CAMP: New Research to Improve Speed Correction Factors and Mobile Source Emissions Modeling

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Overview

CAMP: $3 million effort to represent facility-specific emissions and create new tools.

- History and Motivation
- Importance of Speed Correction Factors (SCFs)
- Key Challenges Faced by CAMP Work Group
- Data Collected
- Upcoming Activities
- Conclusions

If You Remember Only One Thing…

Basis for existing California emissions modeling:

- 15 hours of target-vehicle data
- Collected in Los Angeles in 1992

CAMP data collection:

- 260+ hours of target-vehicle data
- Collected in four California areas 2000-2001
- Represents ~80% of state's VMT

History and Motivation (1 of 2)

May – Nov 1992 SCF crisis: new EMFAC

Minimum emissions point (mph):

	Old EMFAC	New EMFAC
HC	55	30
CO	55	35
NO_x	40	20

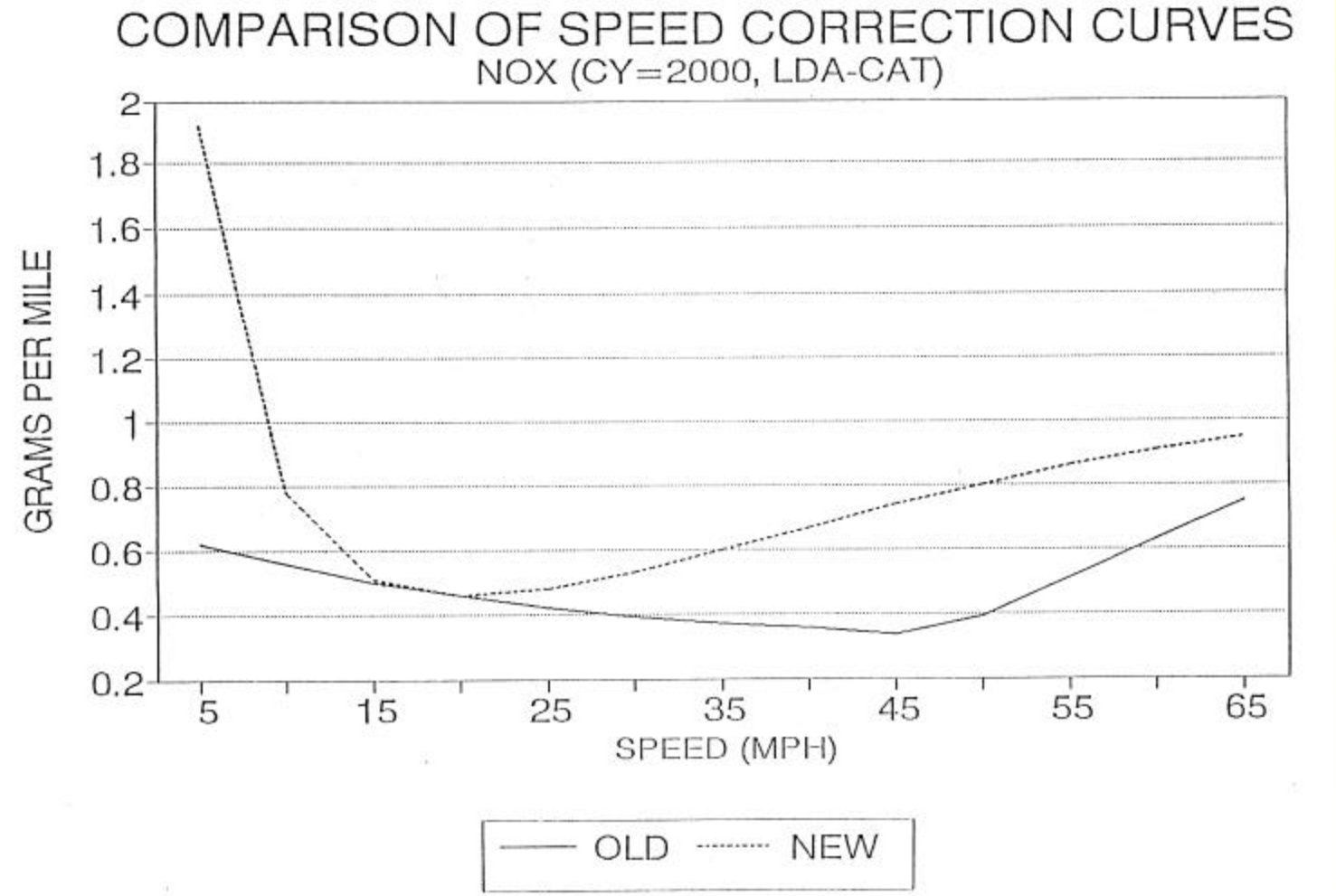
History and Motivation (2 of 2)

Nov 1992 SCF crisis: revised new EMFAC

Approx. minimum emissions point (mph):

	Old EMFAC	May 92 EMFAC	Nov 92 EMFAC
HC	55	30	50
CO	55	35	50
NO_x	40	20	35

1992 SCFs: Pre-May (old) vs. May 92 (new)



Importance of SCFs

Houston, Texas Ozone SIP

- April 2000: 118 tpd NO_x SIP gap
- 2.3% VOC, 6.9% NO_x ↓ with 55 mph limit
- 55 mph = 12.18 tpd NO_x ↓
- November 2001: EPA approves SIP with 55 mph speed limit measure

But…

- January 2002: MOBILE6 released…

Key Challenges

Serving different missions: Caltrans & ARB

- Trip vs. segment- (or link-) based data
- Chase cars and target- vs. chase car-data
- Geographic areas to sample
- Resolving LOS details

Data Collected

	Period	Routes Driven	Target Vehicle-Hrs
Sacramento	2000	140	50
San Francisco	2000	150	74
Modesto	2000	120	58
LA (routes)	2000	100	37
LA (segments)	2001	I-105 fwy I-110 fwy	46

Upcoming Activities

1. Cycle development (2 methods)
2. Dynamometer testing (2 labs)
3. SCF development
4. Model development & implementation

Conclusions

CAMP has 3 goals

1. State-of-the-art driving behavior data
2. Facility-specific SCFs
3. New modeling tools

Achievements

1. 260+ hours of data
2. Improved chase vehicle protocols
3. New cycle development methods
4. Emissions insights for high-speed travel
5. Use of loop data to measure LOS
6. SCFs & new modeling tools (upcoming…)

Example Chase Vehicle (Sierra Research)