

Shared-Use Vehicle Systems

Dr. Alan Lloyd, Chairman
California Air Resources Board

Shared-Use Station Car Summit
University of California-Irvine
July 19, 2001

California Environmental Protection Agency



Air Resources Board

Acknowledgements

- National Fuel Cell Research Center, Scott Samuelsen
- UC Irvine Institute for Transportation Studies, Will Recker
- California Institute for Telecommunication and Information Technology
- UCD New Mobility Center
- UCR College of Engineering, Center for Environmental Research & Technology
- UCI Henry Samueli School of Engineering

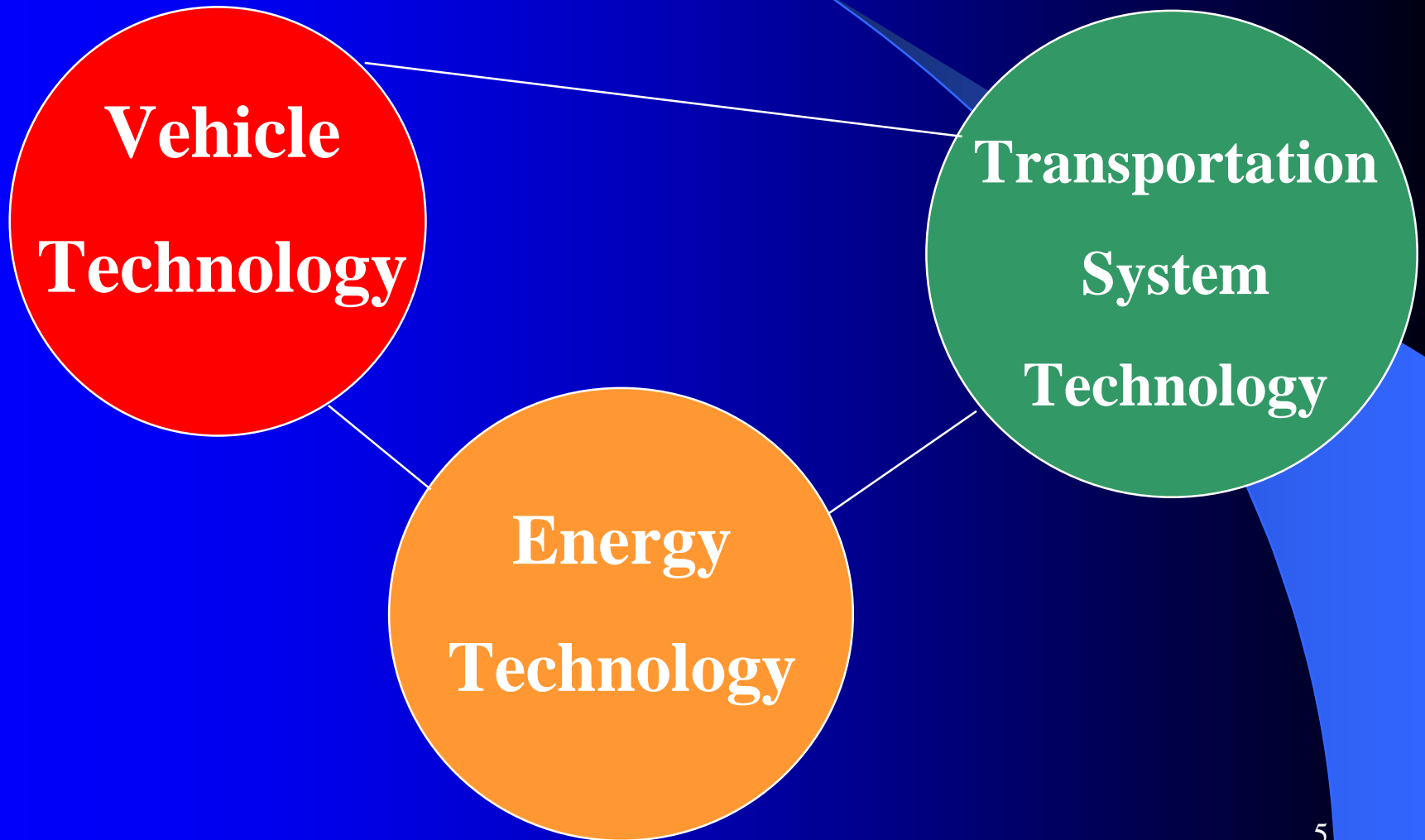
Overview

- ARB and shared-use vehicle systems
- Air quality and the ZEV Mandate
- Additional ZEV credits for shared-use station cars
- Connectivity to distributed generation

ARB and Shared-Use Vehicle Systems

ARB supports the commercial development of shared-use vehicle systems in California

Integration of Technologies



Shared-Use Vehicle System Benefits

- Reduce emissions and energy consumption
- Increase efficiency of businesses and the transportation system
- Increase public transit use and decrease personal vehicle use
- Save time, money and improve quality of life

Shared-Use Vehicle Systems: Not Just a Concept

- Current viable systems
- Successful pilot projects

Let's build on this success.

Air Resources Board Goal



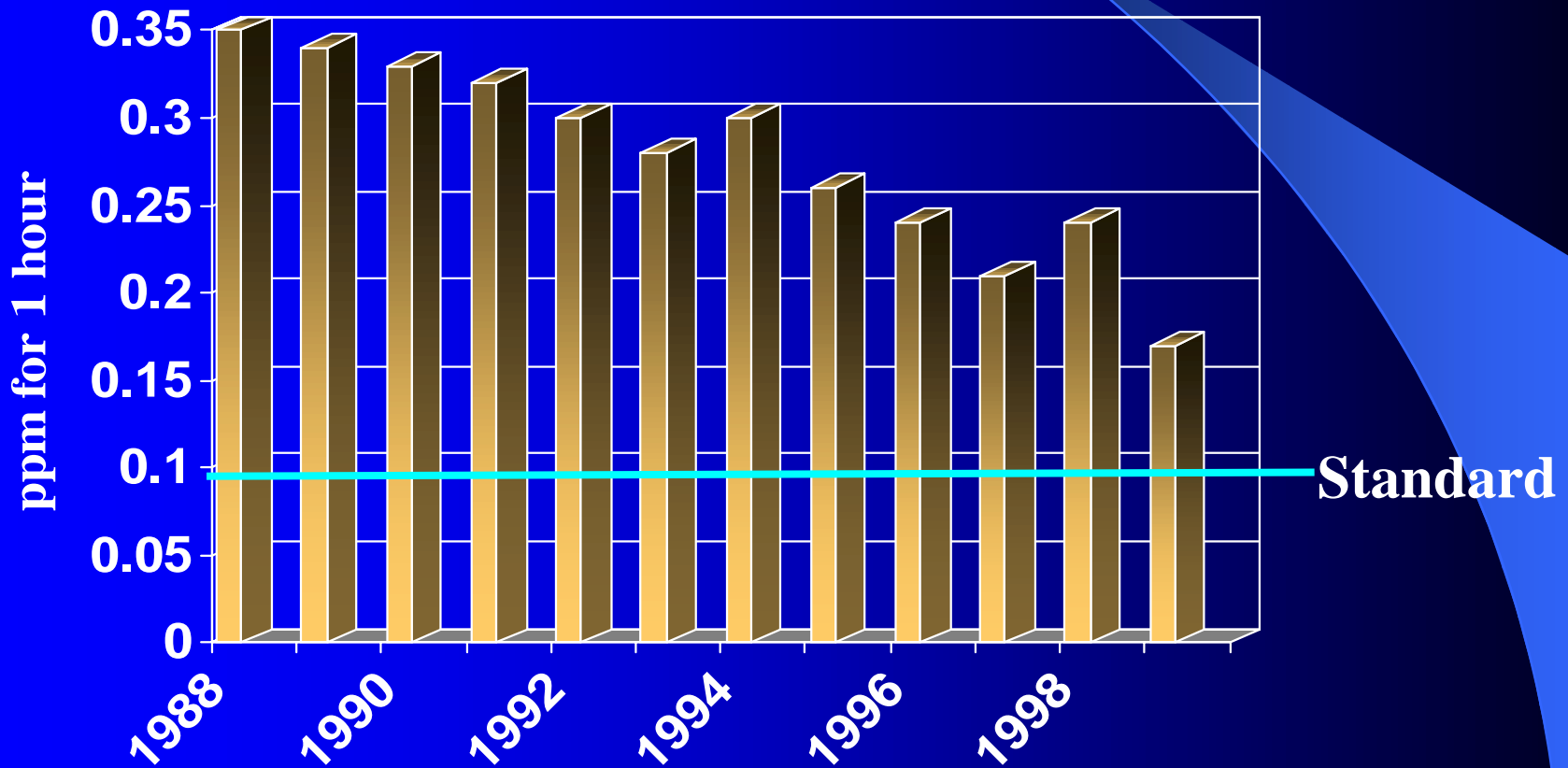
Ensure all individuals in California, especially children and the elderly, can live, work and play in a healthful environment -- free from harmful exposure to air pollution

Reducing Motor Vehicle Emissions in California

- Low Emission Vehicle Program (1990 LEVI and 1998 LEVII)
 - 50% less NO_x
 - Fleet-average standard → 75% less HC
 - Vehicle + fuel = system → RFG
 - ZEV Mandate: 10% of sales
 - ✓ **4% pure ZEV and 6% PZEV**
- Resulting technologies:
 - Better fuel control, catalysts (quick warm-up) and on-board diagnostics
 - BEVs, HEVs, NGVs, SULEVs

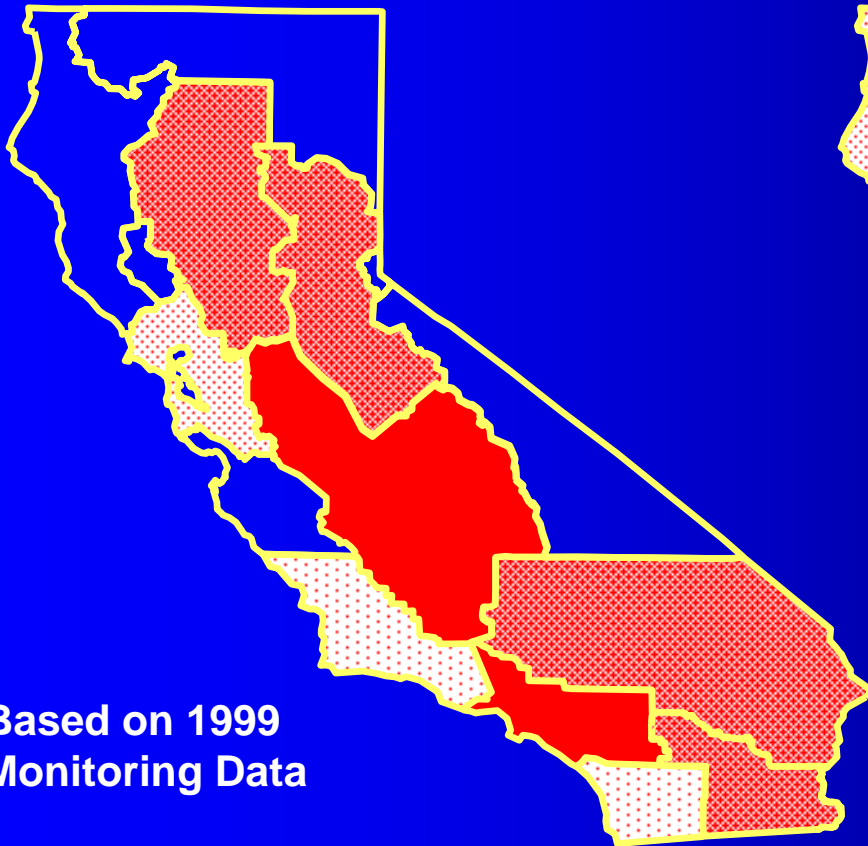
Air Quality Trends

Highest Ozone: Greater Los Angeles

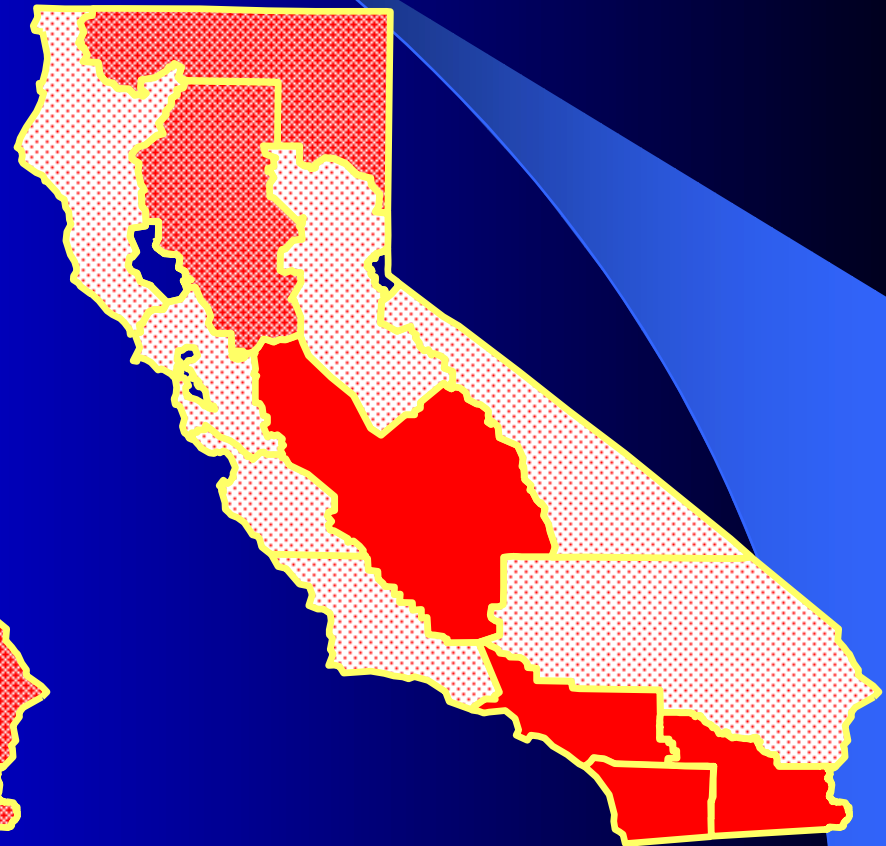


More Than 90% of Californians Breathe Unhealthy Air

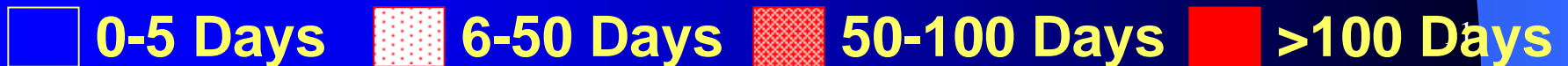
Days Over State
Ozone Standard



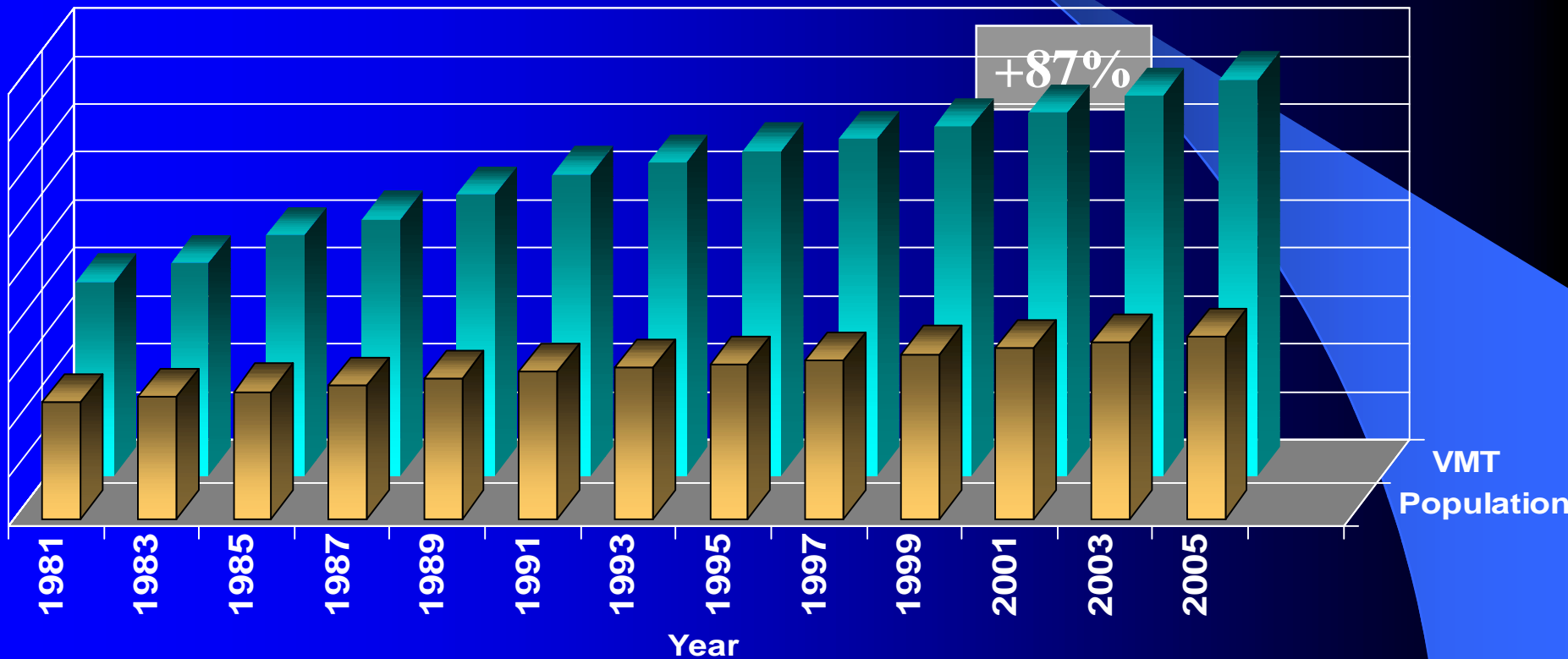
Days Over State
PM10 Standard



Based on 1999
Monitoring Data



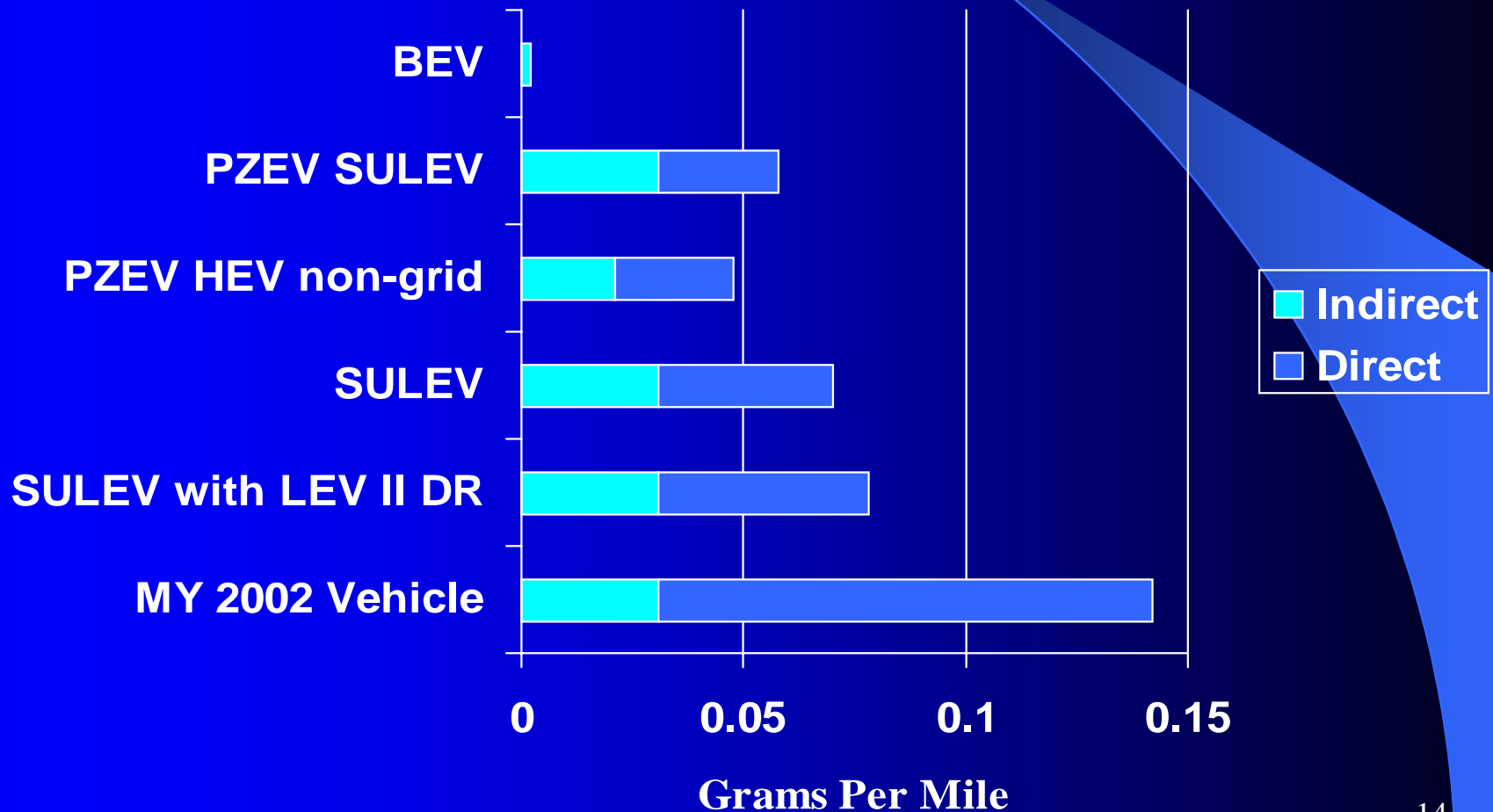
Daily VMT Increasing Faster Than Population



ZEV Air Quality Advantages

- No tailpipe emissions
- No evaporative or fuel marketing emissions
- No emission control equipment deterioration or failure
- Reduced toxic and greenhouse gas emissions
- Extremely low indirect emissions in California

NMOG Emissions Per Vehicle



Revisiting the ZEV Mandate: 2001

- Mandate stays
 - Reduce uncertainty
 - No more reviews
- Modify to address
 - Near term availability
 - Cost
 - Market sustainability

Key Elements of the Revised Mandate

- More gradual phase-in
 - Lower numbers early years
 - De-emphasize NEVs
- Incentives needed for new technologies
 - HEVs, CNG count toward up to half of ZEV reqm't.
 - Bigger credits for early introduction (4x)
 - Bigger credits for hydrogen fuel cells (10x)
 - Efficiency credits (typ. 1.5 for HEV)
 - Battery extended warranty credit
- Extend and increase mandate beyond 2010

Revised Mandate

10 % Mandate

2 %

6 %

PZEV



2 %

ZEV

AT-PZEV



ZEV Credits for Shared-Use Station Cars

- Revised ZEV mandate allows for additional credits for vehicles placed in a transportation system.
- Supports effective integration of ZEVs into market.
- Supports reduced vehicle travel and replacement of travel in dirtier vehicles with clean vehicle travel.

ZEV Credits

- Cleanest vehicle placed in the most advanced system generates the most credit.
- Capped at 50 percent of manufacturer's obligation.

Credits Generated

	<i>ZEV</i>	<i>AT-PZEV</i>	<i>PZEV</i>
Shared use & IT	6	4	2
Link to transit	3	2	1
Total possible credits	9	6	3

Credits Allocated

- Market-based flexibility
- Credits generated by project sponsor -- based on contributions of each manufacturer
- All parties must agree on proposed allocation
- Review of credit levels

Shared-Use System Goals

- Commercial viability
- Monitor and quantify impacts
- Standardization
 - Technology
 - System monitoring

Distributed Generation

- EV charging with distributed power
- e.g., fuel cells and photovoltaic
- Total emissions -- literally near zero

California's Distributed Generation Program

- SB 1298 -- signed by Governor Davis, September, 2000.
- Electrical generation technologies to be certified by ARB or permitted by local air district by January 2003.
- ARB will develop certification program and uniform emission standards, along with guidance for air districts. (Draft by late 2001)

Conclusion

- Use vehicles more efficiently
- Build models that meet demands and needs of consumer
- Transportation and air quality benefits
- Partnership to success