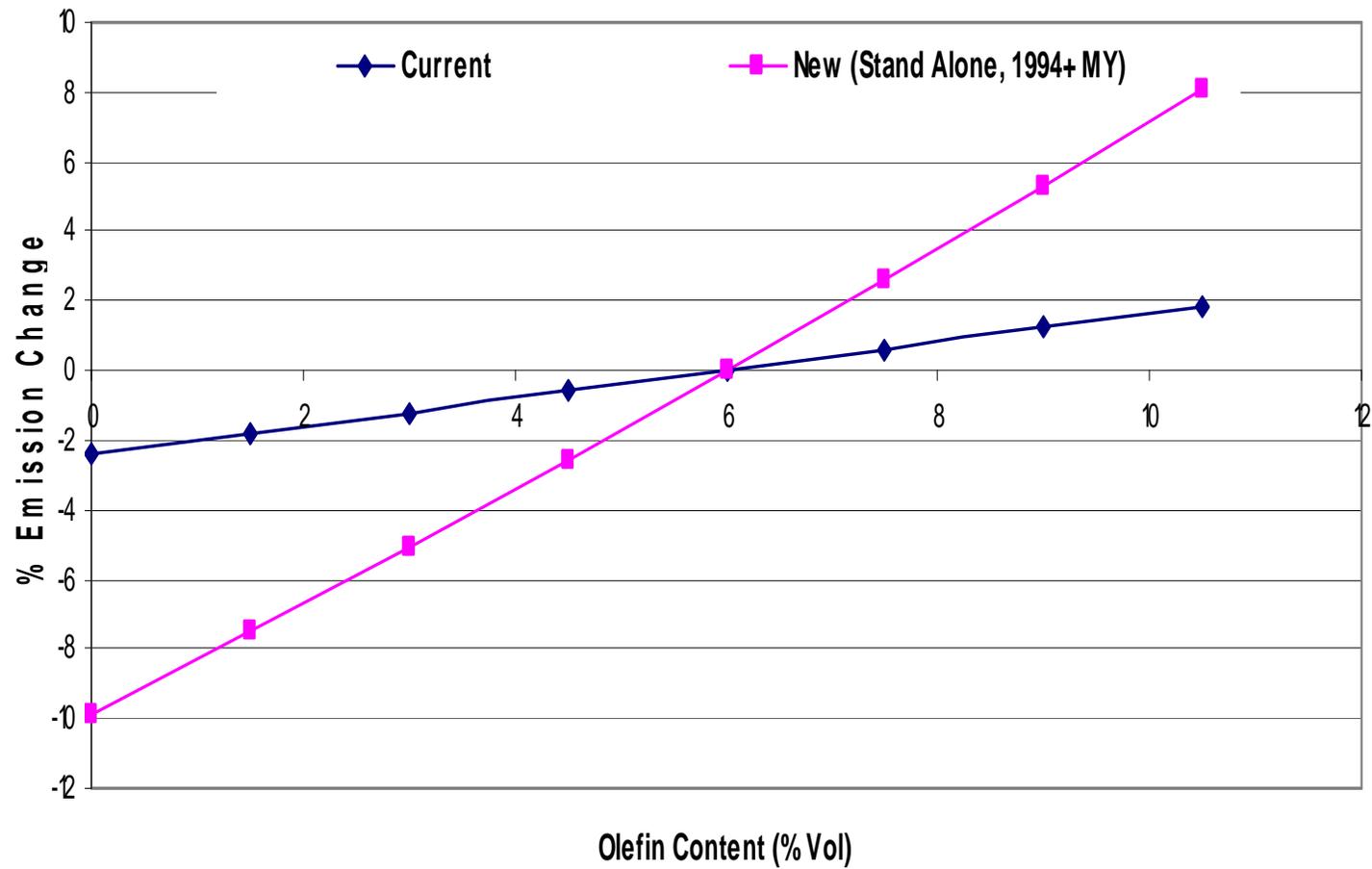
Tech 5 Exhaust NOx Response To Sulfur (All Other Fuel Properties @ Flat Limits)



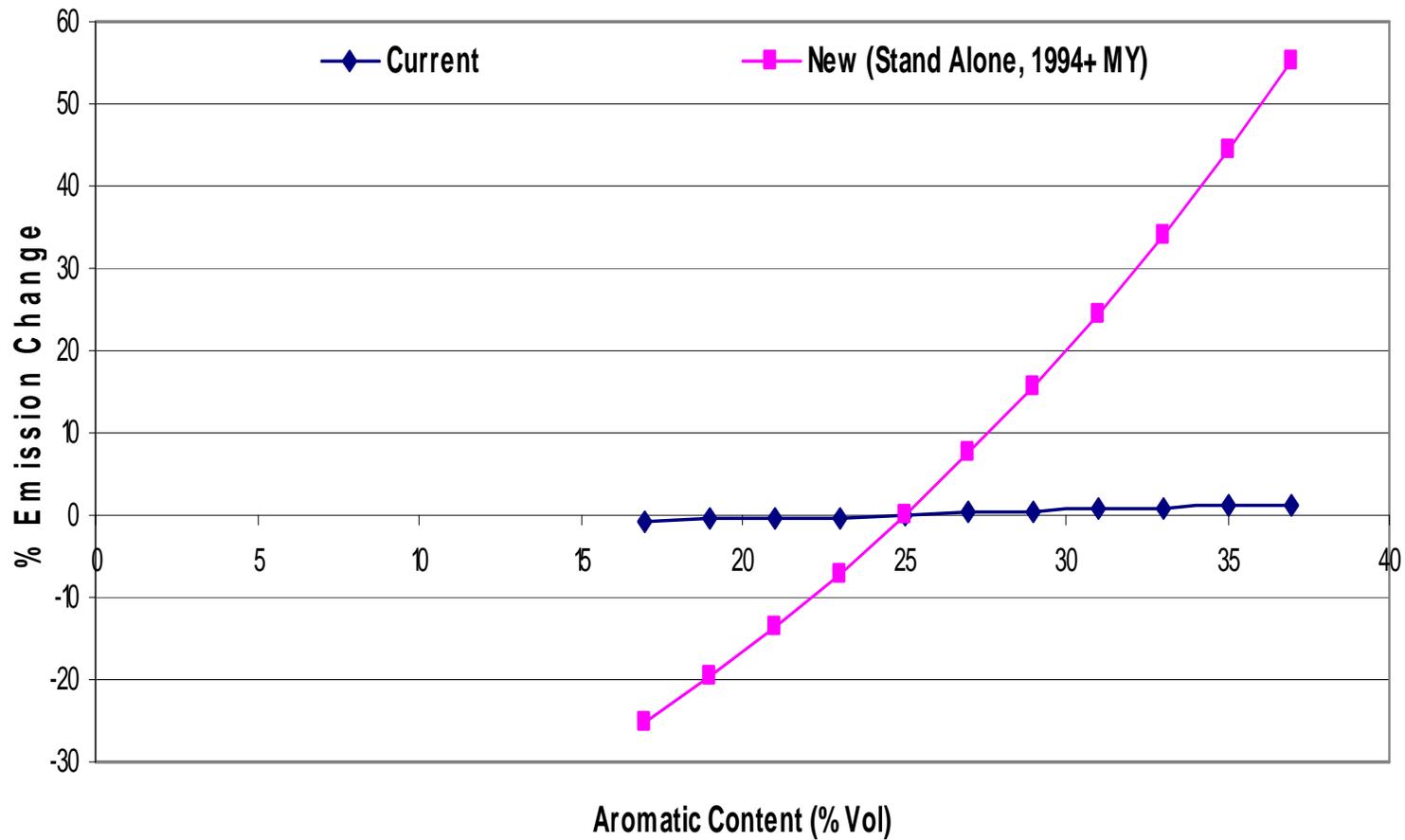
Tech 5 Exhaust NOx Response To Oxygen (All Other Fuel Properties @ Flat Limits)



Tech 5 Exhaust NOx Response To Olefin (All Other Fuel Properties @ Flat Limits)



Tech 5 Exhaust NOx Response To Aromatics (All Other Fuel Properties @ Flat Limits)



Reactivity

2003 Update to MIR Values

- 23 existing VOCs for which new MIR values differed by 5% or greater
- 102 new VOCs added to the list
- While average reactivity is changing, the relative difference is still close

Relative Reactivity

- ☞ Staff is working with MSOD to gain access to speciated data from in-use testing program database
- ☞ Database contains information on species for exhaust, diurnal, and hot soak tests
- ☞ Running loss could be modeled similar to the ethanol multimedia assessment
 - Running loss could be modeled as liquid leaks and headspace vapors

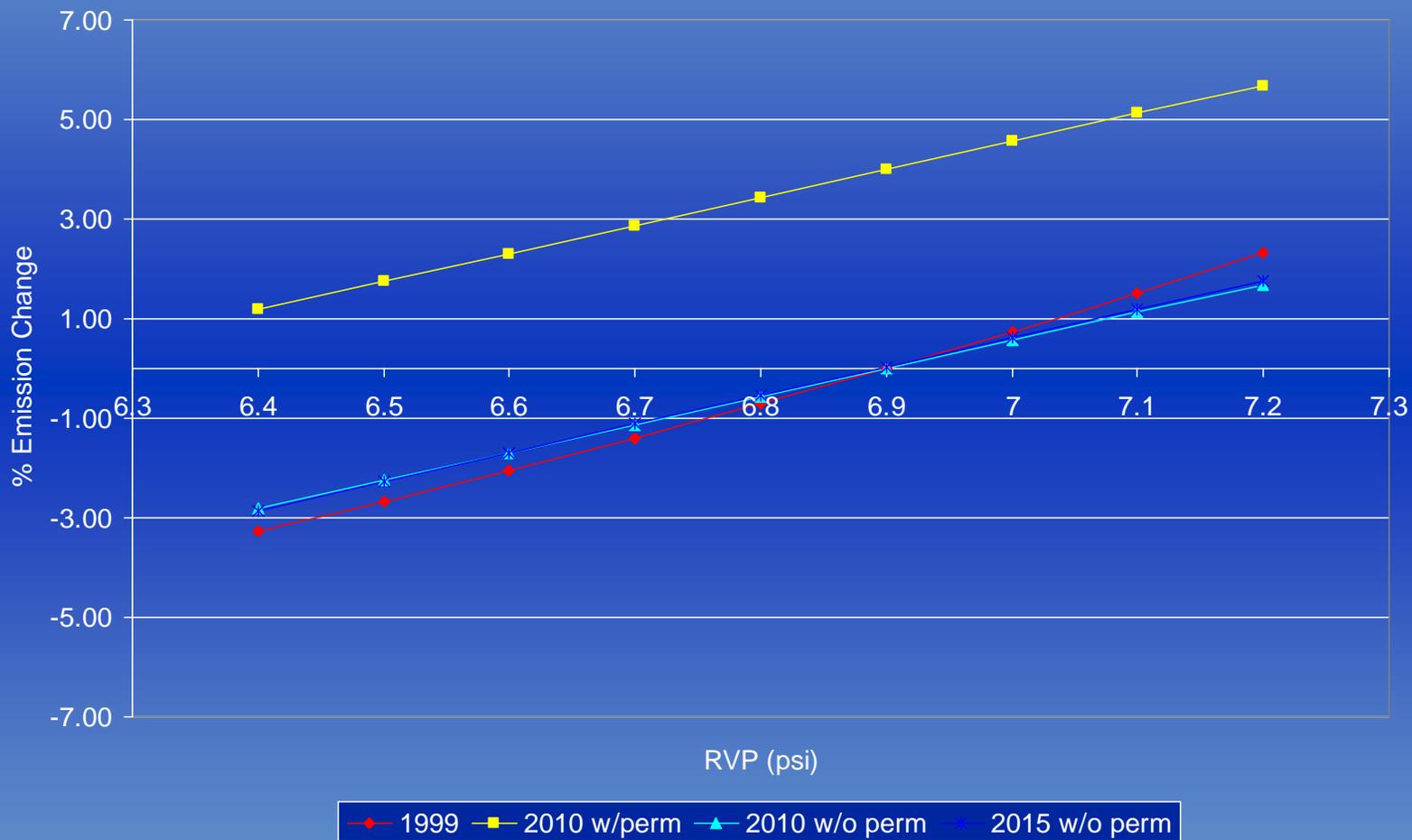
Preliminary Draft Starting Place Model

**Predictive Model Fuel Property
Response**

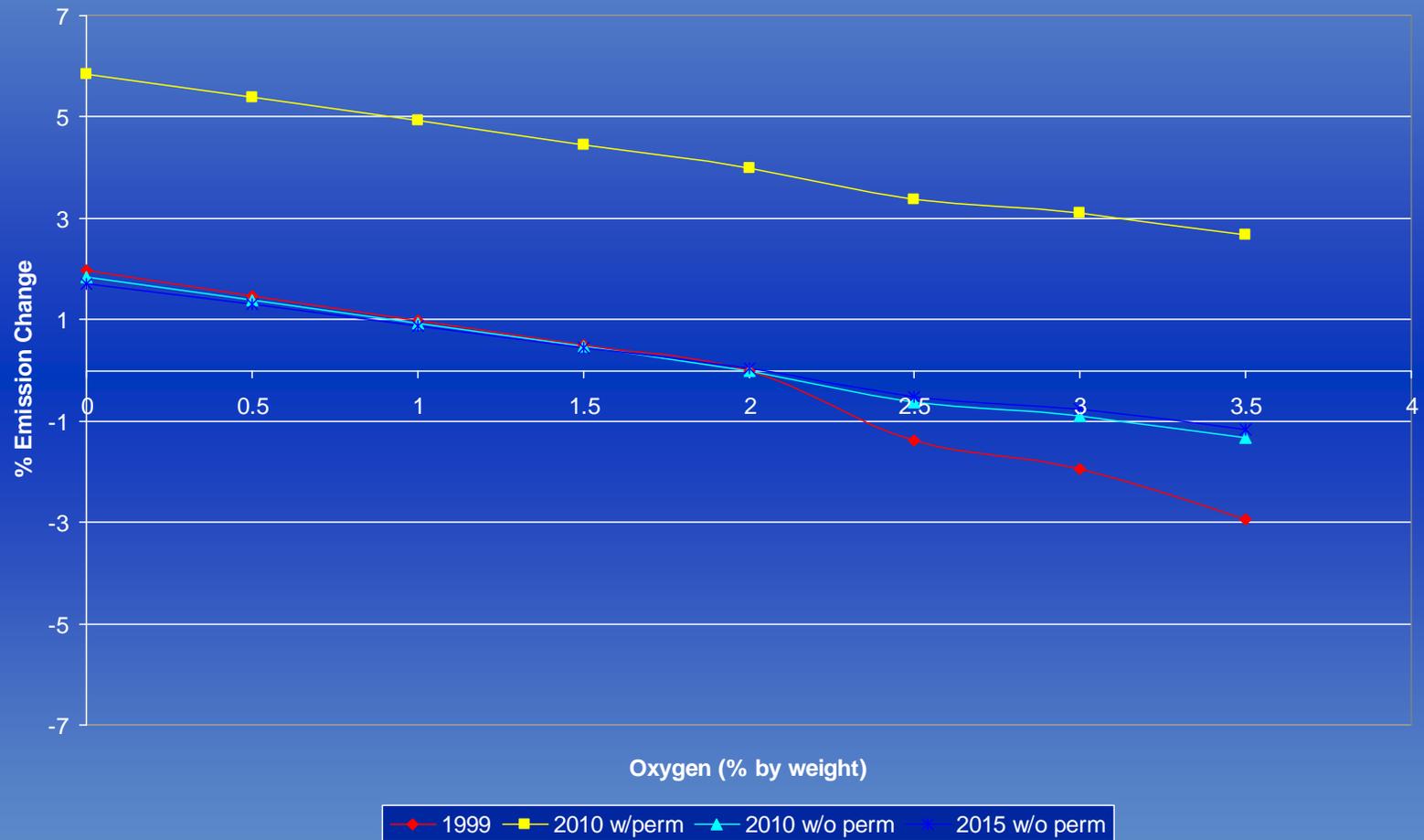
Preliminary Draft Starting Place Model

- ➡ Use new data
- ➡ Use same terms
- ➡ Only update Tech 5 Model
- ➡ Reactivities are same as with current Predictive Model, except permeation
- ➡ Use new inventory weights

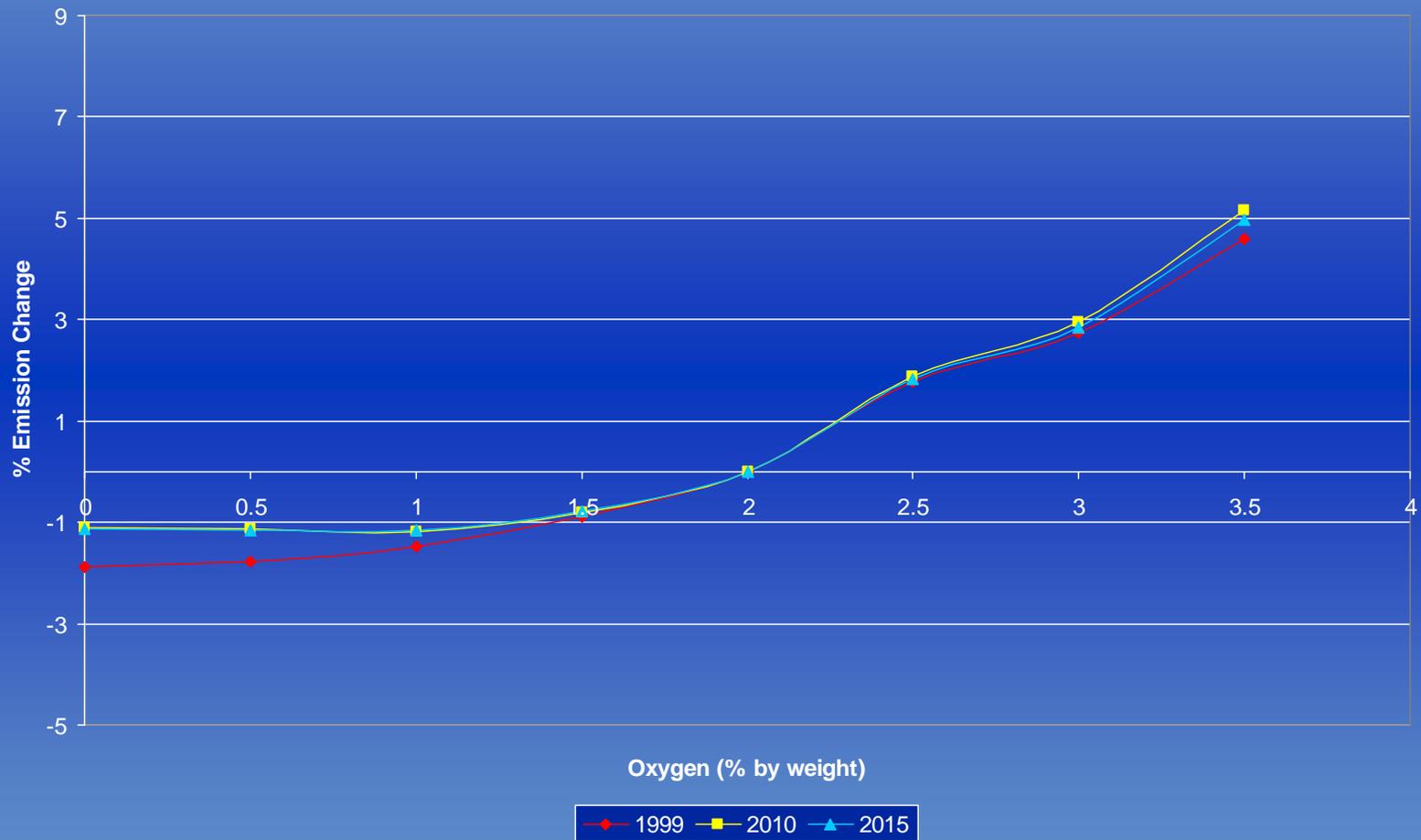
Preliminary Draft Starting Place Model
Ozone Forming Potential Response to RVP
(All Other Fuel Properties @ Flat Limits)



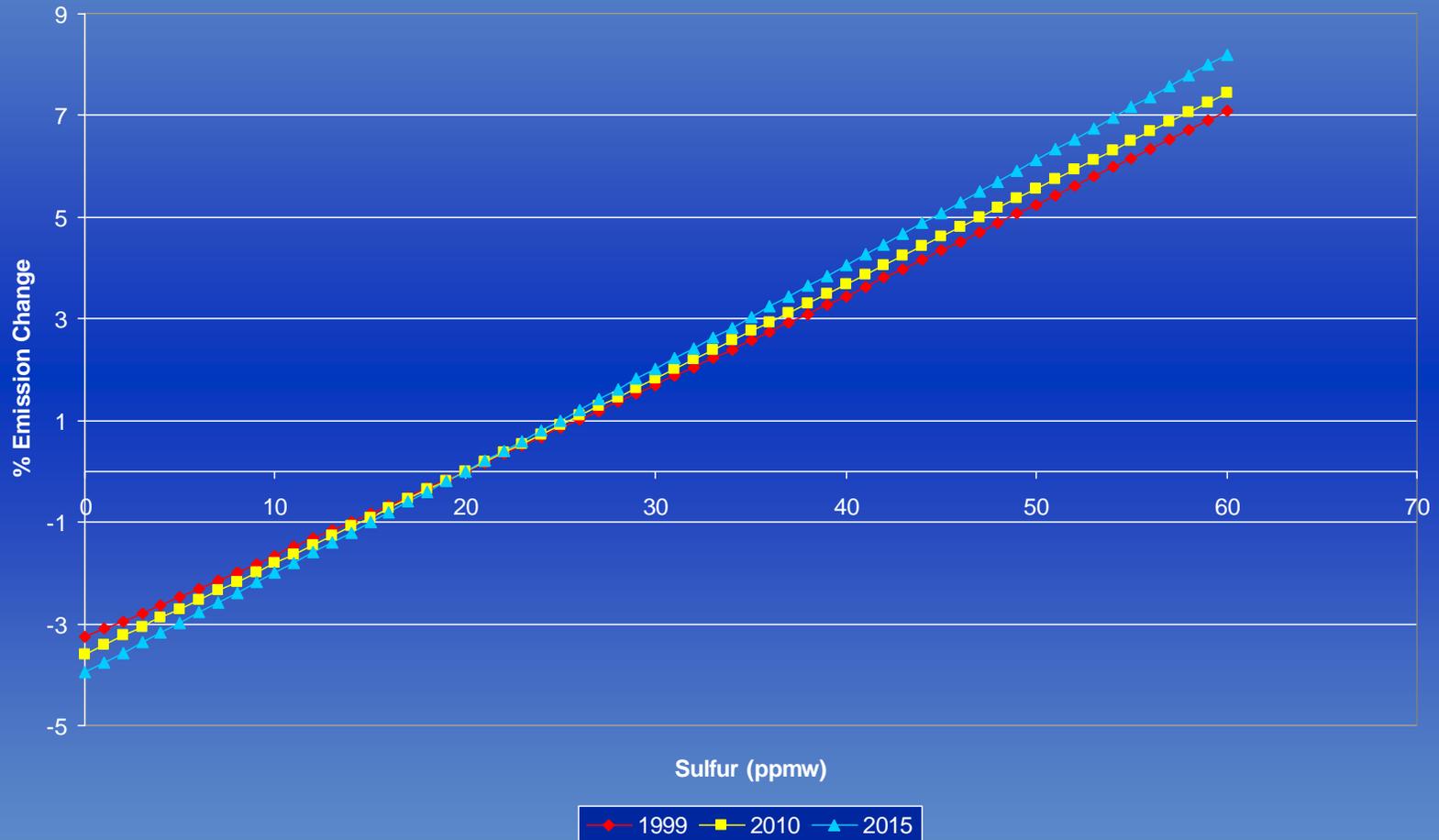
Preliminary Draft Starting Place Model
Ozone Forming Potential Response to Oxygen
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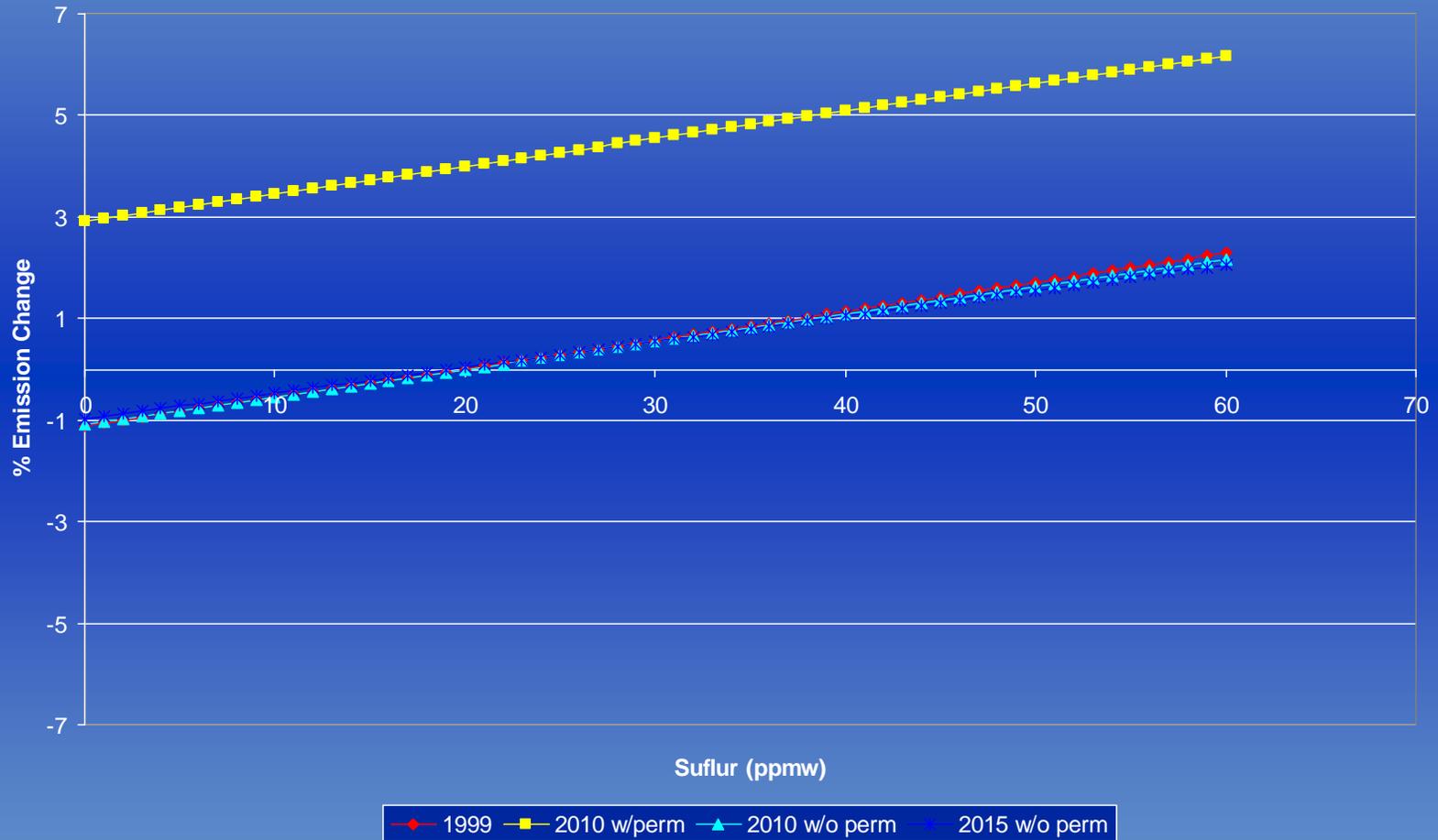
Preliminary Draft Starting Place Model
NOx Response to Oxygen
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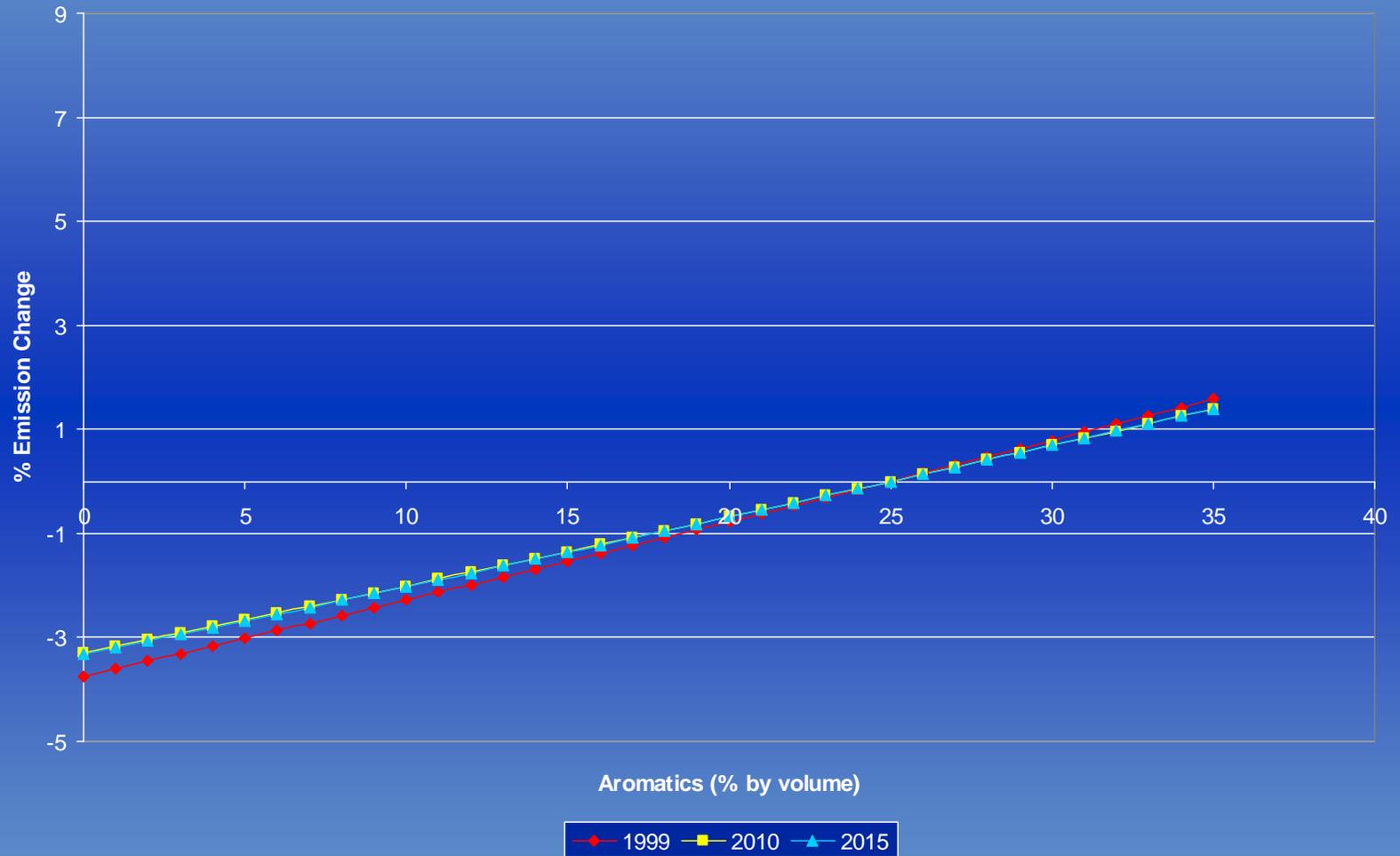
Preliminary Draft Starting Place Model
NOx Response to Sulfur
(All Other Fuel Properties @ Flat Limits)



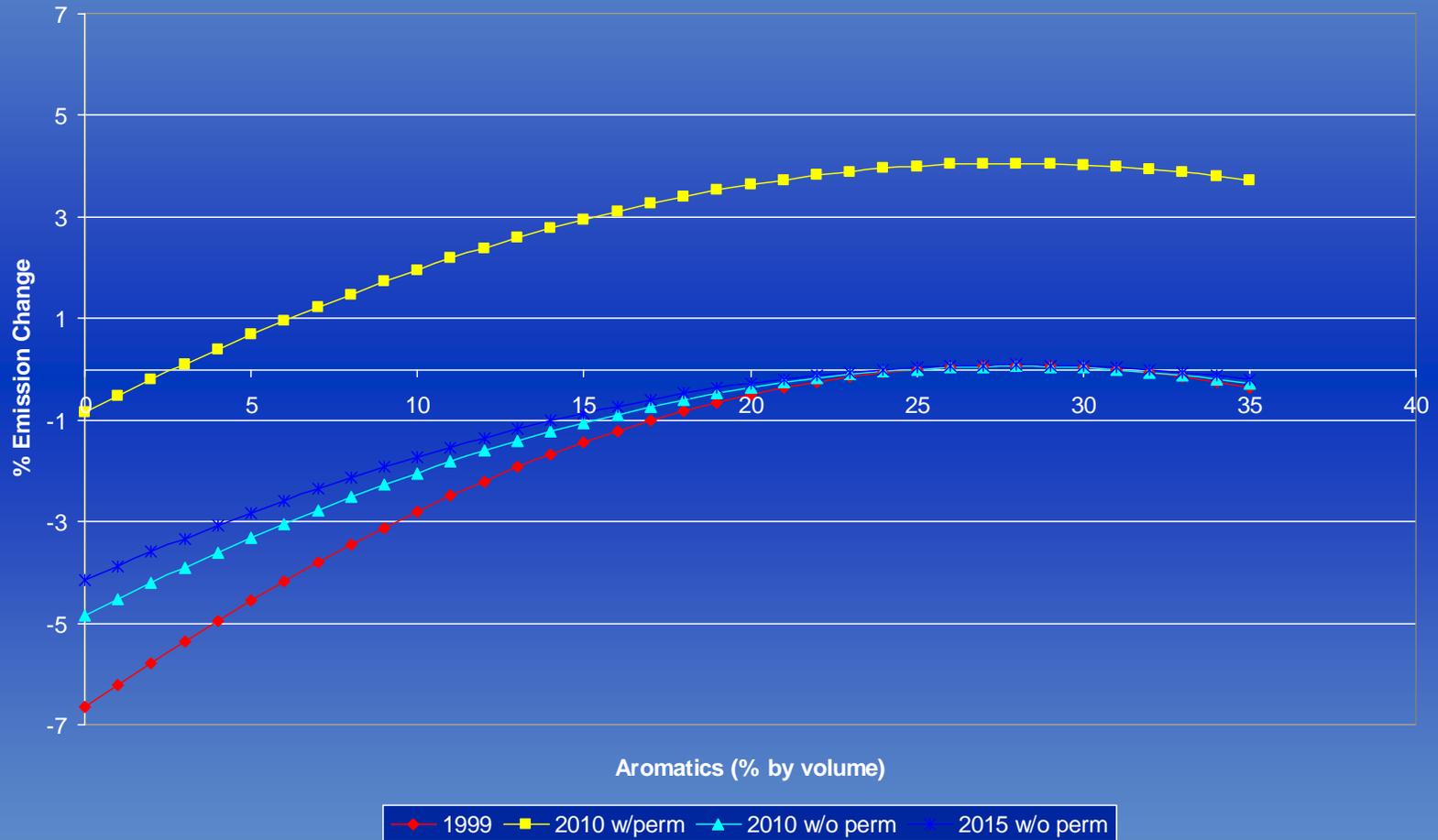
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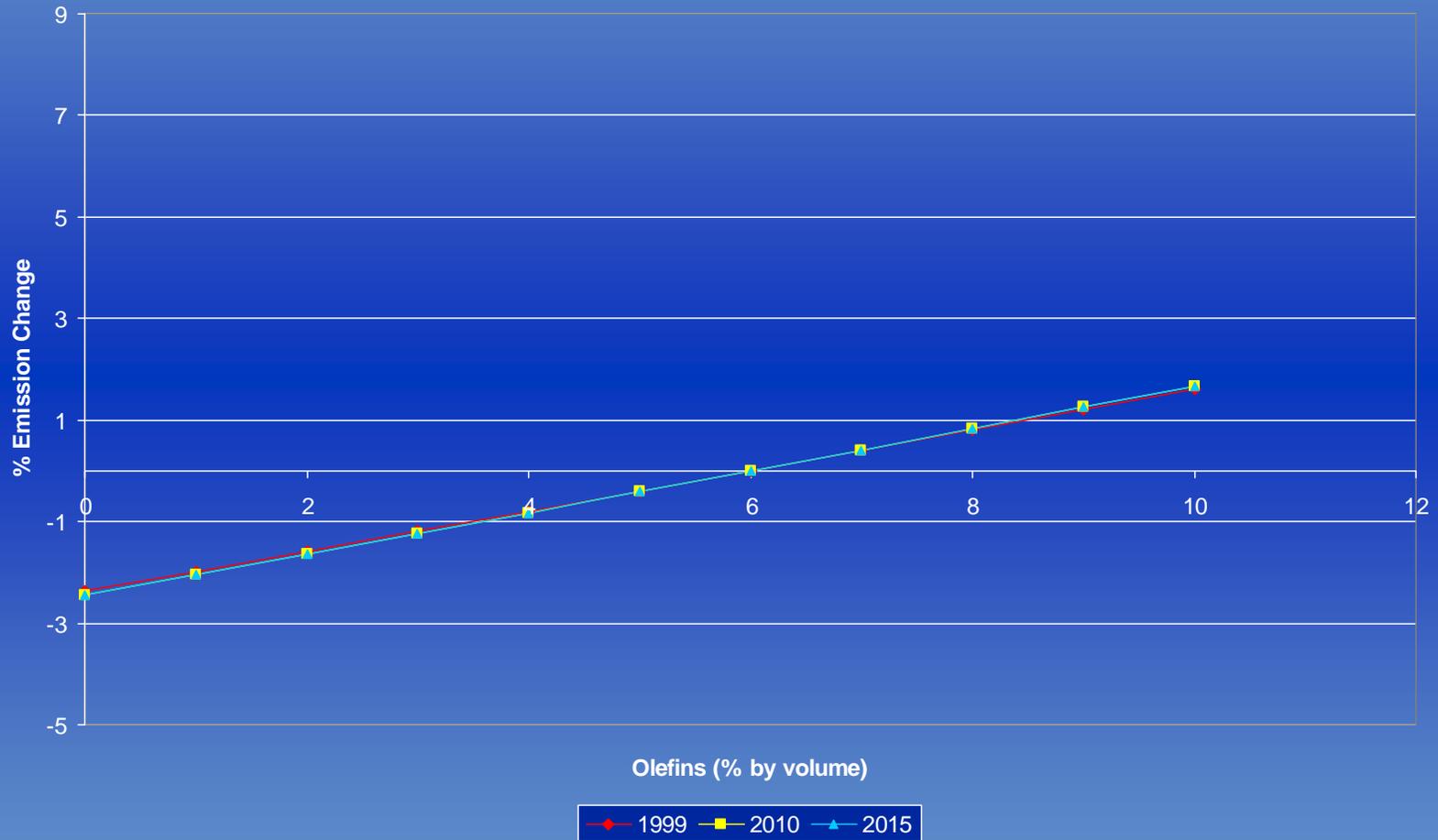
Preliminary Draft Starting Place Model
NOx Response to Aromatics
(All Other Fuel Properties @ Flat Limits)



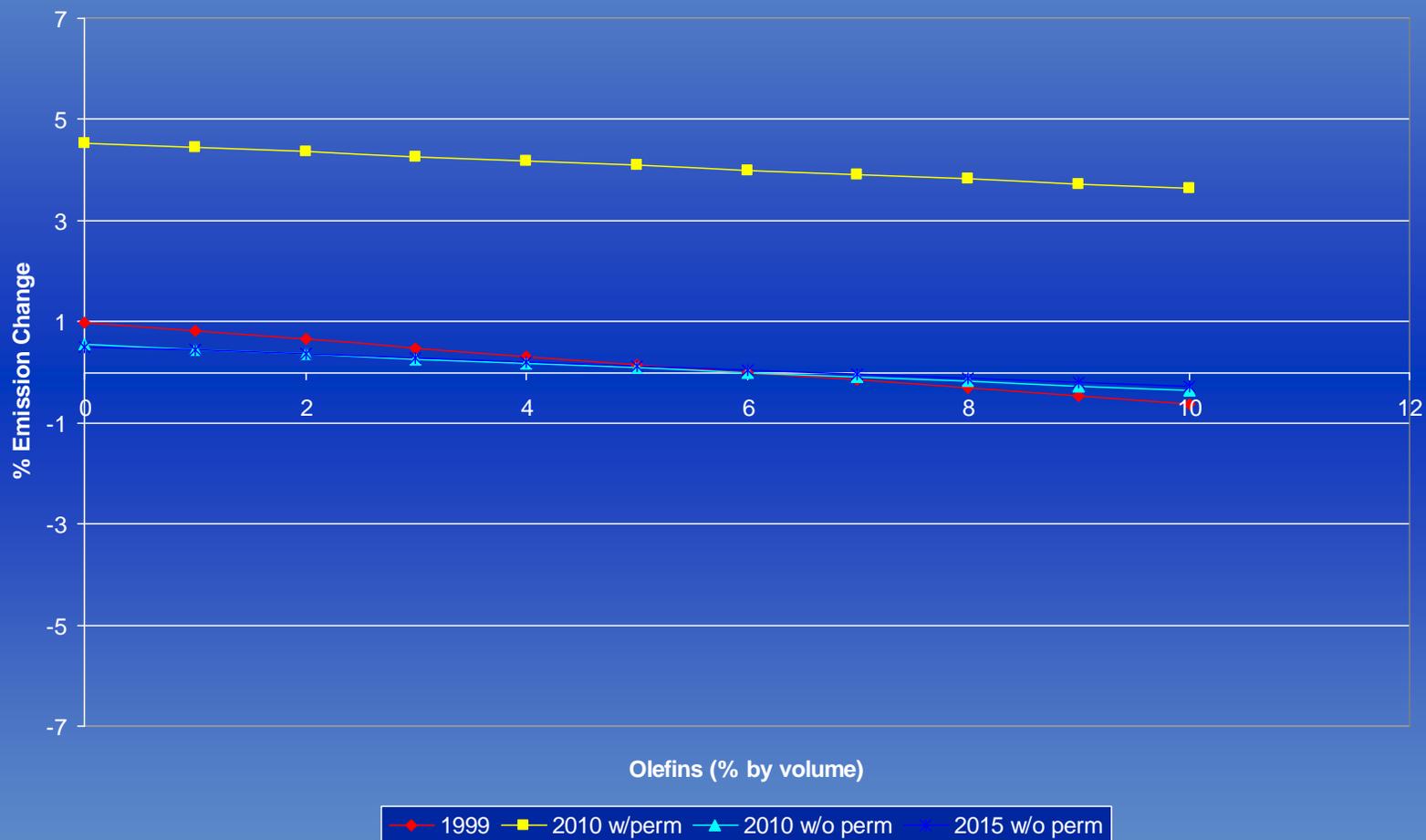
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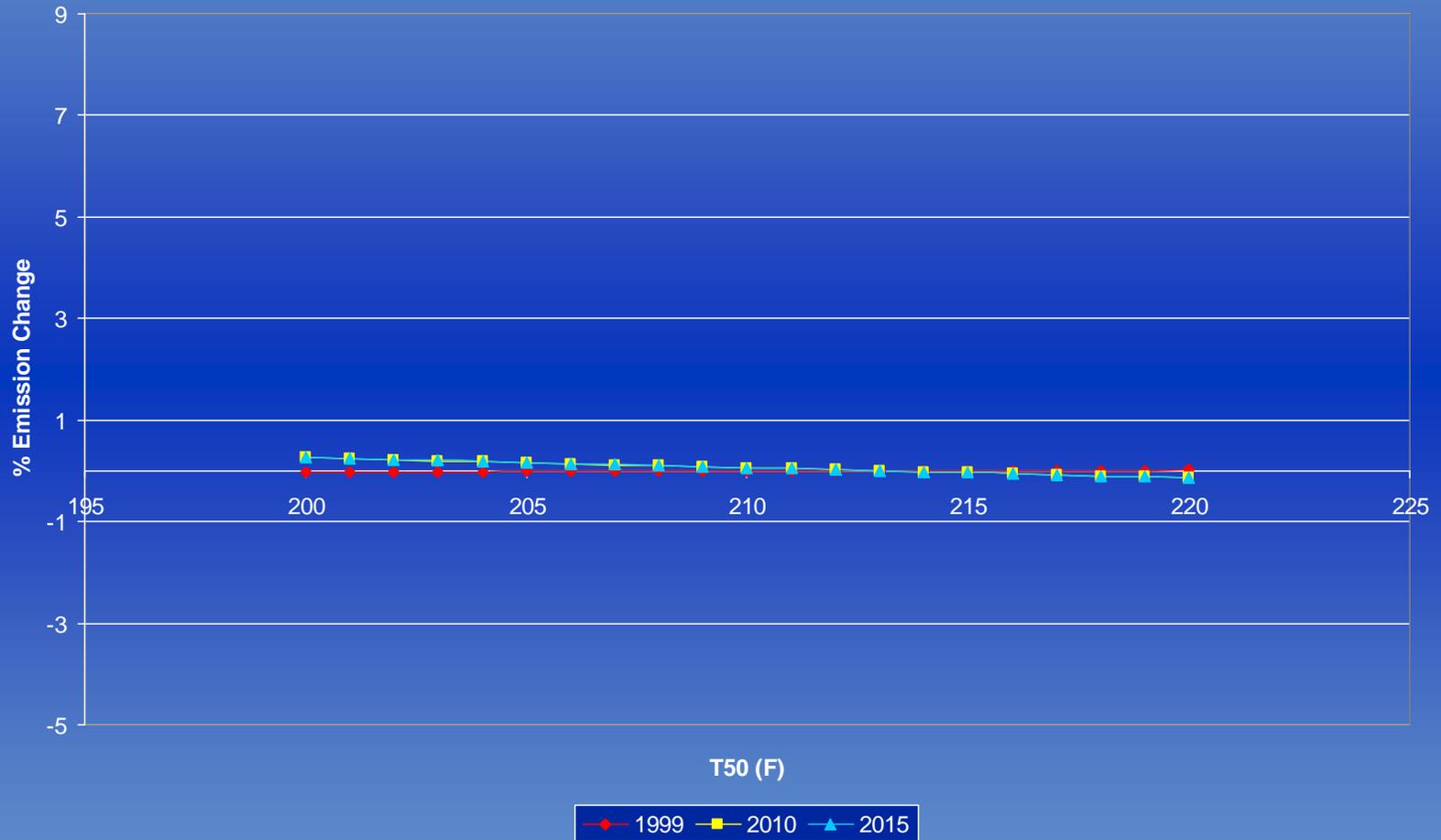
Preliminary Draft Starting Place Model
NOx Response to Olefins
(All Other Fuel Properties @ Flat Limits)



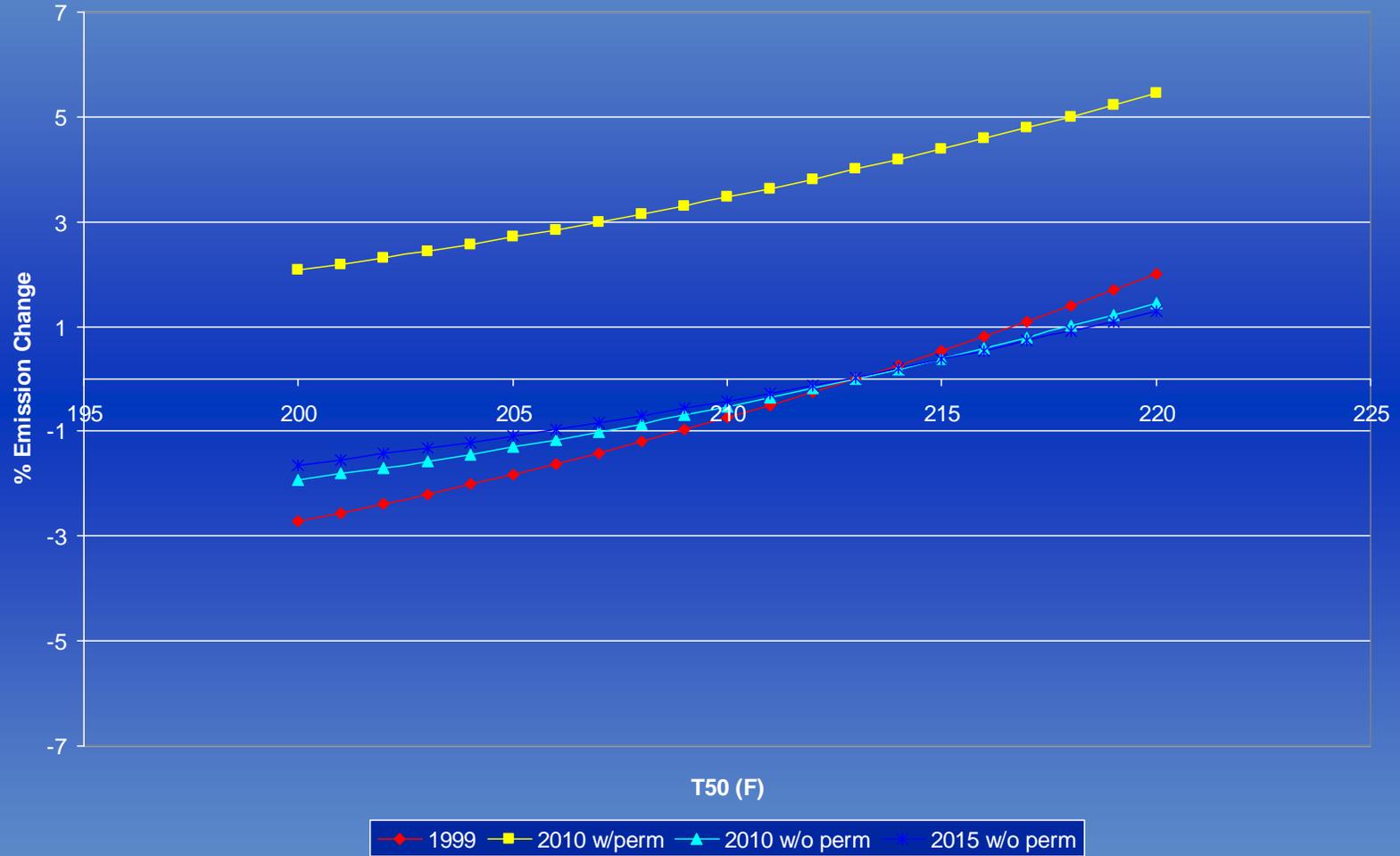
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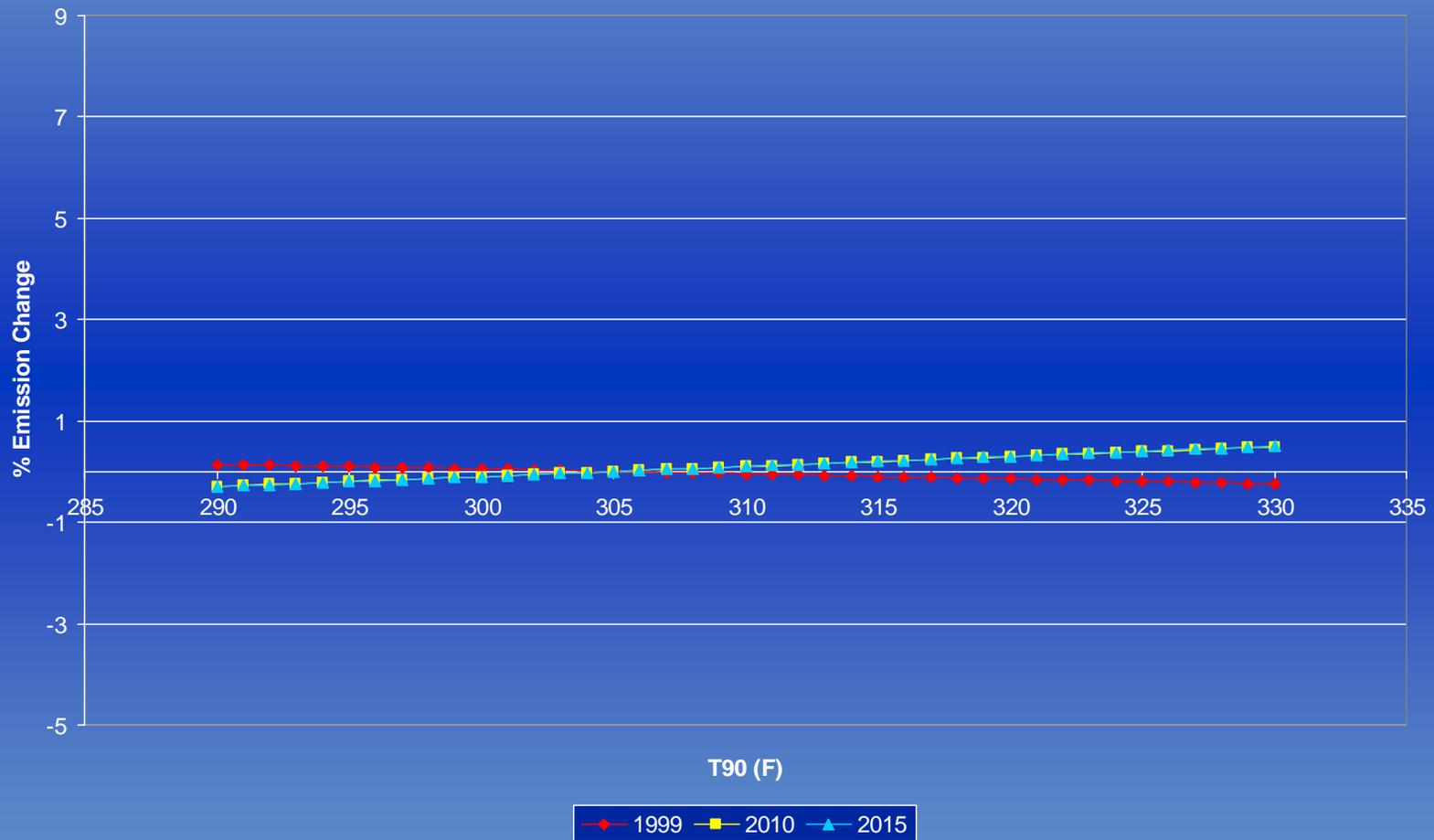
Preliminary Draft Starting Place Model
NOx Response to T50
(All Other Fuel Properties @ Flat Limits)



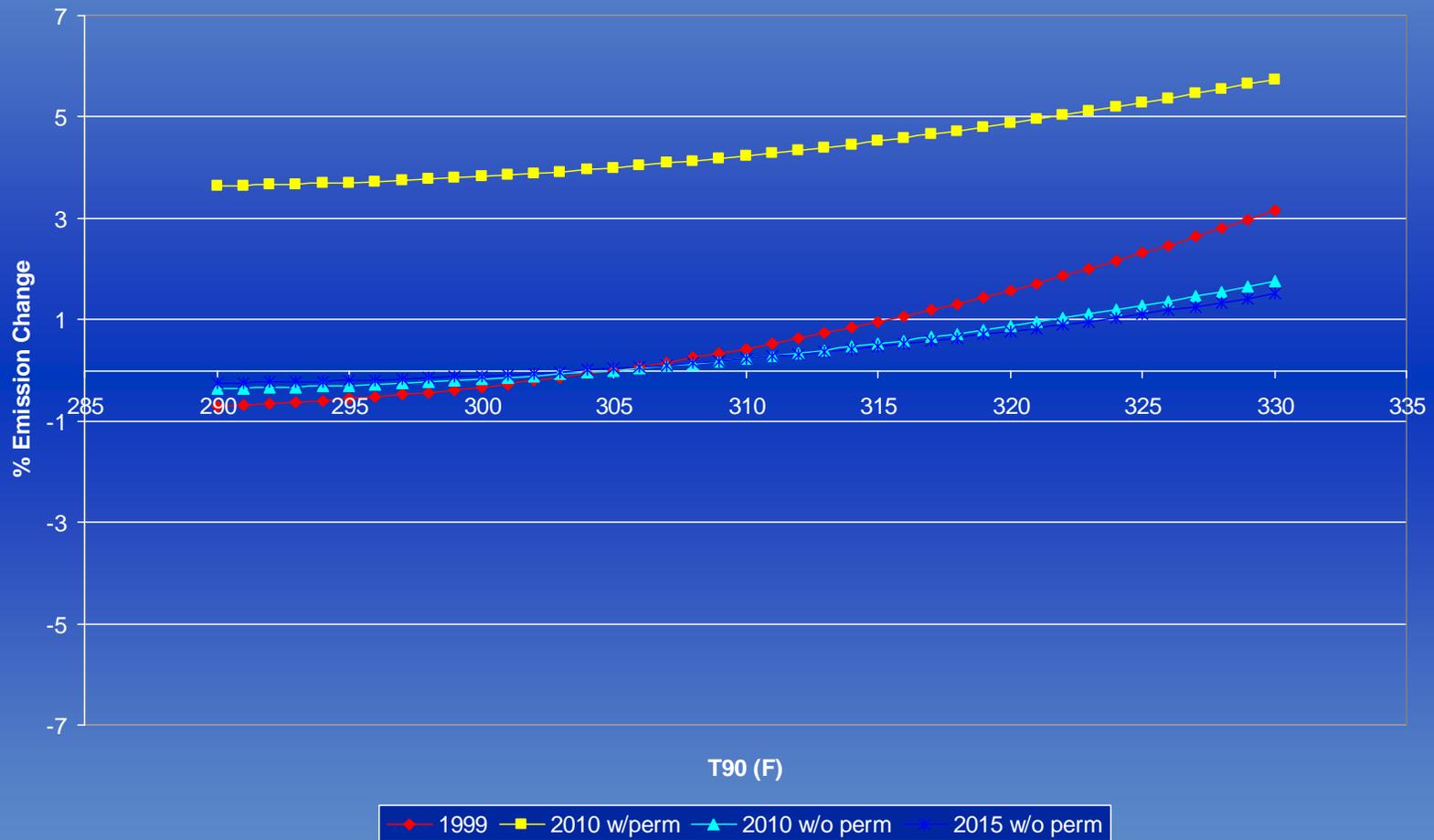
Preliminary Draft Starting Place Model
Ozone Forming Potential Resonse to T50
(All Other Fuel Properties @ Flat Limits)



Preliminary Draft Starting Place Model
NOx Response to T90
(All Other Fuel Properties @ Flat Limits)



Preliminary Draft Starting Place Model
Ozone Forming Potential Response to T90
(All Other Fuel Properties @ Flat Limits)



Emissions Inventory

Emissions Inventory Update

- ☞ Documentation available through Reformulated Gasoline Predictive Model webpage at:
www.arb.ca.gov/fuels/gasoline/premodel/pmdevelop.htm

Permeation - What's Next

- ➡ The CRC is proceeding with a second stage of the E-65 test program
- ➡ Two additional vehicles: LEV II and PZEV
- ➡ Additional fuels: 10% and 20% ethanol and a higher aromatics fuel
- ➡ E85 and a Flexible Fueled Vehicle
- ➡ Interim Final Report available soon
- ➡ Interim report will not present E20 information

Form New Working SubGroups

- Need to form two new working supgroups
- Reactivity factors, including CO
- Emissions Inventory, On-road and Off-road
- Industry groups should nominate an individual with expertise and time that can be committed to workgoup efforts
- Contact Steve Brisby, Manager of Fuels Section for partisipation

Presentations by Others

Open Discussions

Closing Remarks