*Inside EPA and Mobile Source Report present . . .*

# Improving The Clean Air Act: The Mobile Source Issues

**June 20-21, 1995**
**Stouffer Renaissance Hotel**
**Arlington, Virginia**

# *Conference Schedule*

# *Tuesday, June 20, 1995*

**9:00 a.m. Keynote Presentation -- The Mobile Source Issues**

*Margo T. Oge*, Director, Office of Mobile Sources, Office of Air & Radiation, U.S. Environmental Protection Agency.

**9:30 a.m. Reshaping the Clean Air Act -- I**

*Charles L. Ingebretson*, General Counsel, Committee on Commerce, U.S. House of Representatives;
*Mardi K. John*, Founder and Director, Center for Alternative Energy & Propulsion Systems, George Mason University.

**10:30 a.m. Refreshment Break**

**10:45 a.m. Reshaping the Clean Air Act -- II**

*William D. Fay*, President and Chief Executive Officer, Highway Users Federation;
*Paul G. Billings*, Director, State Government Relations, American Lung Association.

**11:45 a.m. The New Engelhard Catalyst Technology**

*William G. Rosenberg*, Founder and President, $E^3$ Ventures, and former Assistant Administrator for Air & Radiation, U.S. EPA.

**12:15 p.m. Luncheon. States' Rights**

*Hon. Becky Norton Dunlop*, Secretary of Natural Resources, Commonwealth of Virginia.

**1:45 p.m. Inspection/Maintenance**

*David Sosnowski*, Environmental Protection Specialist, National Vehicle & Fuel Emissions Laboratory, Office of Mobile Sources, U.S. Environmental Protection Agency;
*Michael J. O'Toole*, Environmental Protection Specialist, Colorado Department of Public Health and Environment;
*Gary A. Bishop*, Research Engineer, University of Denver;
*Leo M. Carroll*, Vice President, Marketing, Systems Control, Inc.

**3:45 p.m. Refreshment Break**

**4:00 p.m. Creating Sound Emission Standards**

*James Markey*, Environmental Protection Specialist, National Vehicle & Fuel Emissions Laboratory, Office of Mobile Sources, U.S. Environmental Protection Agency;
*Glenn F. Keller*, Executive Director, Engine Manufacturers Association.

**5:00 p.m. Cocktail Reception**

# *Wednesday, June 21, 1995*

**9:00 a.m. Keynote Presentation -- Employee Commute Options**
*Hon. Donald Manzullo*, Republican of Illinois, U.S. House of Representatives.

**9:30 a.m. Employer Trip Reduction -- Benefit or Burden?**
*Constance H. Ruth*, Environmental Protection Specialist, National Vehicle & Fuel Emissions Laboratory, Office of Mobile Sources, U.S. Environmental Protection Agency;
*C. Kenneth Orski*, Founder and President, Urban Mobility Corp.

**10:30 a.m. Refreshment Break**

**10:45 a.m. Low-Emission Vehicles -- OTC-LEV and the 49-State Car**
*Robert D. Brenner*, Director, Office of Air Policy, Office of Air & Radiation, U.S. Environmental Protection Agency;
*Bruce S. Carhart*, Executive Director, Ozone Transport Commission;
*Richard L. Klimisch*, Vice President, Engineering Affairs Division, American Automobile Manufacturers Association;
*David W. Raney*, Manager of Environmental and Safety Affairs, American Honda Motor Co., Inc.

**12:45 p.m. Luncheon. Resolving the ZEV Mandate Tangle**
*Hon. Trudy Coxe*, Secretary of Environmental Affairs, Commonwealth of Massachusetts.

**2:15 p.m. Nonroad Engines and Vehicles**
*Deborah S. Dalton*, Deputy Director, Consensus & Dispute Resolution Program, Office of Policy, Planning & Evaluation, U.S. Environmental Protection Agency;
*Gary H. Baise*, Partner, Gabeler, Baise & Miller, and Washington Environmental Counsel, Equipment Manufacturers Institute;
*William M. Guerry, Jr.*, Partner, Collier, Shannon, Rill & Scott, and Counsel to the Outdoor Power Equipment Institute;
*Gary E. Cross*, Partner, Dunaway & Cross, and Counsel to the Portable Power Equipment Manufacturers Association.

**4:00 p.m. Conference Adjourns**

***Conference Participants***

**Keynote Presentation -- The Mobile Source Issues**

*Margo T. Oge*, Director, Office of Mobile Sources, Office of Air & Radiation, U.S. Environmental Protection Agency.

MARGO T. OGE

Margo T. Oge is Director of the Office of Mobile Sources at U.S. EPA and is the national manager of the agency's programs dealing with transportation, motor vehicles and engines, and motor fuels. Prior to this position, she was Director of the Office of Radiation & Indoor Air from 1991 to 1994. Ms. Oge has been with EPA since 1980, specializing in policy and regulatory development. She was Director of the Radon Division, Office of Radiation Programs, from 1988 to 1991. Before that, she was Deputy Division Director of the Economics & Technology Division under the Office of Toxic Substances. From 1985 to 1986, Ms. Oge was Legislative Aide to Senator John Chafee of Rhode Island. Her first position with EPA (1980-1982) was as a chemical engineer in the Regulatory Impacts Branch under the Office of Toxic Substances. She earned her MSc from Lowell University.

**Reshaping the Clean Air Act -- I**

*Charles L. Ingebretson*, General Counsel, Committee on Commerce, U.S. House of Representatives;
*Mardi K. John*, Founder and Director, Center for Alternative Energy & Propulsion Systems, George Mason University.

CHARLES L. INGEBRETSON

Charles L. Ingebretson currently serves as General Counsel to the Committee on Commerce, U.S. House of Representatives. From August 1990 to January 1995, he was Minority Counsel to the committee, advising Republican members on environmental issues and focusing on those within the jurisdiction of the Subcommittee on Health & The Environment. Before joining the committee staff, he practiced environmental law with Hunton & Williams in Richmond, VA. Prior to attending law school, Mr. Ingebretson was Legislative Director for former Congressman Dan Coats, a Republican from Indiana. Mr. Ingebretson received his undergraduate degree from Duke University and his law degree from the University of Notre Dame.

MARDI K. JOHN

Mardi K. John is Founder and Director of the Center for Alternative Energy & Propulsion Systems at George Mason University. She is also a member of the university's physics faculty. The Center is intended to educate students and the public and to be an impartial source of information and analysis. Prior to founding the Center four years ago, Ms. John worked for Bensto doing energy-conservation work for the private sector. She earlier taught at Southeastern University, Northern Virginia Community College, and American University -- where she was awarded her PhD in physics.

## Perspective of various viewholders over changes and choices favoring or opposing CAAA.

### Background

The current efforts to review and revise various laws and mandates that affect the american public, and inspect their effectiveness and applicability is indeed a praiseworthy endeavor. It is indeed what all citizens who are concerned with taxes, health care, crime, education, government expenditures and so forth want to see at this time. Citizens of this country like most people on earth want to live in peace, and have the opportunity to reach their goals and dreams.

In response to the demands of the public, various agencies, programs and regulations must be reviewed for usefulness and productivity. This is a good practice. Like many other regulations involving the practices of various United States government agencies that concern themselves with food and drug safety and quality, clean water, pollution reduction regulations in industries and in trade, the act know as the Clean Air Act Amendment (CAAA) which concerns itself with the quality of air is being revisited.

As the director of a university center dedicated to energy and propulsion, I am privileged to hear and observe the reactions of various executives, administrators, directors, overseers, activists, environmentalist as well as ordinary citizens who have been affected by the CAAA in various capacities and settings. As an impartial educational entity, the George Mason University's Center for Alternative Energy & Propulsion Systems (CAEPS) is an unbiased platform for information and opinion exchange. Given that our university is located in the northern Virginia suburb of Washington DC, the hesitance and resistance of the state of Virginia to accommodate the prescriptions of the Environmental Protection Agency (EPA) as it has been

trying to apply the CAAA has afforded an even greater opportunity and privilege of observing the debate over the implications of enforcing the CAAA.

The conclusion that has been reached is that there is a tremendous 'disconnect' between the various perspectives and viewpoints over the act itself, the strengths of the act, the shortcomings of this act, and most importantly, the way lawmakers need to go about improving this act. Finding a middle ground and a methodology that would suit the majority of the affected and interested parties might prove to be quite illusive. Short of a despotic declaration by one set of interested parties to impose their will on other sets of interested parties, it would not be possible to settle these very diverging viewpoints.

From a purely academic and dispassionate point of observation, it seems clear that if the opponents of CAAA in business and industry eliminate this act today, many main line business and industry groups will come back tomorrow with another version of it. If one set of consumer groups who are opposed to CAAA request its delay or elimination because of its effects on increased costs to transportation users, then other consumer groups will come forward in support of this act based on life-cycle, externality and health-affect costs to consumers. It will be a very difficulty task to find consensus, unanimity, compromise and a middle ground above and beyond what we currently have. This disconnect and discord among the various viewholders on this law will make it very difficult to "improve" the CAAA because all parties define the term "improvement" their own way and tilt its effects on the future according to their own specific interest.

Embedded in all dialogue related to air pollution and more specifically the need for waste reduction from mobile sources that pollute the air are the data and scientific studies that have looked at atmospheric gaseous contents. While models for global climatic changes might be in

dispute and subject of great contention, much of the information that has already been gathered about the atmosphere and the effects of energy utilization modes in the past is not. It can be said that what is in dispute is what society should do about atmospheric pollutants. The Clean Air Act Amendment was congress' way of answering that. Now, the current surge of interest in changing the Clean Air Act is this country's attempt to wrestle with this very question again. The fascinating point is that all the parties who have an interest in this issue, in the solutions Congress selected, and in the methodology that was chosen to achieve changes in waste generation are in an adversarial and contentious modes.

It is possible that the lawmakers who passed the bill into the law that is now referred to as CAAA wanted exactly this sort of discourse, debate and adversarial dialogue. However, the argumentative posturing that may characterize the debate over the shortcomings of CAAA could very well illuminate the point that it is just not possible to come up with a better or more agreeable act of congress that would accomplish the long list of items that the society wants to get done.

Introductory data

The information gathered from Greenhouse Gas monitoring stations in this country, in Antarctica, and around the globe since the 40's and 50's along with data from ice core samples have provided valuable, accurate, thought provoking and intriguing profiles of the effects of human activity on the atmosphere. Various representatives from the Bush Administration and congress in early 1990s were fond of saying that we cannot get away from the waste that we generate.

Automobiles are an indispensable necessity for most american. However, automobiles are also the leading cause of smog, and an important contributors to total emissions in this

country. Smog contents are typically, CO2, NOx, CO, O3, Reactive as well as Non-Reactive organic gases, SO4 and NO3. The state of california as well as the federal government have used the data on various pollutants and have enacted their mandates and laws on the basis of capping these emissions. The I & M programs (inspection & maintenance), higher standards of tailpipe emissions and AFV (alternative fueled vehicles) use programs are three strategies to achieve the goals of pollution reduction of 0.25 g/mi or hydrocarbons, 3.4g/mi of CO, 0.4 g/mi of NOx, 2 g/test of Volatile hydrocarbons, 0.20 g/mi of particulate and 0.015 g/mi of formaldehyde for all cars in the 49 states not including california, which has somewhat tougher standards that the ones listed, by 1998[1] .

The logic of the CAAA is that since these pollutant levels have exceeded every collective amount that the planet has seen since time immemorial with recorded global atmospheric fluctuations being very small and beguiling, and given that we really do not have any sort of a sound scientific knowledge of the behavioral model of the atmosphere with the myriad of ways that particulate and pollutants in the air can interact to reduce the quality of the air, it is not prudent to pollute the atmosphere any more than the current amount.

CAAA is a broad brushstroke ruling that is based on the end results of this society's collective activity. Its goals are to limit the amount of atmospheric pollutants. It does not target any specific industry, sector, technology or activity for pollution reduction. If it did, the blame of waste generation would unfairly affect one segment of the total pollution picture. Therefore, by setting pollution caps all segments of the society be they public, private, commercial, industrial, collective or individual would have to be involved over the course of 3 or more decades to shift from current modalities of energy use to whatever alternatives that will reduce increases in air pollution levels.

So, even though various sectors of the society run on crossed purposes in their habits and modes of energy use, all individuals, companies, organizations, corporations. counties, cities and states can and do agree on the need to eliminate increases in atmospheric pollutants. This one point of agreement is the glue that indeed held the CAAA and allowed its ratification and adoption.

Views and perspectives

CAAA does not identify sources of pollution that have to be changed or eliminated. This is good and bad. The good part is that no specific sector, industry, activity or technology is made to be blamed for the problem and be eliminated. The bad part is that in the absence of direct specifics from the law, businesses, technologies and activities have to be identified and then targeted for change by combinations of public and private groups, and this identification will require dialogue, discourse, agreement and even consensus among groups whose functions, interests and goals intersect and collide with the mission of cleaning the air.

Thus, CAAA has been designed to set a stage where various parties with very diverging perspectives must battle to continue generating revenues, funds and profits the way it has done in the past from a society that is trying to reduce its use of polluting fossil fuels and its related technologies. The showdown between various interested parties is inevitable and necessary.

As private citizens, americans want to have clean air, clean water, clean land, plenty of food, fuel and affordable shelter. However, the human activities of americans are not compatible with the aforementioned. Thus, outside of our roles as consumers and ordinary citizens, american enterprises will suffer increased cost, restrictions in commercial and industrial activities targeting the reduction of pollutants, changes in business practices and various other modes of

change in meeting the goals of clean air. These changes will be resisted. The clash between the needs of americans as individuals and americans as the backbone of a system that is very entrenched in its fossil fuel based operational modes is inevitable. The battle between various perspectives in the society is inevitable. The tug and pull of various interests in changing the goals, the targets and the timetable of CAVA is inevitable. However, just like safe foods, safe drugs, elimination of (alcohol) prohibition, plentiful and cheap gasoline, TV, Vcr and even recycling, the perceived medium of what americans want will indeed be reached.

Conclusions

Here at CAEPS, most business, government, industry and even consumer sectors have been observed to be resistant to the CAAA. However, none of them can agree on what needs to be done. Most lawmakers agree with citizens that the shift from current fuels, infrastructure and vehicles used in transportation will be a tremendous expense and burden. With this law only the "air" will win and everyone else will have added cost, added disruption and added responsibility. However, given that we all rely on and need clean air, the logic is that we will all benefit in the end from preserving this resource and setting a milestone of resistance against other peoples and nations from further polluting the air. We can certainly delay or even eliminate this law. However, If a law is to replace CAAA, it will go through the same battles and fights and, will produce no winners in business, industry or even with taxpayers.

## REFERENCES


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2. Botkin, D., and Keller, E. Environmental Science: Earth as a living Planet. New York. John wiley & Sons, 1994.

3. Graedel, T.E., and Allenby, B.R. Industrial Ecology. Englewood Cliffs, N.J. Prentice Hall, 1995.

**Reshaping the Clean Air Act -- II**

*William D. Fay*, President and Chief Executive Officer, Highway Users Federation;
*Paul G. Billings*, Director, State Government Relations, American Lung Association.

WILLIAM D. FAY

William D. Fay is President and Chief Executive Officer of the Highway Users Federation, the nation's largest, most diverse coalition of individuals and businesses dedicated to continued mobility and personal freedom of choice in transportation. From 1990 to 1994, he served as Executive Director, chief lobbyist, and spokesman of the Product Liability Coordinating Committee. Prior to this, he was Vice President for Congressional Affairs for the National Coal Association. Between 1987 and 1990, Mr. Fay also served as Administrator of the Clean Air Working Group. He has 16 years of experience in Washington, DC. He is a graduate of the University of Idaho, with degrees in accounting and political science.

PAUL G. BILLINGS

Paul G. Billings is Director, State Government Relations, for the American Lung Association He works with the Lung Associations in all 50 states on developing and implementing their public-policy agendas, primarily on the issues of air pollution and tobacco control. Before assuming his current position, he lobbied for the Lung Association in Maryland on the California low-emission vehicle legislation. Mr. Billings previously directed grassroots activities for the National Clean Air Coalition and he was an associate with the FMR Group in Washington, DC. A graduate of Bates College in Maine, he also attended Trinity College in Dublin, Ireland.

## The New Engelhard Catalyst Technology

*William G. Rosenberg*, Founder and President, $E^3$ Ventures, and former Assistant Administrator for Air & Radiation, U.S. EPA.

WILLIAM G. ROSENBERG

William G. Rosenberg is Founder and President of $E^3$ Ventures, Inc., which establishes innovative relationships with companies to go beyond mere compliance with the Clean Air Act to take advantage of market-based ways to increase revenues, fund new business opportunities, and demonstrate environmental leadership. Appointed by President Bush in 1989 as U.S. EPA Assistant Administrator for Air & Radiation, Mr. Rosenberg was the leading force in enacting and implementing the Clean Air Act Amendments of 1990. He pioneered a creative set of policies to develop and implement environmental strategies, emphasizing market-based initiatives, regulatory negotiations, and reaching consensus with environmentalists, industry, and state officials. Initiatives included acid-rain controls, reformulated gasoline, cleaner cars, phase-out of CFCs, enhanced compliance, and federal permitting. Previously, Mr. Rosenberg was Chairman of the Michigan Public Service Commission, Assistant Administrator of the Federal Energy Administration, and Executive Director of the Michigan State Housing Development Authority. He holds an MBA and JD from Columbia University and a BA from Syracuse University.

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# *PremAir* Catalyst Systems
# Fact Sheet

***Summary***

Engelhard Corporation has developed revolutionary clean air catalyst systems, called *PremAir*, that have the potential to significantly reduce ground-level ozone (the main constituent of smog) and carbon monoxide throughout the world. In the United States, the new catalyst systems should help attain federal clean air standards.

Application development work has, so far, been focused on motor vehicles. However, *PremAir* catalyst systems also could be used with stationary equipment, such as air-conditioning units. Initial studies of the *PremAir* catalyst systems on motor vehicles were conducted in Los Angeles, California. These studies indicate that if the catalyst systems are employed on all vehicles they can reduce more ozone and carbon monoxide than other clean air programs such as the electric car, program certain California reformulated fuels and employee commute options. The new systems are expected to be cost-effective, require little vehicle redesign and cause no inconvenience to drivers.

Engelhard will work closely with the automotive industry and other interested organizations to commercialize *PremAir* catalyst systems for motor vehicles as a market-based alternative within current clean air laws. The Company also will pursue a range of other applications for the new technology.

***Destroying pollutants already in the air***

*PremAir* catalyst systems destroy ozone and carbon monoxide that are already in the air. By contrast, automotive catalytic converters and stationary-source pollution control systems destroy pollutants before they are emitted into the atmosphere. For example, the modern three-way catalyst used on cars (which Engelhard invented) destroys over 90% of volatile organic compounds (VOCs), nitrogen oxide (NOx) and carbon monoxide (CO) before they emerge from the tailpipe.

The residual pollutants, together with industrial emissions and naturally occurring compounds form ozone through atmospheric photochemical reactions in the presence of heat and sunlight. The *PremAir* catalyst systems destroy up to 90% of the ozone and carbon monoxide that they contact in ambient air. The new systems will not replace automotive catalysts, but provide a complementary technology in the fight for clean air.

***How the PremAir catalyst systems work***

For the automotive application, the new systems involve placing a catalytic coating on a car's radiator and air conditioning condenser. As air passes over the

radiator and condenser, the catalysts will convert ozone into oxygen, and carbon monoxide into carbon dioxide.

The effectiveness of the catalysts in destroying ozone can be enhanced by modifying the car's radiator fan to run even when the car is parked. Because ozone reaches its peak levels during the hottest, sunniest part of the day, by running the radiator fan for some portion of this time ozone-laden air can be drawn over the catalysts and the ozone destroyed.

The *PremAir* catalyst systems are based on proprietary Engelhard technology. One of the main components of the system is platinum. This is a new application for the metal which is widely used in automotive emission-control systems because of its superior catalytic activity. The amount of platinum used in the systems is expected to match or exceed the amount used in automotive catalytic converters.

***Testing shows significant reductions***

Engelhard retained Sierra Research, an independent research organization familiar with EPA testing procedures, to conduct field tests in Los Angeles. Systems Applications International (SAI), an independent company specializing in atmospheric modeling was retained to assess the potential benefits to air quality using the appropriate modeling procedures.

Initial laboratory and on-road testing in Los Angeles indicates the catalyst systems will convert up to 90 percent of the ozone and carbon monoxide they contact. The potential volume of air that could be processed by motor vehicles is large. If the nine million vehicles, traveling 266 million miles per day in Los Angeles were equipped with the PremAir catalyst systems the air flowing through their radiators is equivalent to all the air across the Los Angeles area up to a height of about 15 feet. If the radiator fans are in operation during the period of highest ozone concentrations the potential volume of air processed would increase tenfold.

According to the SAI models, the *PremAir* catalyst systems, if installed on all vehicles and equipped with modified radiator fans, have the potential to reduce peak levels of ozone by 4.5 parts per billion in Los Angeles. *PremAir* catalyst systems also have the potential to reduce carbon monoxide levels in ambient air by over 12%.

***Potential reductions compare favorably with other clean air programs***

This potential total ozone reduction is larger than that achieved with other clean air programs, such as the electric car program, certain California reformulated fuels and the employee commute option. The potential total carbon monoxide reduction is larger than from all of these alternatives combined.

Engelhard also compared the potential per vehicle reductions with the per vehicle reductions anticipated from the other programs. The SAI analysis showed that if a low emission vehicle (LEV) is equipped with a *PremAir* catalyst system and a modified radiator fan, it would provide the same ozone reduction as an electric car. Three LEVs with *PremAir* catalyst systems could provide the same carbon monoxide reduction as one electric car. Low emission vehicles are to be

introduced in California next year.

The tests also indicate that one LEV with a *PremAir* catalyst system with the same adjustment to the radiator fan would reduce ozone more than three ultra-low emissions vehicles (ULEV), another emissions modification mandated for automobiles sold in the upcoming years in California. Two LEVs with *PremAir* catalysts systems could provide the same carbon monoxide benefit as one ULEV.

SAI also determined that the *PremAir* catalyst systems could achieve more reductions in air pollutants when compared to anticipated benefits of the employee commute options. The *PremAir* catalyst systems would achieve those benefits without imposing any of the driver inconvenience anticipated in the employee commute options.

***PremAir catalyst systems can provide a cost-effective alternative***

Although the new systems have not been commercialized and pricing has not been determined, preliminary cost estimates indicate that *PremAir* catalyst systems can be cost-effective in achieving clean air goals.

Preliminary estimates are that *PremAir* catalysts systems may add $500 to $1,000 to the price of a car. Therefore, the estimated cost per ton of emissions reduced is $6,400 to $12,800. This compares favorably to published cost per ton estimates for other clean air programs. These cost per ton estimates are: $26,100 per ton for employee commute option programs; $12,700 to $24,900 for the incremental benefit of ULEVs over LEVs; $10,700 to $166,200 for the incremental benefit of electric cars over ULEVs; and $13,500 for CARB-2 gasoline (a California-mandated reformulated fuel) over federally mandated reformulated gasoline.

***Next steps***

Engelhard continues to optimize the *PremAir* catalyst systems, but expects no obstacles in doing this based on the Company's vast experience with catalytic technology. The Company also is working with the automotive industry to conduct demonstration programs during 1995.

Concurrently, Engelhard is meeting with federal and state regulators to determine how best to employ the new technology under current clean air laws.

The *PremAir* catalyst systems build on Engelhard's leadership in three-way catalytic converter technology for automotive emissions and the direct catalytic conversion of stratospheric ozone into oxygen for aircraft cabin air. The three-way automotive catalyst, which Engelhard invented, reduces pollutants in automobile emissions by more than 90 percent (CO - 96 percent; VOCs - 97 percent; NOx- 90 percent) over the approximately 100,000 mile life of a car.

Engelhard Corporation is a world-leading provider of specialty chemical products, engineered materials and precious metals management services. The Company supplies a variety of products and technologies for air-pollution control, including automotive emissions control systems, systems to cut CO, VOC and NOx pollution from power-generating and industrial facilities, and catalysts to reduce ozone in aircraft cabins.

**Luncheon. States' Rights**

*Hon. Becky Norton Dunlop*, Secretary of Natural Resources, Commonwealth of Virginia.

BECKY NORTON DUNLOP

Becky Norton Dunlop is Secretary of Natural Resources for the Commonwealth of Virginia. She is the principal environmental-policy official for Virginia and oversees eight state agencies, including the Departments of Environmental Quality, Conservation & Recreation, Game & Inland Fisheries, Historic Resources, the Virginia Marine Resources Commission, and the Chesapeake Bay Local Assistance Department. Secretary Dunlop has been appointed to serve as Co-Chair on the Governor's Advisory Council on Self-Determination & Federalism. Prior to being named as a member of his Cabinet by Gov. George Allen, Mrs. Dunlop was Managing Director of the *Enough is Enough!* campaign, a national grassroots movement to reduce sexual violence and eliminate child pornography and remove hard-core and illegal pornography from the marketplace. During the 1980s, Mrs. Dunlop was a senior policy official in the Reagan Administration. In 1977, she founded Century Communications, Inc., a management consultant firm. Mrs. Dunlop is a graduate of Miami University, Oxford, OH.

**Inspection/Maintenance**

*David Sosnowski*, Environmental Protection Specialist, National Vehicle & Fuel Emissions Laboratory, Office of Mobile Sources, U.S. Environmental Protection Agency;

*Michael J. O'Toole*, Environmental Protection Specialist, Colorado Department of Public Health and Environment;

*Gary A. Bishop*, Research Engineer, University of Denver;

*Leo M. Carroll*, Vice President, Marketing, Systems Control, Inc.

DAVID SOSNOWSKI

David Sosnowski is an Environmental Protection Specialist at U.S. EPA's National Vehicle & Fuel Emissions Laboratory in Ann Arbor, MI, specializing in motor-vehicle inspection and maintenance programs. He works in the I/M Section of the Emission Planning & Strategies Division. He helped draft the proposed and final version of the November 1992 I/M rule as well as the recently proposed I/M Flexibility Amendments. He joined EPA's Office of Mobile Sources in 1988, moving to Ann Arbor two years later. Mr. Sosnowski taught English composition and creative writing at the Universities of Alaska, Michigan, Detroit, and Wayne State. He is a poet and published fiction writer. Mr. Sosnowski graduated from the University of Michigan with a Bachelors in English literature and from the University of Alaska with a Masters in creative writing.

MICHAEL J. O'TOOLE

Michael J. O'Toole is an Environmental Protection Specialist with the Colorado Department of Public Health & Environment, facilitating operating inspection and maintenance programs for gasoline and diesel-fueled vehicles. His specific responsibilities are to implement the state's enhanced and basic I/M programs. He is a 15-year member of the Society of Automotive Engineers and is associated with the National Center for Vehicle Emissions Control & Safety at Colorado State University. He has a BS in industrial sciences and transportation and has completed graduate studies in socio-technical programs

GARY A. BISHOP

Gary A. Bishop is a Research Engineer at the University of Denver, with duties including the development and refinement of hardware and software for the University's remote-sensing equipment for automobile exhaust emissions. He has participated in numerous field studies and has published extensively in various journals, detailing studies of automobile emissions and the efficacy of programs designed to control or reduce them. Dr. Bishop received a BS in chemistry from Berry College and an MS and PhD in biophysical chemistry from the University of Colorado.

LEO M. CARROLL

Leo M. Carroll is Vice President of Marketing for Systems Control, Inc., a leading contractor in the design, construction, and operation of centralized vehicle-emissions testing programs. The company has inspection/maintenance contracts in Washington state, Maine, Texas, Michigan, and Indiana. Prior to his present position, he was the General Manager of Vehicle Test Technology, Inc. During the 1980s, Mr. Carroll was the I/M Program Administrator for the Municipality of Anchorage, Alaska, where was responsible for the startup and operation of a decentralized program. Before that, he was the automotive training coordinator for the Colorado Department of Health. Mr. Carroll began his career with the National Center for Vehicle Emissions Control & Safety at Colorado State University.

# FLEXIBILITY TAKES MANY FORMS

- New credit guidance issued February 27, 1995
- I/M Flexibility Amendments proposed April 28, 1995
- Alternative test procedures
- Re-evaluating test-and-repair discount based on local data

# NEW I/M CREDITS

- Technician training and certification
- ASM2
- Age-based hybrids
- Repair-and-retest based hybrids
- ASM1 and RSD (in development)

# FLEX RULE: WAIVER CHANGES

- **Phase-in of basic and enhanced waivers until January 1998 allowed**
- **Repairs done 60 days prior to test counted**
- **Parts costs on owner-performed repairs of primary emission controls counted**
- **Hardship exemptions not limited to once per vehicle lifetime**
- **Comment requested on how to adjust waiver limit for inflation**

# FLEX RULE: NEW, "LOW" STANDARD

- OK if full credit not needed for 15%, attainment
- Standard equals basic with...
  - 3% waivers and 96% compliance
  - Visual checks for EGR and PCV added
  - Light trucks to 8,500 lbs. GVWR added
- Can be met by biennial, test-and-repair program
- Does not require dynamometers
- Gets slightly less than one-third the reductions of the original standard

# FLEX RULE: ETC.

- Requests comments on whether the population cutoff for basic I/M should be changed from 50,000 to 200,000
- Does not require I/M automatically in redesignated areas that experience a violation
- Does not change SIP or implementation deadlines
- Public comments are currently being summarized and addressed
- Final rule is scheduled to be published by August 24, 1995.

# ALTERNATIVE TESTS

- California pilot study determined ASM to achieve reductions comparable to the IM240
- 2-mode ASM credits included in February 27, 1995 guidance; 1-mode ASM credits being developed
- EPA has approved in concept the ESP-proposed helium tracer gas purge test and the through-the-gas-cap pressure test
- EPA is conducting a pilot study of these alternative evap tests in its test lanes in Illinois
- I/M Test Committee is in the process of developing test procedures and equipment specifications for ASM and alternative evaporative tests


# DISCOUNT FLEXIBILITY

- **EPA is working with Utah and Virginia to determine if existing, local data can be used to objectively quantify a local test-and-repair discount**
- **EPA hopes to refine and build on a method developed by Sherman Engineering for using before- and after-repair idle data as a surrogate for transient emissions scores**
- **Once a workable protocol has been developed and presented for stakeholder comment, it will be made available to other states**


# STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

*Dedicated to protecting and improving the health and environment of the people of Colorado*

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Colorado Department
of Public Health
and Environment


## COLORADO'S A.I.R. PROGRAMS

### HISTORICAL BACKGROUND

- Metropolitan area in nonattainment for carbon monoxide and transitional attainment for ozone. Various areas throughout the state also exceed $PM_{10}$ (and visibility) standard

- July 1981 introduced traditional decentralized I/M program

  - change of ownership
  - sticker enforced
  - light-duty passenger vehicles and most trucks
  - low emissions tune-up
  - E.C.S.I. M/Y 1975 and newer

- program covered eight-county metro area

- program coverage expanded to encompass additional vehicles and add additional (partial) county, metro Greeley, Weld County.

### ENHANCED AND IMPROVED BASIC I/M

- Authorized (reluctantly) by the Colorado General Assembly (HB'93-1340) May 1993 with implementation 01 January 1995

- Federal Mandate vs high-tech testing procedures compatible with vehicle technology

- Regulations, S.I.P.'s and R.F.P. developed, submitted, implemented (many thanks to those states who exchanged info./draft RFP's)

- RFP published Aug '93 with contractual agreement signed 22 Feb '94

- and we're off ...

**PROGRAM DESIGN AND STRUCTURE**

- Both improved basic and enhanced programs implemented at the same time

- Basic program traditional in structure and based upon "Colorado '94" TAS which is tied to program host system and registration data base real-time

- Enhanced program would be considered of hybrid design: (see fact sheets)

  - program is split principally by technology in that newer (1982 and newer) model year vehicles are tested through a contractor operated network of dedicated, multi-lane centers

  - Pre-'82 model year may be inspected at decentralized inspection-only facilities operated by independent owner/operator (motorists owning such vehicles may pursue services from contractor or independent)

  - Inspection procedures:
    - I/M 240 for light-duty passenger vehicles and trucks of model year 1982 and newer
    - idle short tests for older vehicles and heavy-duty trucks
    - ECSI, all 1975 and newer
    - smoke and CFC assessment

  - Inspection Fees:
    - newer vehicles $24.25
    - idle test $15.00 (max.)
    - free retest within ten (10) days (min.)

  - Inspection Cycles: (system wide)
    - 1982 and newer = biennial
    - Pre-'82 and "fleets" = annual
    - 4 year "new" vehicle exemption
    - change of ownership

**IMPLEMENTATION EXPERIENCES** - comments

- You/your staff will become intimately involved with County Commissions, Planning Commissions, municipal governments, and certainly neighborhood groups

- Consider options for locating contractor operated centers other than strictly demographics:
  - census / State Demographer / COG
  - growth projections
  - county vs population
  - set capacity based upon future data

- Would strongly recommend initial phase-in of 2-3 months, voluntary participation

- Insist on formal, comprehensive Acceptance Testing Procedures for all lanes and facilities

- It is not likely that you could have too much motorist outreach or public education activity and there could never be too much training for lane inspectors

- Beware!
  - "fast pass", avoid tying to network capacity or throughput calculations
  - phase-in emissions limits - no matter what, you're bound to be criticized
  - AWD/4WD/traction control and ABS equipped vehicles (see manual)
  - EPA inertia weight and H.P. tables
  - the media in general, but certainly talk-show hosts
  - V.I.N.A. program - vehicle class determination

- Be absolutely certain that contractor selection criteria and procedures are prescriptive, understood, and that the process is understood by all and well documented

- **Do Not ...**
  - implement program in an election year
  - implement with less than one year of "construction" time
  - implement while legislature is in session

- implement the program without the involvement public/industry committee ... Repair Training and Diagnostic Advisory Committees

**IN CLOSING:**

Colorado's Enhanced and improved Basic I/M program was introduced 02 Jan '95 with eight (8) of thirteen (13) stations available. Three additional stations were on-line within the month. More facilities are in process for 01 July '95 implementation in Boulder County.

While the introduction of enhanced I/M was a bit rocky, the program improves with every day of operation. The repair industry in general is responding well, we're seeing good repairs and the demand for training is strong. We will find ourselves challenged with the repair of vehicles previously unidentified ($E_0$) such as the Escort. We continue to believe I/M 240 technology is strong but recognize the long-term fix for this problem we all face is reducing VMT, reducing society's reliance on the automobile.

We look forward to the further investigation of other evolving technologies such as remote sensing with the annual survey targeted for this fall and the Greeley Pilot/Feasibility Study due in 1996.

Thank you for this opportunity ... Good Luck!

95-119T.MJO
6/6/95

## COLORADO'S ENHANCED I/M PROGRAM

- Inspection program begins January 2, 1995 with Boulder County, July 1995
- Program area includes Adams, Arapahoe, Boulder, Douglas, Jefferson and the City and County of Denver
- Inspection requirements linked to vehicle registration and valid windshield certificate display, with motorist notification by County Clerk
- Inspection Cycles
  - Model years 1-4 = exempt
  - Model year 1982 and newer, but greater than 4 model years = biennial
  - Pre-1982 = annual
  - Each change of ownership
- Strategically located, multi-lane, high volume contractor operated inspection centers
  - Inspection services for all non-diesel vehicles
  - Hours: 8:30 am - 7:30 pm M-F, 8:00 am - 1:00 pm Sat.
  - Pre-1982 vehicles may be inspected at independent inspection-only facilities
- Tests Required
  - 1982 and newer = I/M-240 dynamometer test
  - Pre-1982 and heavy-duty = idle short tests
  - 1975 and newer = inspection of emissions control systems
  - Air conditioning leak check for chlorofluorocarbons
  - Visible smoke and recall verification
- Motorist Assistance
  - Comprehensive diagnostic information
  - Repair assistance
  - Motorist outreach and consumer hotline programs
- Emissions Related Repair Waiver Limits
  - 1968 and newer = $450
  - Pre-1968 = $75
  - Repairs to emissions control systems and correction of visible smoke do not apply
- Small Business/Technical Assistance Program
  - Technical information and training
  - Marketing and business development
  - Train-the-trainer

94-025T.mjo

# STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

*Dedicated to protecting and improving the health and environment of the people of Colorado*

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Colorado Department
of Public Health
and Environment

## I/M 240 FACT SHEET

### I. WHY COLORADO NEEDS AN EMISSIONS TESTING PROGRAM:

- Colorado, especially the Denver-metro area, has a significant air pollution problem.
- During the past fifteen years Denver has been in violation of the federal health standards for carbon monoxide (CO) on numerous occasions.
- Air quality will become an even greater concern with the growth expected in the state.
- In order to preserve the quality of life and health of Colorado residents, an effective air pollution program must be in place.
- Colorado's I/M 240 test is expected to reduce CO emissions by 31%. Already preliminary data is showing this to be true.
- The previous program did an effective job of diagnosing older cars with emissions problems, but the old tailpipe test does not effectively determine newer model year vehicles that are gross polluters. The science proves this fact.

### II. COLORADO'S I/M 240 PROGRAM IS BEGINNING TO WORK.

- **Preliminary Data Shows:**
- The average vehicle identified in March as failing the test emitted more than 81 grams of CO per mile.
- Upon repair and retest, the average vehicle emitted less than 33 grams of CO per mile. This represents an average reduction of CO emissions of 59%.
- This new test is identifying gross polluters that were not identified previously. For example, the new test has been able to detect a dirtier class of cars.
- **Data Available on The Old Idle Test Shows:**
- 50% of all excess CO emissions.
- 38% of the tests were conducted incorrectly.
- Reduction in CO emissions of 13%.

### III. RESULTS OF I/M 240 STUDIES:

Scientific and real-world tests have proven the I/M 240 to be the most effective technology available to catch gross polluting vehicles and significantly reduce CO emissions.

- **A Recent Study by Sierra Research on California's I/M 240 Technology Detected:**
- 99.1% of all excess CO emissions.
- 99.6% of all excess HC (hydrocarbon) emissions.
- 100% of all excess NOx (nitrogen oxide) emissions.
- False failure rate of 4% of all vehicles in the study.

- **In the Same Study, Remote Sensing Detected:**
- 10.4% of all excess CO emissions.
- 10.8% of all excess HC emissions.
- 8.9% of all excess NOx emissions.
- False failure rate of 58%.
- **Conclusion:**
- I/M 240 test produced an average CO emission reduction of 32% in all vehicles inspected.
- I/M 240 identified 99% of vehicles' that exceeded allowable levels of CO emissions.

IV. ALTERNATIVES TO THE CURRENT PROGRAM:

There are several options available to reduce carbon monoxide emissions. However, those alternatives may be more costly to implement and have far greater lifestyle effects on the public. **None of these alternatives are able to achieve the large reductions in emissions that the I/M 240 can.** The I/M 240 is designed to reduce CO emissions from vehicles in the Denver metro-area by 31%.

The following outlines some alternatives and their costs as considered by the Regional Air Quality Council:

- Mandatory travel reduction program for employers of 100 or more. This program is anticipated to cost more than $100 million annually, affect over 800 employers and 500,000 employees, and achieve a 4-5% reduction in emissions.
- Mandatory no-drive days for high polluting vehicles would reduce emissions by 10-11%. It would affect 300,000 motorists.
- Establishing a $2 regional daily parking surcharge would cost $325 million annually and achieve a 10% emissions reduction.

# Air Pollution Control Division Fact Sheet, February 1994

This is the first issue of the APCD Fact Sheet. It is hoped this sheet will work as a reference tool to help you answer some of the public's more frequently asked questions.

Call Fred Quartarone at x3108 with any corrections, updates or comments.

## GENERAL TRENDS:

## Colorado air quality trends; a good news, bad news story

Colorado's air quality has improved markedly in the past two decades, however growth and increased vehicle usage are threatening those improvements.

**On the good news side** -- of the major pollutant categories monitored in Colorado all but the visibility category have improved in the last two decades.

- The number of days on which federal CO standards were exceeeded in the Denver-metro area dropped from 125 in 1972 to two days in 1993.
- Ground-level ozone standards have not been violated anywhere in Colorado since 1989.
- Lead, nitrogen dioxide and sulfur dioxide standards have been met.
- Over the last 20 years particulate matter levels have fallen off dramatically, however population and industrial growth could threaten the improvements if new reduction strategies aren't utilized.

**On the bad news side** -- last year's air quality declined noticeably in several categories. Coupled with predictions of increased growth and more traffic, the future of the state's air quality is uncertain.

- The Denver area is not expected to meet carbon monoxide attainment standards by 1995-96.
- The Denver Region Council of Governments predicts that the amount of miles driven each day in the Denver area will double by the year 2015. The increase is sure to impact all facets of Denver's air quality.
- Currently Denver-area motorists travel about 40 million miles daily, burning approximately 2.5 million gallons of gasoline.
- Denver's "Brown Cloud" is not improving, rather it's worsening, if anything.

## Motor vehicles and air quality

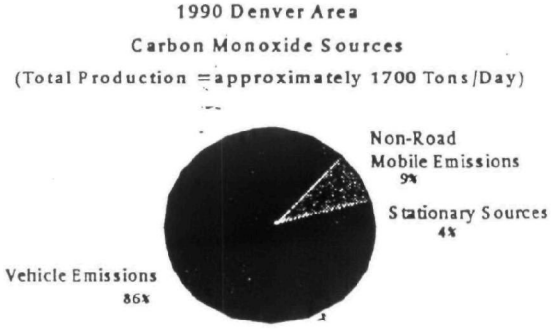
*• For every 10,000 miles driven, a typical vehicle in Colorado emits approximately:*
*586 lbs. of Carbon Monoxide*
*2 lbs. of Benzene*
*0.3 lbs. of 1,3-Butadiene*
*1 lb. of Formaldehyde*

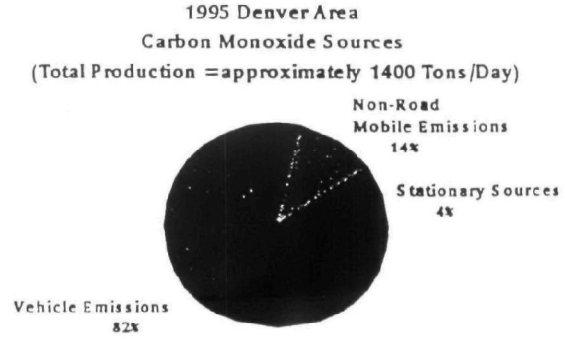
*• Benzene, 1,3-Butadiene and Formaldehyde are hazardous air pollutants that can cause cancer and other health problems depending on an individual's exposure to them.*

*• Currently Denver-area motorists travelabout 40 million miles daily, burning approximately 2.5 million gallons of gasoline.*

*There are more than 1.9 million automobiles in the Denver area.*

## Denver-area Carbon Monoxide



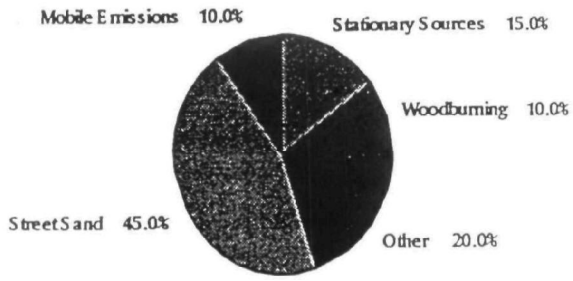
| POLLUTANT | SOURCES | NON-ATTAIN-MENT AREAS | EXCEEDANCE EVENTS 1992 | STANDARD | HEALTH EFFECTS |
|---|---|---|---|---|---|
| **Carbon Monoxide (CO)** is a colorless odorless gas. It occurs naturally in the air as the result of incomplete combustion processes, such as forest fires, the oxidation of methane and other natural processes. | **Urban CO is produced mainly from automotive sources.** Urban atmospheres contain about 100 times as much CO as any other pollutant. | • Denver metro area (including Boulder)<br>• Fort Collins<br>• Greeley<br>• Colorado Springs<br>• Longmont | • Denver metro area (including Boulder) = 7 exceedance events<br>• All other areas = zero | 9 ppm / 8 hours<br>35 ppm / 1 hour | CO affects the central nervous system by depriving the body of oxygen. Tests of automobile drivers show exposure to CO can impair a driver's judgment and ability to respond rapidly in traffic. It can especially affect pregnant women, fetuses, anemic individuals and persons with cardiovascular diseases. |
| **PM 10** is the term given to the tiny particles of solid or semi-solid material found in the atmosphere under 10 microns in size. PM10 is considered inhalable. | PM10 usually is created during a combustion process. Sources are fly ash (from power plants), carbon black (from automobiles and diesel engines), and soot (from fireplaces and wood stoves). | • Denver metro area (including Boulder)<br>• Aspen<br>• Canon City<br>• Lamar<br>• Pagosa Springs<br>• Telluride | • Denver metro area (including Boulder) = 1 exceedance event<br>• Lamar = 1 exceedance event<br>• All other areas = zero | 150 ug/m$^3$ / 24 hours<br>50 ug/m$^3$ / year | Particulate matter can reduce lung function, aggravate respiratory conditions and may increase the long-term risk of cancer or development of respiratory problems. |
| **Ozone ($O_3$)** is a highly reactive form of oxygen. Ozone is not emitted directly from a source, but forms when reactive hydrocarbons and nitrogen oxides chemically react with each other in sunlight. | The reactive hydrocarbons or percursors that form ozone are emitted from automobile exhaust; gasoline and oil storage and transfer facilities; industrial usage of paint solvents and degreasing agents. | • Denver metro area (including Boulder) | • Statewide = zero | 0.12 ppm / 1 hour | Short term exposure to ozone may impair mechanical functions of the lungs and may induce respiratory and related symptoms in sensitive individuals. |

| POLLUTANT | SOURCES | NON-ATTAIN-MENT AREAS | EXCEEDANCE EVENTS 1992 | STANDARD | HEALTH EFFECTS |
|---|---|---|---|---|---|
| **Sulfur Dioxide ($SO_2$)** is a colorless gas with a pungent odor. It is highly soluble in water, resulting in the formation of sulfurous acid, which can easily be converted to sulfuric acid which is the major acidic component of "acid rain." | Sulfur dioxide is emitted mainly from sources that burn fossil fuels (coal, oil) such as power plants and refineries, and from the production of materials from sulfur-bearing ores, such as copper smelting. | None | None | 0.03 ppm / yearly<br>0.14 ppm / 24 hours<br>0.5 ppm / 3 hours | Sulfur dioxide can aggravate an individual's respiratory tract, impair pulmonary functions and increase the risk of asthma attacks. |
| **Lead (Pb)** is a metallic element that in the ambient air exists primarily as particulate matter in the inhalable size range. | The predominant source of atmospheric lead is motor vehicles that burn leaded gasoline. It is also produced from the extraction and processing of metallic ores. | None | None | 1.5 ug/m³ / 3 months | Lead can impair an individual's production of hemoglobin, cause intestinal cramps, peripheral nerve paralysis, anemia and severe fatigue. |
| **Nitrogen Dioxide ($NO_2$)** is a reddish-orange-brown gas with a characteristic pungent odor that forms during high-temperature combustion to form oxides of nitrogen (NOx), which then can combine with oxygen and form nitric dioxide, the oxide of nitrogen with the biggest health hazard. | About 44 percent of the nitrogen dioxide emissions in the Denver area come from large combustion sources such as power plants, 33 percent from motor vehicles, 15 percent from space heating, 3 percent from aircraft and 5 percent from miscellaneous off-road vehicles. | None | None | 0.053 ppm / yearly | Nitrogen dioxide can increase respiratory problems, cause mild symptomatic effects in asthmatic individuals and increase susceptibility to respiratory infections. |

## PM10 Sources

Average Annual PM10 Source Apportionments

Denver-Metro Area




## Acid rain

Acid rain is the general term to describe the rainfall removal of acidic pollutants from the atmosphere. However, acids can be contained in other forms of precipitation such as snow or fog. The term acid deposition is used to include all the possible forms of acid pollutant removal from the atmosphere, but acid rain remains the popular term.

The majority of the deposited acids are nitric acid ($HNO_3$) and sulfuric acid ($H_2SO_4$). These are formed when nitrates and sulfates in the air mix with water vapor. **Coal-fired power plants and motor vehicles are the major sources of acid pollutants in Colorado.**

The effects of acid deposition are the subject of continuing controversy. The northeast section of the United States has experienced the worst reportable impacts in this country. Losses of and changes to aquatic life, such as fish populations, have been attributed to acid deposition. Crop and forest growth may be reduced by acid deposition or a combination of acid deposition and other environmental factors.

The most sensitive systems to acid deposition are poorly buffered lakes and streams. Buffering capacity refers to the availability of alkaline minerals from soil or rock to neutralize the acids.

To date, there is no firm evidence of ecological changes caused by acid deposition in Colorado. A survey of Colorado lakes found no lakes that have been acidified by acid deposition. However, short lived "acid pulses" from melting snow may be adversely affecting the aquatic life of alpine lakes, although the water's pH is not permanently lowered. Many areas in Colorado's Rocky Mountains are highly sensitive, with little buffering capacity, and are at risk of being harmed by acid deposition.

## Visibility

The cause of visibility impairment is most often fine particles in the 0.1 to 2.5 micrometer size range (1 micrometer is a millionth of a meter). Light passing from a vista to an observer is either scattered away from the sight path or absorbed by the atmospheric fine particulates. Sulfate, nitrate, elemental carbon and organic carbon are the most effective particulates at scattering and/or absorbing light. The man/woman-made sources of these particulates include wood burning, electric power generation, industrial combustion of coal or oil and emissions from cars, trucks and buses.

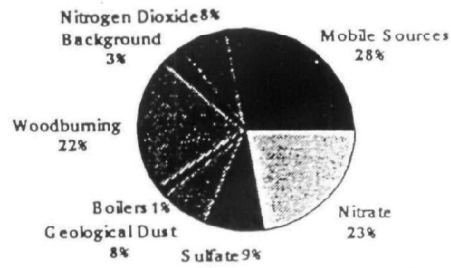
A visibility standard exists for the Denver area. The standard is 0.76 per kilometer of atmospheric extinction, which means that 7.6 percent of the light in a kilometer of air is blocked. The level must be exceeded, averaged over four hours, for a violation to occur. It applies during the core daylight hours from 8 a.m. to 4 p.m.

## Denver's "Brown Cloud"

Visibility factors combined with meteorology are responsible for the creation of the Brown Cloud. When pollutants emitted from the urban environment are trapped by a temperature inversion, a Brown Cloud is often created. Below is a pie chart showing the type and amounts of pollutants found in a typical "Brown Cloud:"

Average Visibility Apportionment

For Brown Cloud Episodes*




*These figures were compiled using several days data; on individual days source contributions for some categories may be significantly higher.

Source = 1987-88 Denver Brown Cloud Study

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June 20 - 21, 1995
Stouffer Renaissance Hotel
Arlington, Virginia

## INTRODUCTION

Urban air quality does not meet the federal standards in many cities. Violations of the ozone standard arise from photochemical transformation of oxides of nitrogen ($NO_x$) and hydrocarbons (HC). Carbon monoxide (CO) standards are primarily violated as a result of direct emission of the gas. Mobile sources are a major factor in all urban emissions inventories for carbon monoxide, hydrocarbons, and oxides of nitrogen.

Air pollution control measures to mitigate mobile source emissions in non-attainment areas include inspection and maintenance (I/M) programs, oxygenated fuel mandates, and transportation control measures. Nonetheless, many areas remained in non-attainment past the 1987 deadline for compliance with federal standards, and some are projected to remain in non-attainment for many more years despite the measures currently undertaken.

In 1987, with support from the Colorado Office of Energy Conservation, the University of Denver developed an infra-red (IR) remote monitoring system for automobile carbon monoxide (CO) exhaust emissions. Significant fuel economy improvements result if rich-burning (high CO and HC emissions) or misfiring (high HC emissions) vehicles are tuned to a more stoichiometric and efficient air/fuel (A/F) ratio. Therefore, the University of Denver CO/HC remote sensor is named Fuel Efficiency Automobile Test (FEAT). The initial instrument was successfully demonstrated in the summer of 1987. Revised instrumentation capable of video capture of vehicle license plates and the capability to measure exhaust hydrocarbon emissions was demonstrated in the summer of 1990. Additional enhancements have been added and demonstrated since then which enable the measurement of exhaust NO emissions, exhaust opacity, speed and acceleration, dual lane vehicle measurements and the capability for determining the operating temperature of a passing vehicles catalysts.

### Theory of Operation

The FEAT instrument was designed to emulate the results one would obtain using a conventional non-dispersive infra-red (NDIR) exhaust gas analyzer. Thus, FEAT is also based on NDIR and non-dispersive ultraviolet (UV) absorption principles. An IR and UV source sends a horizontal beam of radiation across a single traffic lane, approximately 10 inches above the road surface. This beam is directed into the detectors on the opposite side and divided between four individual IR detectors; CO, $CO_2$, HC, and reference and one UV detector; NO and reference. An optical filter that transmits IR or UV light of a wavelength known to be uniquely absorbed by the molecule of interest is placed in front of each detector, determining its specificity. Reduction in the signal caused by absorption of light by the molecules of interest reduces the voltage output. One way of conceptualizing the instrument is to imagine a typical garage-type NDIR instrument in which the separation of the IR source and detector is increased from 10 cm, as found in the sample cell, to 20-40 feet. Instead of pumping exhaust gas through a flow cell, a car now drives between the source and the detector. Because the effective plume path length and amount of plume seen depends on turbulence and wind, the FEAT can only directly measure ratios of CO, HC or NO to $CO_2$. These ratios are constant for a given exhaust plume. With a fundamental knowledge of combustion chemistry, we can determine many parameters of the vehicle's operating

characteristics, including the instantaneous air/fuel ratio, grams of CO, HC or NO emitted per gallon of gasoline burned, and the %CO, %HC or %NO in the exhaust gas.

Field Experience

The FEAT is effective across traffic lanes of up to 50 feet in width. It can be operated across double lanes of traffic with additional video hardware; however, the normal operating mode is on single lane traffic. The FEAT operates most effectively on dry pavement, as rain, snow, and very wet pavement scatter the beams. These interferences cause the frequency of invalid readings to increase, ultimately to the point that all data are rejected as being contaminated by too much "noise". At suitable locations we have monitored exhaust from over two thousand vehicles per hour.

The FEAT has been used to measure the emissions of more than 2,000,000 vehicles in 20 different countries and most metropolitan areas in the United States. The FEAT has been shown to give accurate readings for CO, HC and NO in double-blind and open studies of vehicles both on the road and on dynamometers. Reported accuracies for CO are better than ± 5%, ± 15% for HC and ± 30% for NO.

Not all cars have equal emissions. Data from our measurements show that, a small fraction of the passing vehicles are responsible for half or more of the emissions in any given area. In Denver half the emissions come from only seven percent of the vehicles. In Kathmandu half the emissions come from 25% of the vehicles. The few vehicles emitting half of the CO and HC are referred to as "gross polluters". For automobile emissions the old adage that the "tail wags the dog" holds true.

The overall characteristics of these fleets are very similar regardless of age, location, or the presence or absence of I/M programs and can be mathematically described by a gamma distribution. Most U.S. vehicles show mean emissions of 1% CO and 0.1% HC (as propane) or less in the exhaust. The newer the fleet the more skewed the emissions. This is because more of the vehicles have near zero emissions and thus, a smaller number of gross polluters dominates the total emissions.

The good news is that for the U.S. fleet the lowest emitting 50% of the vehicles produce only ~4% of the CO emissions and ~16% of HC using current gasoline formulas as fuel. Not all gross polluters are old vehicles (only about 25% of pre 1975 vehicles in the U.S.). In fact, the majority of even precatalyst vehicles are relatively low emitting. There is a strong correlation between fleet age and fleet emissions, however, this correlation has less to do with emissions control technology than it does with vehicle maintenance. Any well maintained vehicle regardless of age can be relatively low emitting. All of our studies point to the fact that new vehicles have negligible emissions when first purchased, thus emphasizing the need for proper maintenance.

## INSPECTION AND MAINTENANCE PROGRAMS AND REMOTE SENSING

Recent attempts to "enhance" current I/M programs in the United States have kindled a debate

as to why the programs have been ineffective at reducing measurable on-road vehicle emissions and what can be done to improve them. Current programs in the United States have a number of notable weaknesses which likely contribute to their overall ineffectiveness.

1) Emphasize vehicle testing over vehicle maintenance.
    A) Compare programs contract costs for testing versus the amount spent on mechanic training.
    B) Only emission repairs and not emission testing directly impacts air quality.

2) Assume all failed vehicles get repaired.
    A) Current and enhanced program protocols and repair cost waivers encourage owners to have vehicles tested multiple times before initiating repairs.

3) Assume vehicle emissions invariant.
    A) Vehicles are tested infrequently.
    B) All programs use a single pass/fail cutpoints

4) Provide no year round deterrence against emissions component tampering.
    A) Tests are scheduled and at the owners consent.

5) Fairness issues limit effectiveness.
    A) Often fleets are allowed to be self inspected
    B) Some model years exempted from testing
    C) Vehicles driven 100,000 miles/yr tested at same rate as vehicles driven 10,000 miles/yr.

The capability to now monitor vehicle emissions unobtrusively from the roadside enables these issues to be directly dealt with from a fresh perspective. Vehicle emissions should be monitored on a continual basis with more emphasis placed on educating the public about the need for regular vehicle maintenance, not just when their vehicle fails an I/M test. A continual monitoring presence can be used to deter emissions systems tampering, much in the same way that the IRS audit's a small fraction of tax returns to encourage compliance, as well as providing a means for evaluating the effectiveness of the I/M program. We must remember that I/M programs are meant to reduce on-road vehicle emissions, not just demonstrate our ability to successfully implement complicated and expensive programs. As popular as command and control programs from government entities have been in the past all of these programs will stand or fall on the basis of the public cooperation and acceptance. A key underpinning of this support is whether or not the programs accomplish their goals, namely for I/M programs cleaner air.

Suggested reading:

"On-Road Vehicle Emissions: Regulations, Costs, and Benefits", Stuart P. Beaton, Gary A. Bishop, Yi Zhang, Lowell L. Ashbaugh, Douglas R. Lawson and Donald H. Stedman, Science 268: 991-993, 1995.

"A Cost-Effectiveness Study of Carbon Monoxide Emissions Reduction Utilizing Remote Sensing", Gary A. Bishop, Donald H. Stedman, James E. Peterson, Theresa J. Hosick and Paul L. Guenther, J. Air Waste Manage. Assoc. 43:978-988, 1993.

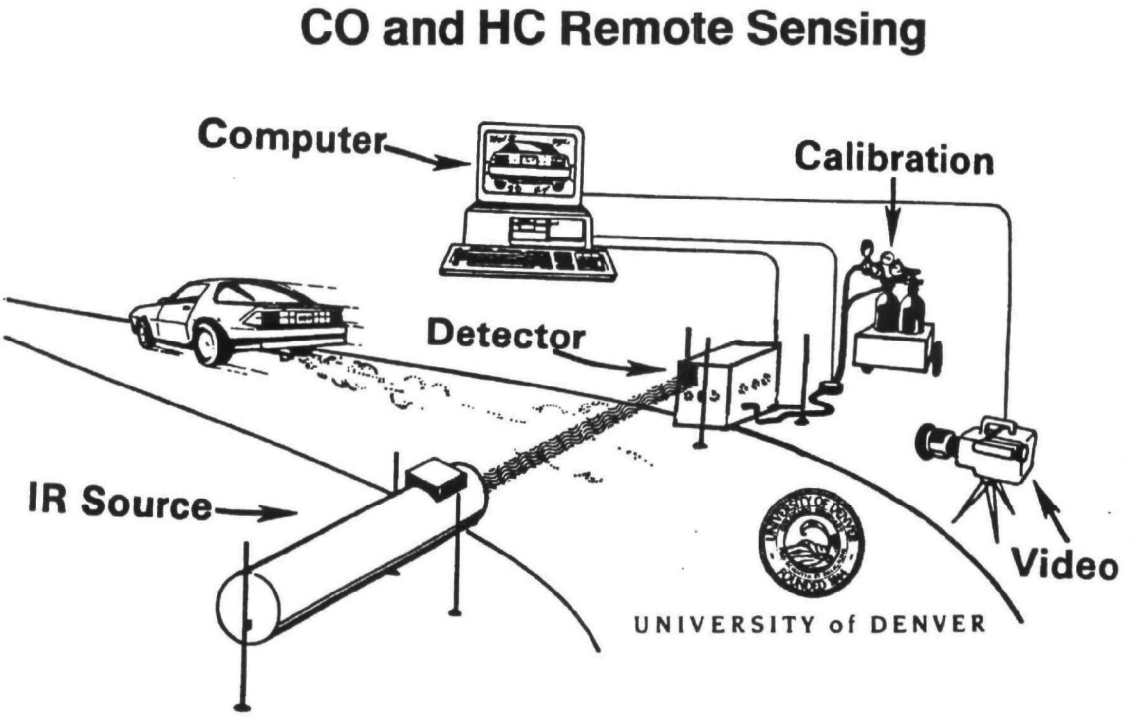
"IR Long-Path Photometry, A Remote Sensing Tool For Automobile Emissions", Gary A. Bishop, John R. Starkey, Anne Ihlenfeldt, Walter J. Williams, and Donald H. Stedman, Anal. Chem. 61: 671A-677A, 1989.

D.R. Lawson, "'Passing the Test' - Human Behavior and California's Smog Check Program,", J. Air Waste Manage. Assoc., 43:1567, 1993.

D.R. Lawson, P.J. Groblicki, D.H. Stedman, G.A. Bishop and P.L. Guenther, "Emissions from In-use Motor Vehicles in Los Angeles: A Pilot Study of Remote Sensing and the Inspection and Maintenance Program", J. Air Waste Manage. Assoc., 40(8):1096, 1990.

J.G. Calvert, J.B. Heywood, R.F. Sawyer, J.H. Seinfeld, "Achieving Acceptable Air Quality: Some Reflections on Controlling Vehicle Emissions," Science, 261, 37, 1993.

View Graphs




A schematic diagram of the University of Denver on-road emissions monitor. It is capable of monitoring emissions at vehicle speeds between 2.5 and 150 mph in under one second per vehicle.

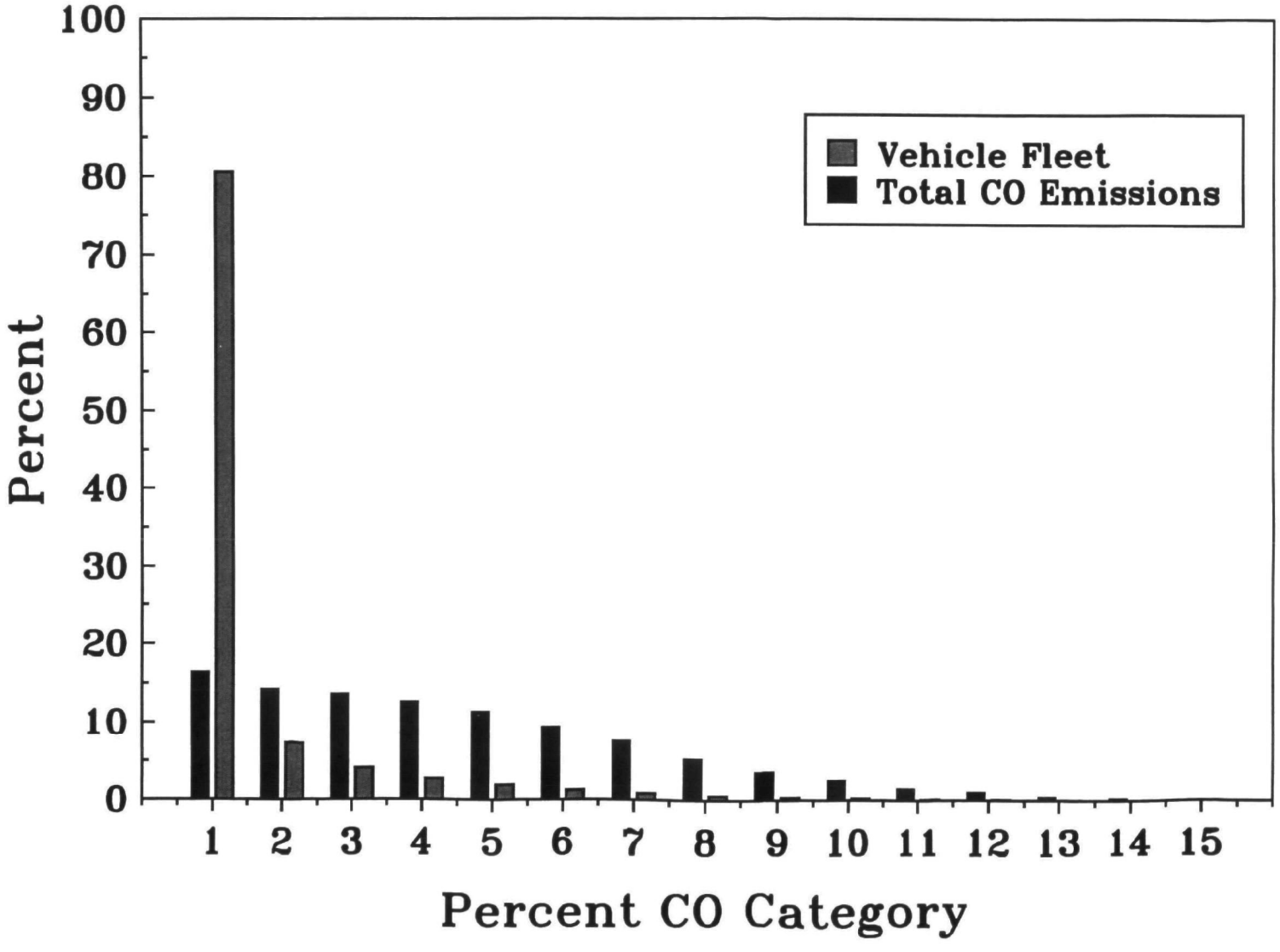
# Remote Sensing Accuracy

CO better than ± 5%
HC better than ± 15%
Both measured blind

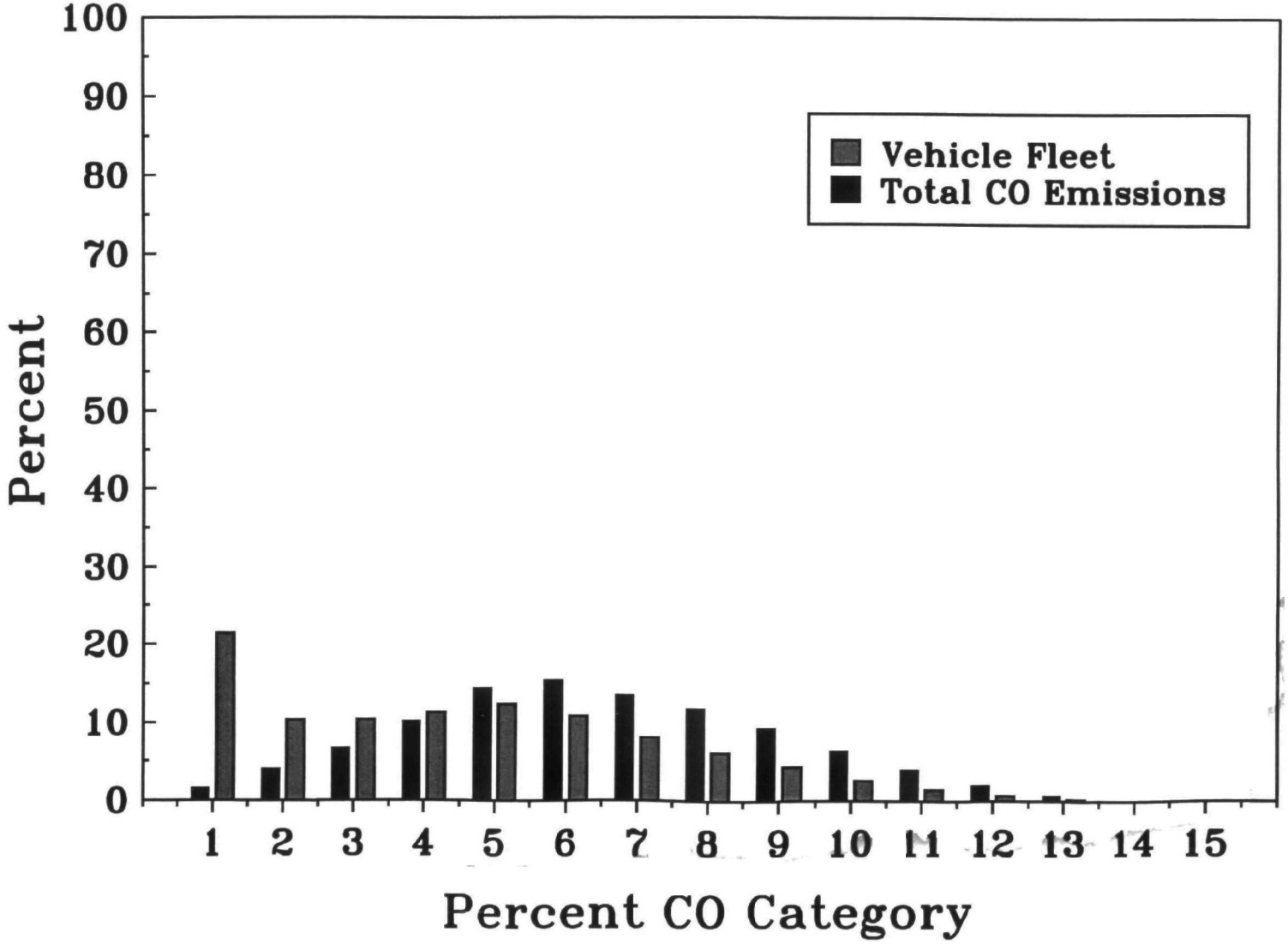
NO about ± 30%
Opacity about ± 30%
Neither blind

Speed and acceleration
0.1 mph; 0.1 mph/s

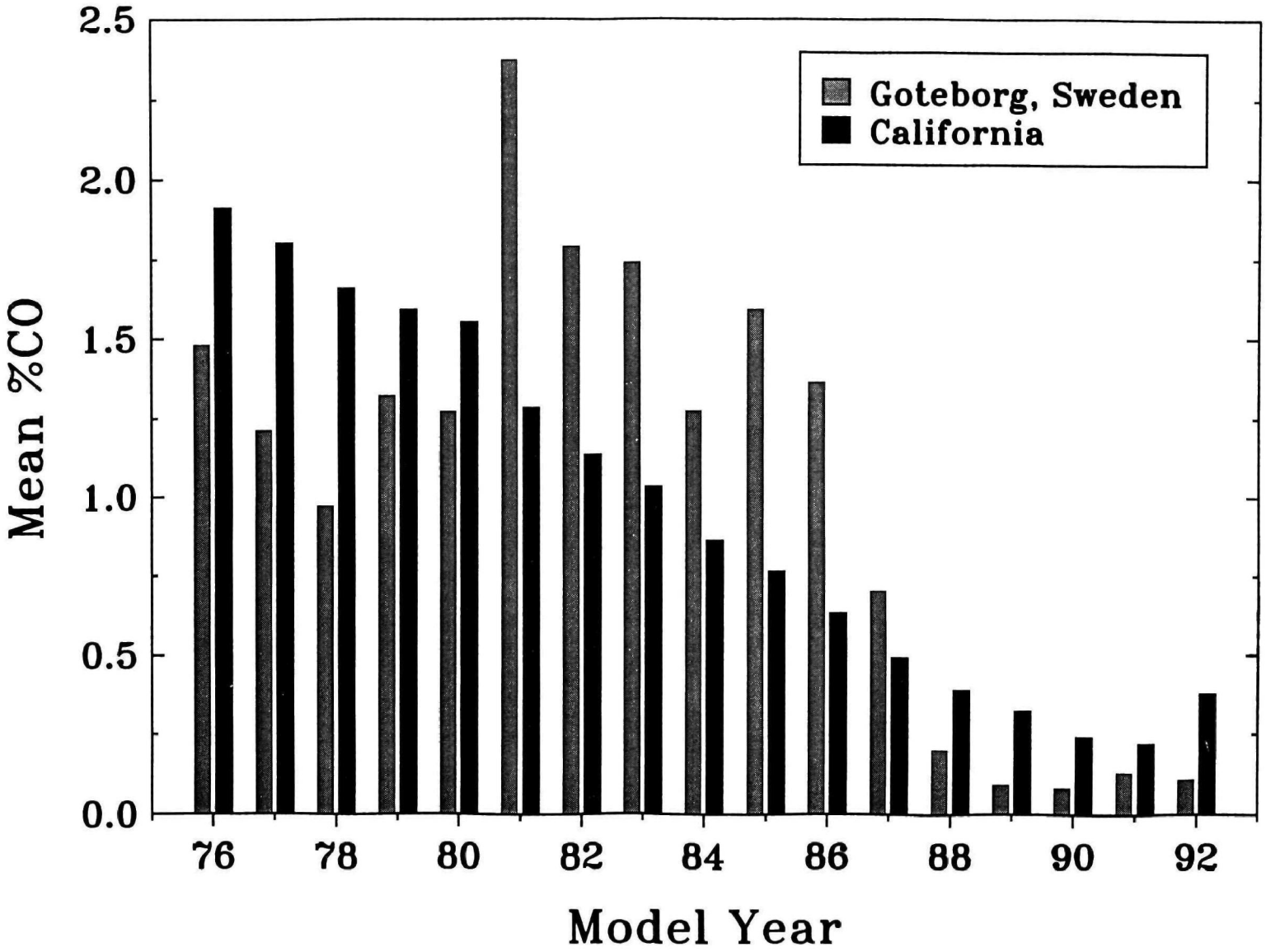
Hot/Cold car detector


Denver, CO. 1992
Vehicle Fleet
Total CO Emissions
Percent
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Percent CO Category

# Katmandu, Nepal 1993

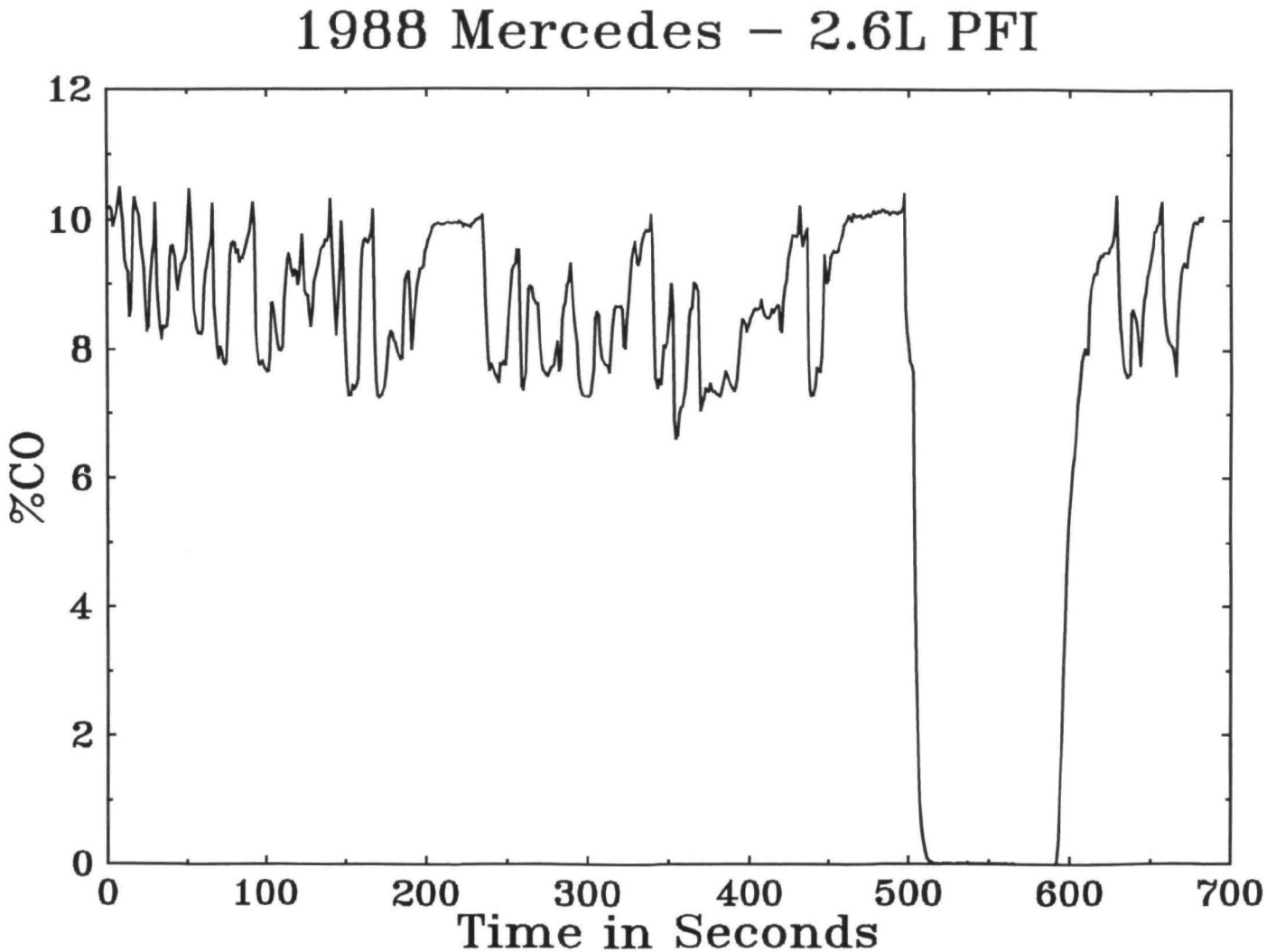


# California 1991 / Goteborg, Sweden 1990

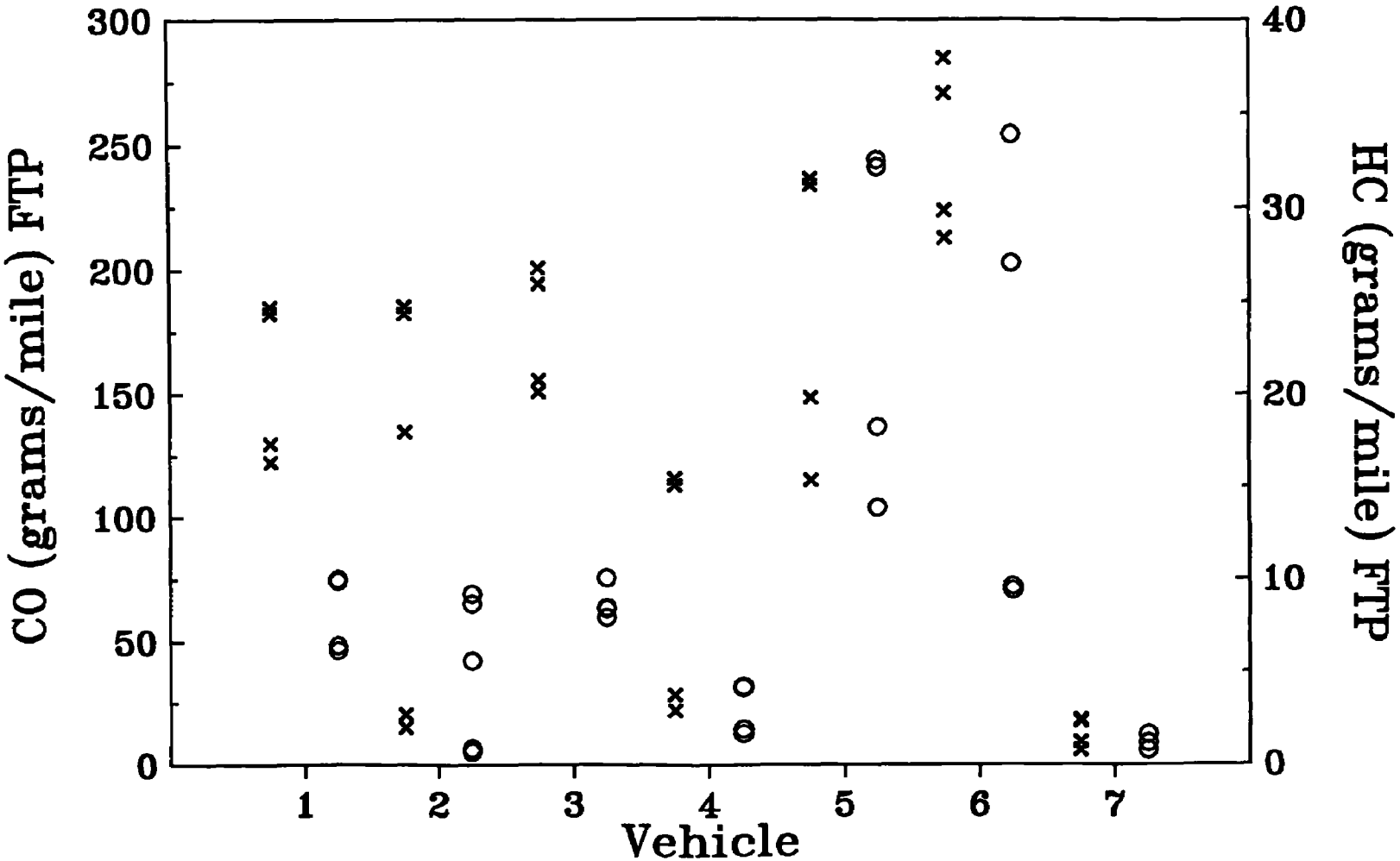


# Inspection and Maintenance Program Weaknesses

- Emphasizes testing over maintenance
- Assume all failed vehicles get repaired
- Assume vehicle emissions are invariant
- Provide no year-round deterrence against emissions component tampering
- Fairness




%CO data collected with a 4 gas analyzer from a 1988 Mercedes Benz 190E over a road course of stop-and-go/freeway driving. Low emissions are observed when presumably the oxygen sensor was functioning properly.




FTP data for CO and HC emissions from seven 1986 and newer model year high emitters. Four (or 5) separate tests on the same fuel are plotted for each vehicle for CO (x) and HC (o).

## Creating Sound Emission Standards

*James Markey*, Environmental Protection Specialist, National Vehicle & Fuel Emissions Laboratory, Office of Mobile Sources, U.S. Environmental Protection Agency;
*Glenn F. Keller*, Executive Director, Engine Manufacturers Association.

JAMES MARKEY

James Markey is an Environmental Protection Specialist in the Certification Division of U.S. EPA's Office of Mobile Sources. He has been with EPA since 1990 and his work has been focused on a review of and revisions to the Federal Test Procedure, which serves as the regulatory cornerstone of exhaust-emissions control. Prior to joining EPA, Jim was an economist with the Bureau of Labor Statistics, U.S. Department of Labor.

GLENN F. KELLER

Glenn F. Keller is Executive Director of the Engine Manufacturers Association, a not-for-profit group consisting of worldwide manufacturers of internal-combustion engines used in all applications except passenger cars and aircraft. He frequently acts as the main spokesman for the industry and is responsible for ensuring that the interests of the engine manufacturers are appropriately represented in proposed legislation and emissions regulations around the world. He joined EMA in 1987. Mr. Keller began his career with the Ford Motor Co., spending 10 years on various projects of engine design, emissions-control development, and car product planning. He was also a product-development consultant with L.B. Knight & Associates, where he developed applications and processes for advanced materials. He received his BS in mechanical engineering from the Illinois Institute of Technology and an MBA in marketing and finance from the University of Michigan.

# WILLIAM M. GUERRY, JR.
## Outline of Speech on Utility Engines
## June 21, 1995

I. CALIFORNIA REGULATIONS

II. TEXAS OPT-IN

III. FEDERAL PHASE I REGULATION

- A. Effective Date
- B. Stockpiling Restriction on Equipment Manufacturers, But No Separate Effective Date
- C. Elevated CO Standard
- D. Two-Stroke Lawnmower Exemption
- E. Two-Stroke Snowthrower Exemption
- F. No Mandatory In-Use Testing Program
- G. Equipment Manufacturers' Responsibilities
- H. No Cap on Noise

IV. REGULATORY-NEGOTIATION

- A. Technology/Standards
  1. *Technology*
  2. *New Engine Standards*
  3. *In-Use Standards*
  4. *In-Use Testing*
- B. Enforcement Remedies
- C. Evaporative Controls
- D. Voluntary Programs
  1. *Spillage*
  2. *Noise Labeling*

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AMERICAN LUNG ASSOCIATION.

# Presentation Outline

## Paul G. Billings
## June 20, 1995

## Improving the Clean Air Act : The Mobile Source Issues

- Is the air clean?
- Health studies say no
- How do we achieve clean aiir?
- Mobile
- Stationary
- Area
- Cleaner Fuels
- I/M
- Cleaner Cars
- Reduce Vehicle Use
- Political Realities
- Every program has enemies
- EPA has discovered flexibility
- States blame transport
- Congress -- 2 dozen bills to gut, repeal or delay the Clean Air Act
- Save the Act

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AMERICAN AUTOMOBILE ASSOCIATION
Bill Berman, Director

AMERICAN AUTOMOBILE MANUFACTURERS ASSOCIATION (AAMA)
Gerald A. Esper, Director, VED

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BROOKHAVEN NATIONAL LABORATORY
Jeffrey Williams, Project Engineer

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COMSIS CORP.
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GEORGIA DEPT. OF TRANSPORTATION
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GREENGAS OF AMERICA
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MARYLAND DEPT. OF TRANSPORTATION
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Sandra A. Uphill, Counsel

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NATIONAL PRIVATE TRUCK COUNCIL
Earl Eisenhart, Vice President, Policy & Government Affairs

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WISCONSIN DOT DIVISION OF PLANNING
Lynne B. Judd, Chief, Environmental Strategies

# Creating Sound Emission Standards

James P. Markey
National Vehicle and Fuel
Emissions Laboratory
Office of Mobile Sources, U.S. EPA

The Mobile Source Issues Conference
June 20, 1995

# The FTP Review Project: A Case Study

I. Steps to a sound regulation

II. Cooperative research: lessons learned

III. Inventory-regulatory feedback

# I. Steps to a Sound Regulation

- Identifying the problem
- Understanding the problem
- Solving the problem

# Identifying Problems with the Federal Test Procedure

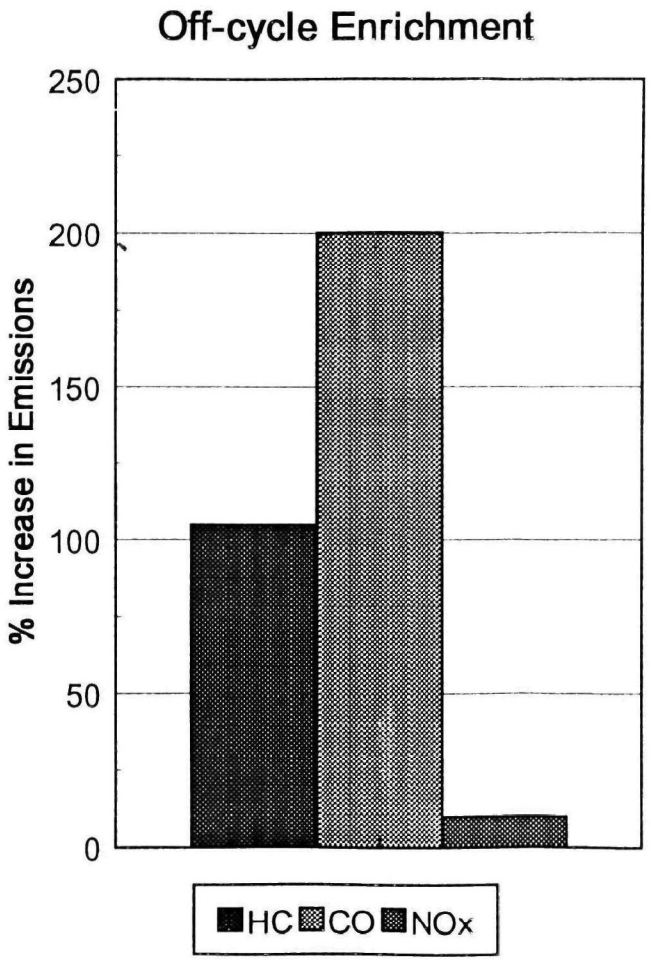
- CAAA required EPA to:
  "review and revise as necessary...to insure that vehicles are tested under circumstances which reflect actual current driving conditions..."

- Complete work in 18 months

# Identifying the Problem… What We Thought was Wrong

- Potential concerns:
  - Speeds and accels
  - Road grade (none)
  - Air conditioning
  - Vehicle loading
  - Start/soak

# Pitfalls of Making the Quick Call




- Dooley's Aphorism: "It wasn't what we didn't know that hurt us, it's what we knew for sure that turned out to be wrong."
- Acceleration test considered as a quick fix

**Time is a key ingredient of sound science**

# Understanding the Problem... Non-FTP Operation and Emissions

- In-use Driving Surveys
  - Four U.S. cities employing two survey techniques
  - Air-conditioning usage study
- Emission Test Programs
  - EPA and ARB testing
  - AAMA/AIAM sponsored multiple test programs by in cooperation with EPA and ARB

# Solving the Problem... Considerations in Revising the FTP

- Test Procedures
  - Representing the real world in a test cell
  - External constraints (CAFE)
- Standard setting
  - Evaluating benefits and costs
- Implementation
  - Lead time considerations

# Solving the Problem... Proposed Revisions to the FTP

- Aggressive Driving
  - Taking into account differences in vehicles and drivers
- Air Conditioning
  - What is a "good" simulation?
  - Creating incentives for in-use control
- Intermediate Soaks
  - Balancing getting control today against expected control (Tier II) in the future

# II. Cooperative Research

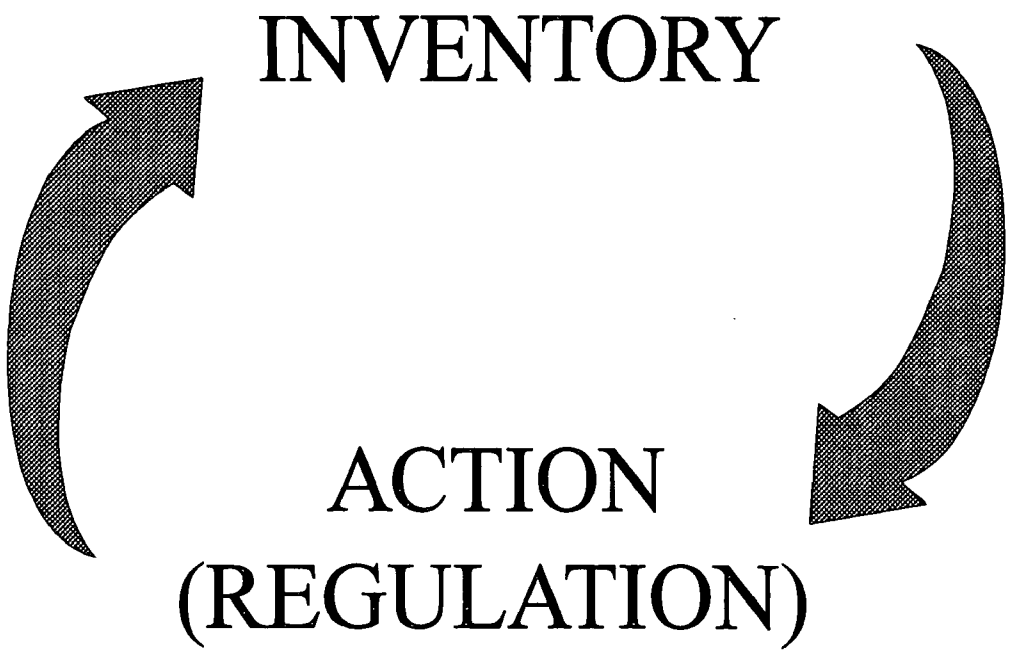
## PRO:

- Leverage human and financial resources
- Coordinate agencies' regulatory actions
- Minimize conflicts by working with common database

## CON:

- Differing agendas and priorities
- Limiting the scope of research

# III. The Importance of the Feedback System



# The Mobile Source Emission Inventory...

- Purpose:
  - Tells us what we have
  - Where it comes from
  - Starting point for modeling future inventories
- Uses:
  - Identifies areas of concerns
  - Tool for evaluating regulatory impact
  - Critical input to SIP/FIP

# Inventory Improvement Efforts

- Ongoing revisions to MOBILE model
  - MOBILE5b to be released this summer
    - Incorporates effects of recent rules
  - Major review/revision due in early FY97
- Emission Inventory Improvement Program
  - Partnership with STAPPA/ALAPCO
  - Improve inventory guidance
- NARSTO
  - Enhance understanding of ozone formation
  - Develop tools for future inventory models

# In Summary...

- Sound regulations demand sound science
- Resources for sound science through partnering research with stakeholders
- Ongoing need to enhance inventory feedback system

Conference on Improving the Clean Air Act: The Mobile Source Issues

Arlington, VA June 20-21, 1995

# Creating High Performance Regulations

ema

GLENN F. KELLER
Engine Manufacturers Association

# Regulatory Environment

- Regulation Pervasive Throughout Industry
- Integral Facet of Product Design
- Clean-Sheet Approaches

# Scope of Regulation

- Emission Standards
- Certification Procedures
- Production Audit Testing
- In-Use Compliance

# Re-Invention of Regulation

- Clean-Sheet Approaches
- Foster A Partnership Relationship With Industry

# Attributes of a Partnership

- Mutual Objectives
- Mutual Cooperation
- Mutual Trust

# Partnership: OBJECTIVES

- Cost-Effective Control Measures
- Incentivize Advanced Technology

# Partnership: COOPERATION

- Feasibility > Leadtime > Stability
- Uniformity of Regulation

# Uniformity of Regulation

- Same Requirements in Every State
- Broad Interpretation of Preemption
- Worldwide Harmonization

# Partnership: TRUST

- Reduce Overkill Approaches
- Mutual Responsibility for Enforcement

# Mutual Responsibility for Enforcement

- Manufacturer Self-Certification
- Quality of Production Audit
- Cooperatively Monitor In-Use Compliance

# Closing Points

- Reasonableness
- Foster Mutual Trust
- Eliminate "What If" Safeguards

**Keynote Presentation -- Employee Commute Options**

*Hon. Donald Manzullo*, Republican of Illinois, U.S. House of Representatives.

HON. DONALD MANZULLO

Hon. Donald Manzullo is the Republican Representative of the 16th Congressional District of Illinois. He was first elected to the 103rd Congress and was re-elected in November 1994 with 71% of the vote. As a ranking member of the House Small Business Committee, Congressman Manzullo is Chairman of the Subcommittee on Procurement, Exports & Business Opportunities. He is Vice Chairman of the Subcommittee on International Economic Policy, Trade & The Environment of the International Relations Committee. He also leads the Subcommittee on Asia Narcotics Working Group and serves on the Joint Economic Committee. He received a BA from American University and a JD from Marquette University.

**"Pursuing Reasonable Alternatives to Car Pool Mandates"**
**by**
**U.S. Representative Don Manzullo**
**Illinois - 16th District**

The U.S. House of Representatives is moving closer to resolving a problem facing the people of Chicago and its rural collar counties. The Employer Trip Reduction requirements of the 1990 Clean Air Act, also known as the Employee Commute Option, has been under fire from businesses, state and local governments for some time. The law would require any employer, including municipal and state governments, school districts, retailers, health care facilities, and manufacturers with 100 or more people working in severe or extreme nonattainment areas to file plans with the states demonstrating a twenty-five percent decrease in the number of people driving to work. This mandate currently affects eleven states and fourteen metropolitan areas. For the past year and a half, my office has been working with the EPA on this issue. However, we have gone as far as we can in pursuit of an administrative rule change. Now we must pursue a legislative alternative.

We all want clean air. There is absolutely no disagreement on that issue. As part of the goal to guarantee clean, healthy air for ourselves and our children, we must also keep in mind that the federal government has a responsibility to apply solutions that work and eliminate those programs that are ineffective and/or stand to cripple local economic development. The Employee Commute Option (ECO) will cost Chicago area employers $200 million annually. Unfortunately, even if the mandate is fulfilled to the letter of the law, air quality improvement would be less than one percent - an improvement Assistant EPA Administrator for Air and Radiation Mary Nichols has called "minuscule."

We must realize that ECO mandates have never worked. In California, where car pooling mandates have been in place for some time, the South Coast Air Quality

Management District is currently trying to find a way to eliminate their ECO requirements because they haven't worked.

There are also many systematic problems with car pooling laws. For example, under the ECO, a high school student will be able to drive to school while perhaps his mother or father can't drive to work. A student will be able to drive while his teachers can't. Nothing about the ECO makes sense; nor has it been effective.

So what this leaves us with is a costly, paper-pushing exercise for area employers who are already meeting trip reduction goals and an impossible mandate for rural employers to meet. In this country, government has a history of passing regulations, albeit with the best of intentions, and then doing nothing to change them when they are proven to be ineffectual.

At the moment, the U.S. House of Representatives is considering legislation that I have introduced to truly make employee commuting an option. My legislation will allow states to decide if they want car pooling to be part of their clean air plan. This **does not change the goals or standards of the Clean Air Act**, but would allow states to develop clean air controls that are bust suited to their circumstances.

In February, 1994, the results of an ECO demonstration project was released by Chicago Area Transportation Survey (CATS) that showed where good alternatives to driving were already in place, like Chicago's extensive public transportation system, tremendous trip reduction has already been established. Out in McHenry County, however, participants failed to meet the ECO standards even though they aggressively pursued van pooling and car pooling programs.

In April, 1995, the EPA held ECO working group meetings in Washington and Chicago. At these meetings, panelist heard from many employers including the Sears and the City of Chicago who exemplify the proper way to pursue trip reductions on a voluntary basis. For employers who have the resources to provide trip reducing alternatives and can educate their employees as to the benefits of trip reduction, ECO has a practical and positive application. Recently, the State of Illinois introduced a proactive, voluntary program (Partners For Clean Air) designed to educate and assist businesses in finding ways to reduce the number of single passenger trips. This is exactly the type of approach that we should be pursuing.

The Clean Air Act was passed to monitor **trends** in air quality, primarily around large U.S. metropolitan areas. The Employee Commute Option should be a tool used to facilitate reaching national air quality goals. It should not be a club that unfairly mandates costly paperwork and places unnecessary hardships on rural employers. Remember, the most successful environmental program in the United States - recycling - has no federal mandate.

**- END -**

***U.S. Representative Don Manzullo (R-Egan) represents the 16th District of Illinois. Congressman Manzullo serves as Chairman of the House Small Business Subcommittee on Procurement, Exports, and Business Opportunities. He also serves as Vice Chairman of the House International Relations Subcommittee on International Economic Policy and Trade and the Subcommittee on Asia. Rep. Manzullo is a member of the Joint Economic Committee.***

104TH CONGRESS
1ST SESSION

# H. R. 325

To amend the Clean Air Act to provide for an optional provision for the reduction of work-related vehicle trips and miles travelled in ozone nonattainment areas designated as severe, and for other purposes.

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IN THE HOUSE OF REPRESENTATIVES

JANUARY 4, 1995

Mr. MANZULLO (for himself, Mr. ARCHER, Mr. BARTLETT of Maryland, Mr. CRANE, Mr. CUNNINGHAM, Mr. FAWELL, Mr. HASTERT, Mr. HOEKSTRA, Mr. HUNTER, Mr. HYDE, Mr. KLINK, Mr. KNOLLENBERG, Mr. SAXTON, Mr. SMITH of New Jersey, Mr. SMITH of Texas, Mr. WALKER, Mr. WELDON of Pennsylvania, Mr. WILSON, and Mr. ROHRABACHER) introduced the following bill; which was referred to the Committee on Commerce

---

# A BILL

To amend the Clean Air Act to provide for an optional provision for the reduction of work-related vehicle trips and miles travelled in ozone nonattainment areas designated as severe, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. OPTIONAL EMPLOYER MANDATED TRIP REDUCTION.**

Section 182(d)(1)(b) of the Clean Air Act is amended by to read as follows:

"(B) The State may also, in its discretion, submit a revision at any time requiring employers in such area to implement programs to reduce work-related vehicle trips and miles traveled by employees. Such revision shall be developed in accordance with guidance issued by the Administrator pursuant to section 108(f) and may require that employers in such area increase average passenger occupancy per vehicle in commuting trips between home and the workplace during peak travel periods. The guidance of the Administrator may specify average vehicle occupancy rates which vary for locations within a nonattainment area (suburban, center city, business district) or among nonattainment areas reflecting existing occupancy rates and the availability of high occupancy modes. The revision may require employers subject to a vehicle occupancy requirement to submit a compliance plan to demonstrate compliance with the requirements of this paragraph.".

O

## Employer Trip Reduction -- Benefit or Burden?

*Constance H. Ruth*, Environmental Protection Specialist, National Vehicle & Fuel Emissions Laboratory, Office of Mobile Sources, U.S. Environmental Protection Agency;
*C. Kenneth Orski*, Founder and President, Urban Mobility Corp.

CONSTANCE H. RUTH

Constance H. Ruth is an Environmental Protection Specialist with U.S. EPA's National Vehicle & Fuel Emissions Laboratory in Ann Arbor, MI. She has been working with EPA since 1990, focusing on the employee commute options (ECO) program since its inception. Before joining EPA, she worked at the University of Michigan. Ms. Ruth has a BS and MS in natural resources from the School of Natural Resources & Environment at the University of Michigan.

C. KENNETH ORSKI

C. Kenneth Orski is Founder and President of the Urban Mobility Corporation, a Washington, DC-based consulting firm specializing in transportation management. He heads the Mobility Coalition for Clean Air, an alliance of employers, business organizations, and transportation-management associations coordinating a nationwide campaign to seek repeal of the mandatory employee commute option (ECO) requirement of the Clean Air Act. In 1993, he was appointed to the South Coast Air Quality Management District's Rule 1501 Task Force that overhauled southern California's ECO regulation. Mr. Orski served as Associate Administrator of the Urban Mass Transportation Administration in the Nixon and Ford Administrations and, prior to that, as Director of Urban Affairs & Transportation at the Paris-based OECD. He currently serves as a member of the Maryland DOT Transportation Advisory Committee, Vice Chairman of the Institute of Transportation Engineers' Travel Demand Management Council, and a member of the Technical Council of the Intelligent Transportation Society of America. He is a graduate of Harvard College and Harvard Law School.

# The Employee Commute Options (ECO) Program

**What is the Employee Commute Options (ECO) Program?**

The ECO program is an innovative effort to get large employers (of 100 or more employees at a single work site) in the areas around the U.S. with the worst air pollution to find ways to reduce the number of their employees who drive to work alone.

**What is the Object of ECO?**

The program's purpose is to reduce solo-driving and promote alternative transportation modes in order to reduce air pollution. Congress included the program in the Clean Air Act Amendments of 1990 as a way to improve air quality, mitigate the buildup of greenhouse gases, and respond to increasing congestion. The ECO program represents an important first step in the long-term role trip reduction can play in addressing these problems.

**Why Does this Program Focus on Reducing Trips?**

Cars and light trucks are a major source of the pollutants that form ozone, the major component of smog. Smog has proven to be the most intractable urban area air pollution problem. In addition, cars emit greenhouse gases and pollutants that are directly hazardous to human health. Most reductions in vehicle emissions since 1970 have come from tailpipe standards that have required auto-makers to produce cleaner vehicles. As new cars have replaced older, dirtier models, the average vehicle's tailpipe emissions per mile have decreased. However, growth in the total number of miles driven is now outpacing these improvements in emission control technology. The ECO program addresses this trend of ever increasing vehicles miles travelled.

**How Does the Program Work?**

The Clean Air Act requires that States (and Air Districts in California) develop and implement ECO programs. These programs must require large employers to develop and implement a plan that encourages employees to commute to work without driving alone. Employers can select the appropriate strategies for each worksite to reduce commuting trips and increase vehicle occupancy.

Some of the incentives an employer may consider as a means of increasing vehicle occupancy include: promoting and subsidizing carpooling, vanpooling, transit, walking and bicycling to work; permitting telecommuting from home and compressed work weeks; providing preferential parking for carpools and vanpools; and offering the cash equivalent of employer paid parking.

**Where is ECO Required?**

ECO is required in severe and extreme ozone nonattainment areas and serious carbon monoxide nonattainment areas. Currently, ECO is required in the following areas:

- Baltimore
- Chicago
- Houston/Galveston/Brazoria
- Los Angeles
- Milwaukee
- NY/NJ/CT metro area
- Philadelphia/Wilmington/Trenton
- Mohave Desert, CA
- Ventura County, CA

# UNITED STATES CODE

## 1988 EDITION

## SUPPLEMENT IV

CONTAINING THE GENERAL AND PERMANENT LAWS OF
THE UNITED STATES, ENACTED DURING THE
101ST CONGRESS AND 102D CONGRESS

Prepared and published under authority of Title 2, U.S. Code, Section 285b,
by the Office of the Law Revision Counsel of the House of Representatives

JANUARY 3, 1989, TO JANUARY 4, 1993

VOLUME SIX

TITLE 42—THE PUBLIC HEALTH AND WELFARE

§§ 1-9800

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1993

State should ensure adequate access to downtown, other commercial, and residential areas and should avoid measures that increase or relocate emissions and congestion rather than reduce them.

"(B) Within 2 years after November 15, 1990, the State shall submit a revision requiring employers in such area to implement programs to reduce work-related vehicle trips and miles traveled by employees. Such revision shall be developed in accordance with guidance issued by the Administrator pursuant to section 7408(f) of this title and shall, at a minimum, require that each employer of 100 or more persons in such area increase average passenger occupancy per vehicle in commuting trips between home and the workplace during peak travel periods by not less than 25 percent above the average vehicle occupancy for all such trips in the area at the time the revision is submitted. The guidance of the Administrator may specify average vehicle occupancy rates which vary for locations within a nonattainment area (suburban, center city, business district) or among nonattainment areas reflecting existing occupancy rates and the availability of high occupancy modes. The revision shall provide that each employer subject to a vehicle occupancy requirement shall submit a compliance plan within 2 years after the date the revision is submitted which shall convincingly demonstrate compliance with the requirements of this paragraph not later than 4 years after such date.

"(2) Offset requirement

For purposes of satisfying the offset requirements pursuant to this part, the ratio of total emission reductions of VOCs to total increased emissions of such air pollutant shall be at least 1.3 to 1, except that if the State plan requires all existing major sources in the nonattainment area to use best available control technology (as defined in section 7479(3) of this title) for the control of volatile organic compounds, the ratio shall be at least 1.2 to 1.

"(3) Enforcement under section 7511d

By December 31, 2000, the State shall submit a plan revision which includes the provisions required under section 7511d of this title.

Any reference to the term "attainment date" in subsection (b) or (c) of this section, which is incorporated by reference into this subsection (d), shall refer to the attainment date for Severe Areas.

"(e) Extreme Areas

Each State in which all or part of an Extreme Area is located shall, with respect to the Extreme Area, make the submissions described under subsection (d) of this section (relating to Severe Areas), and shall also submit the revisions to the applicable implementation plan (including the plan items) described under this subsection. The provisions of clause (ii) of subsection (c)(2)(B) of this section (relating to reductions of less than 3 percent), the provisions of paragaphs [1] (6), (7) and (8) of subsection (c) of this section (relating to de minimus rule and modification of sources), and the provisions of clause (ii) of subsection (b)(1)(A) of this section (relating to reductions of less than 15 percent) shall not apply in the case of an Extreme Area. For any Extreme Area, the terms 'major source' and "major stationary source" includes (in addition to the sources described in section 7602 of this title) any stationary source or group of sources located within a contiguous area and under common control that emits or has the potential to emit, at least 10 tons per year of volatile organic compounds.

"(1) Offset requirement

For purposes of satisfying the offset requirements pursuant to this part, the ratio of total emission reductions of VOCs to total increased emissions of such air pollutant shall be at least 1.5 to 1, except that if the State plan requires all existing major sources in the nonattainment area to use best available control technology (as defined in section 7479(3) of this title) for the control of volatile organic compounds, the ratio shall be at least 1.2 to 1.

"(2) Modifications

Any change (as described in section 7411(a)(4) of this title) at a major stationary source which results in any increase in emissions from any discrete operation, unit, or other pollutant emitting activity at the source shall be considered a modification for purposes of section 7502(c)(5) of this title and section 7503(a) of this title, except that for purposes of complying with the offset requirement pursuant to section 7503(a)(1) of this title, any such increase shall not be considered a modification if the owner or operator of the source elects to offset the increase by a greater reduction in emissions of the air pollutant concerned from other discrete operations, units, or activities within the source at an internal offset ratio of at least 1.3 to 1. The offset requirements of this part shall not be applicable in Extreme Areas to a modification of an existing source if such modification consists of installation of equipment required to comply with the applicable implementation plan, permit, or this chapter.

"(3) Use of clean fuels or advanced control technology

For Extreme Areas, a plan revision shall be submitted within 3 years after November 15, 1990, to require, effective 8 years after November 15, 1990, that each new, modified, and existing electric utility and industrial and commercial boiler which emits more than 25 tons per year of oxides of nitrogen—

(A) burn as its primary fuel natural gas, methanol, or ethanol (or a comparably low polluting fuel), or

(B) use advanced control technology (such as catalytic control technology or other comparably effective control methods) for reduction of emissions of oxides of nitrogen.

[1] So in original. Probably should be "paragraphs".

## *ECO Status Sheet* *(For the latest status, contact each state or air district directly)*

| STATE | AREA/ DISTRICT | NONATTAINMENT STATUS | PROPOSED APPROVAL | SIP APPROVED | LEAD AGENCY | PROGRAM APPROACH |
|---|---|---|---|---|---|---|
| CA | Los Angeles | Extreme for Ozone Serious for CO | | Y | SCAQMD | Plan review |
| CA | Ventura Co. | Severe for Ozone | | | VCAPCD | 1) Plan review or 2) Performance standard |
| CA | S. East Desert | Severe for Ozone | | | MDAQMD | Plan review |
| CT | NY/NJ | Severe for Ozone | Y | | Conn DOT | Plan review |
| DE | Philadelphia | Severe for Ozone | | | Del DOT | Plan review with performance standard |
| IN | Chicago | Severe for Ozone | | Y | IDEM | Plan review |
| IL | Chicago | Severe for Ozone | Y | | IDOT | Intended to have seasonal program with 4/1/95 notification |
| MD | Balt./Phil. | Severe for Ozone | | | MDE | Plan review with performance standard |
| NJ | NY/Phil. | Severe for Ozone | Y | | NJ DOT | Plan review with performance standard. |
| NY | NY/NJ | Severe for Ozone | | | NY DOT | Plan review |
| PA | Philadelphia | Severe for Ozone | | | PA DER | Performance standard |
| TX | Houston | Severe for Ozone | | Y | TNRCC | Performance standard |
| WI | Milwaukee | Severe for Ozone | | Y | WIS DNR | Plan review |

# Employee Commute Options (ECO)
# Questions and Answers

**What is the Employee Commute Options (ECO) Program?**

- The Clean Air Act requires employers with 100+ employees at a worksite in 9 regions of the country to implement programs to reduce solo driving among their employees[1]. The program is sometimes referred to as the Employer Trip Reduction (ETR) Program.

**What is the object of this program?**

- The intent of the provision is to reduce solo driving and promote alternative modes of transportation in order to reduce pollutants in the air that affect people's health. The provision will help reduce traffic congestion as well.

**Why was this provision included in the Clean Air Act?**

- Congress included the ECO provision in the Clean Air Act because even as cars are getting cleaner, people are driving more. As a result, the benefits achieved through technological improvements are being undermined by growth in total vehicle miles travelled. Congress felt that there was a need to address how people travel as part of the solution to cleaning the air and reducing traffic congestion.

**Where is ECO required?**

- ECO is required in severe and extreme ozone nonattainment areas and serious CO nonattainment areas.

- Baltimore
- Houston/Galveston/Brazoria
- NY/NJ/CT metro area
- Phila./Wilmington/Trenton
- S.E. Desert Modified AQMA (Mohave)
- Los Angeles
- Milwaukee
- Chicago
- Ventura County

11 States are affected:

- California
- Connecticut
- Delaware
- Illinois
- Indiana
- Maryland
- New Jersey
- New York
- Pennsylvania
- Texas
- Wisconsin

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[1] 42 USC 7511a(d) (1) (B)

**How many employers and employees are affected by the ECO program?**

- Approximately 25,000 employers

- Roughly 9 million employees

**What is required of employers?**

- Employers subject to the provision will need to determine their Average Passenger Occupancy (APO) by surveying their employees over a week-long period to determine how they report to work between 6am and 10am[2].

- In most areas, employers will submit detailed compliance plans for review by the State that are designed to meet the target Average Passenger Occupancy (APO) determined by the State (or Air District in California). Potential strategies include: promoting and subsidizing carpooling, vanpooling, transit, walking and bicycle riding to work; allowing for telecommuting from home and compressed work weeks; providing preferential parking for carpools & vanpools; guaranteed ride home programs; and parking cash out[3].

- A state may choose to increase the flexibility of its program by adopting a regional approach that would allow the state to submit one compliance plan on behalf of all employers. In this situation individual employers would not necessarily have to survey their employees. It is state regulation that will determine what is required of employers in each state. The employer obligation will depend on what the state regulation requires. EPA has given States tremendous flexibility and latitude to implement the ECO program in a flexible and common sense manner.

**What is the target APO?**

- The target Average Passenger Occupancy (APO) is 25% above the Average Vehicle Occupancy (AVO) for the nonattainment area.[4] If a nonattainment area is divided into zones, then the target is a 25% increase above the AVO for each zone.

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[2]The APO is determined by dividing the number of employees reporting to the worksite during the morning commute by the number of vehicles in which they arrive. A carpooler's vehicle count is proportional to the number of riders in the carpool (1/2, 1/3, 1/4 etc.) Employees who walk, bicycle, ride transit or telecommute from home count as arriving in zero vehicles.

[3]An employer offers to provide a cash allowance to an employee equivalent to the parking subsidy that the employer would otherwise pay to provide the employee with a parking space.

[4]The baseline AVO is calculated by dividing all commuters in the nonattainment area during the 6-10 am peak period by the number vehicles in which they commute.

- A few States have a larger than 25% increase required of some employers and a less than 25% increase required of others such that the overall 25% increase for the nonattainment area is met.

- Most areas have a program that requires employers to submit compliance plans for approval that are designed to meet the target APO. An employer that fails to meet the target APO should not receive a penalty if the compliance plan was submitted, approved, and implemented on schedule.

- Some areas have adopted a performance standard approach requiring employers to meet the target APO. Areas that have this approach have a good faith effort policy such that employers who do not meet the target may demonstrate a good faith effort to reach the target and thereby not be penalized for failing to meet the target.

**Will an employer already at or above the target APO need to increase any further?**

No, except in Maryland where an upper level cap protects employers with high APOs.

**What approaches are States using in their ECO programs?**

EPA Guidance outlined four options that States could use for their ECO programs. Areas adopting the approach are indicated.[5]

- The "intensive plan review" approach is based on a plan-by-plan review that ensures each plan will "convincingly demonstrate" that the target will be met. (Ventura County, L.A., WI, IL, IN, NY, CT, DE, MD)

- The "set of minimum measures" approach lays out a set of strategies required for employers. (No states opted for this approach.)

- The contingency plan approach requires each employer that fails to meet the target to implement a stringent set of strategies. (No states opted for this approach.)

- The performance standard approach requires employers to meet the target APO or be subject to penalties. The areas adopting this approach have a good faith effort policy. (TX, NJ, PA, DE, MD, & Ventura County)

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[5]In some areas employers may choose between two approaches.

**When will employers begin the program?**

- Many of the states have already received or will begin to receive compliance plans from employers during 1995. Some will begin implementation later. Contact each state directly for its implementation schedule.

**What is the status of the ECO program?**

- Over 16,000 employer plans have been submitted.

- All 13 ECO State Implementation Plans (SIPS) due to EPA have been submitted and found complete by EPA.

- EPA has approved 4 SIPs. (IN, TX, WI, and the Greater Los Angeles area) Three proposals to approve SIPs have been made by EPA. (CT, IL, & NJ) .

- Some states have suspended their programs for a time. These include IL, PA, MD and TX.) By working together with states in a problem-solving mode, EPA is optimistic that the issues that have led to controversy in some areas can be resolved through a constructive dialogue.

**What agencies are implementing this program?**

- 9 State Air agencies (or Air Districts in California) (Ventura, L.A., Southeast Desert, TX, WI, IN, MD & PA)

- 5 State DOTs (IL, NJ, CT, NY & DE)

**What will be the impact of the ECO program on employees?**

- Employees will be provided options by employers such as subsidies for transit (where it is available); ride-matching services for carpooling; opportunities to telecommute or to work a compressed work week; guaranteed rides home in the case of emergency, preferential parking for carpools and vanpools and cash as an option in the place of parking provided by the employer as a benefit. Employees may elect to participate or not participate in any program offered by employers.

**What is the best way to know what is happening in each State or area regarding ECO?**

- Officials in each State or Air District should be contacted directly to obtain the latest information regarding the ECO program.

## The Employee Commute Options (ECO) Program in Practice

### ECO – Part of a national effort to clean the air

The Clean Air Act calls on many industries and sectors of society to contribute to cleaning the air across America. As a result of these contributions, the United States is making progress toward the fundamental goal of the Act -- clean and healthy air for all Americans.

One of the main reasons for continuing urban air pollution problems is a rapid increase in the number of miles being traveled by cars and light trucks. These increases threaten to overwhelm progress toward clean air that is occurring as older, dirtier vehicles are replaced by newer, cleaner ones.

As an important first step toward slowing the increase in miles driven, Congress created the Employee Commute Options (ECO) program in the Clean Air Act Amendments of 1990. In the metropolitan areas with the worst ozone or carbon monoxide pollution, large employers are required to implement programs that encourage their employees to commute by methods other than driving alone. Requirements apply only to employers that have 100 or more employees at a work site.

Currently, nine metropolitan areas are affected:

- Baltimore
- Houston/Galveston/Brazoria
- Milwaukee
- Philadelphia/Wilmington/Trenton
- Mohave Desert, CA
- Los Angeles
- NY/NJ/CT metro area
- Ventura County, CA
- Chicago

Employer programs must be designed to achieve a target ridership level. Generally, plans must be designed to increase the average number of riders in vehicles driven to work by 25% over the average for their area prior to ECO. Employers are free to use any trip reduction incentives they choose, and to tailor those incentives to their particular work site. Examples of incentives include compressed work schedules, the option of cash rather than a free parking space, transit pass subsidies, ride-matching services for carpooling, and guaranteed rides home for carpoolers in case of emergency.

As part of its Climate Change Action Plan, the Clinton Administration is promoting "parking cash-out" legislation that would eliminate the need for employers to pay taxes on cash provided to employees in place of employer-paid parking. Some employers may find that this strategy -- offering employees the option of cash rather than a free parking space -- would allow them to meet their ECO requirements with little if any additional expense.

### ECO – Reducing air pollution and traffic congestion

The ECO program will:

- Reduce traffic congestion. Traffic congestion wastes time that commuters could spend on the job or with their families, and decreases worker productivity by increasing their levels of

stress and fatigue.

- Cut motor vehicle emissions, reducing health threats from smog and carbon monoxide. Ozone can cause reduced lung function and other respiratory problems and may lead to chronic lung diseases. Low levels of carbon monoxide can aggravate angina pectoris, a cardiovascular disease, and may hinder prenatal mental and physical development.

- Cut emissions of greenhouse gases that contribute to global warming.

- Promote use of public transit and provide incentives for employers and transportation agencies to work together on regional solutions to transportation problems.

**ECO is being implemented**

The states are actively implementing the program. All thirteen of the required ECO regulations are in place. (Some of the nine metropolitan areas subject to ECO are in more than one political jurisdiction.) In most areas, employers either submitted plans in 1994 or will submit them in 1995. Many employers already are implementing their ECO plans.

**ECO is flexible**

EPA is committed to flexible implementation of the ECO program. The Agency has worked closely with state and local air and transportation officials to fashion the program with that principle in mind. As a result, state and local agencies have substantial discretion to design and implement their ECO programs, and employers have many options for achieving ECO's goals. For example:

- States can set differing ridership targets for employers in different parts of a nonattainment area -- for example, downtown and suburban areas. New York, Pennsylvania, and Texas have taken advantage of this flexibility.

- States can allow employers to reach ECO ridership targets by averaging among different work sites, or by obtaining credits from other employers who achieve greater-than-required trip reductions.

- State ECO programs can protect employers from receiving penalties if they fail to meet trip reduction goals when a good-faith effort has been demonstrated. Employers who fail to meet the ridership goal may be required to take additional steps to encourage alternatives to solo driving.

- States may allow credit for employees arriving in clean-fuel vehicles.

Recently, EPA has adopted other policies that add to the program's flexibility. For example:

- A state may establish a regional trip-reduction program as a means of meeting the ECO requirement. A state may demonstrate that the regional program would produce trip reductions equivalent to those from a successful ECO program, and employers would not be

required to submit individual plans. An example of such a program would be parking cash-out on a regional level. At little or no additional cost to employers, employees would be offered the option of cash rather than employer-paid parking.

- States may approve employer plans that include subsidies to employees -- for example, subsidies for transit or ridesharing -- that are applied only during the season of high pollution levels. As a result, employers may focus a significant portion of their ECO resources on the time of year when air pollution levels most warrant trip reduction efforts.

- States may allow employers credit for reducing delivery and other work-related trips during the peak commuting period.

- States may allow credit for employees who travel to a satellite work center rather than a main worksite located farther from home.

- States may accept credit for children dropped off at daycare. For example, an employee who drops two children off at daycare en route to a worksite will be counted as arriving in 1/3 of a vehicle.

**Commute option incentives -- Working for employers**

Some employers are implementing trip reduction strategies solely because it makes good business sense. For example:

- A large oil company in Houston for a decade has used commute options incentives as a way to recruit and retain employees. The company has succeeded in getting 87 percent of its 1,500 employees to find alternatives to solo driving. The company provides transportation subsidies and parking-cost reductions for carpoolers.

- In Atlantic County, NJ, one employer investigated telecommuting as a means of meeting ECO requirements. The company subsequently found it was not subject to ECO requirements, but decided to implement telecommuting anyway for business reasons.

Commute options incentives sometimes offer the opportunity for firms to save money. For example, a California employer was able to avoid building a $1 million parking garage by implementing trip reduction measures instead.

**Commute option incentives -- Working for employees**

ECO can benefit employees by providing them with new commute options and incentives. Many of these incentives -- such as compressed work weeks, transit pass subsidies, or parking cost reductions for carpoolers -- constitute benefits to employees. ECO will encourage some employers to offer employees greater flexibility in their work schedules.

Employees remain free to accept or reject these incentives. There is nothing in the Clean Air Act that would force an employee to change commuting habits.

ECO commuting options will give some workers -- especially those in multi-car families -- the choice of selling a car used primarily for commuting. The result could be a savings of up to $6,000 a year in auto ownership and operating costs.

Commuting options also can help workers reconcile the demands of work and family. Connecticut officials report that many employers are exploring telecommuting and compressed work-week programs to solve work/family challenges and commuting problems.

**Employer-based programs -- ECO works for employers**

The following examples of employer trip reduction programs are cited by a contractor study for the Federal Highway Administration[1]:

- At GEICO headquarters in Friendship Heights, Md., 20 percent of employees rideshare, 31 percent use transit, and only 40 percent drive alone. The site is a few blocks from a regional subway station. GEICO's travel demand management plan included restricted on-site parking (1,020 spaces for 2,500 employees) and parking fees ($10 or $60) for off-site parking. The plan also included free parking and reserved spaces for carpools and vanpools, a subsidized vanpool program, and transit subsidies.

- The Ventura County Government Center in California, which has 2,700 employees at its suburban headquarters site, achieved a 13 percent decrease in vehicle trips in a five-month period. The site is not well served by public transit and abundant free parking is available. In response to a local air quality regulation, the county offered a cash incentive to employees based on the number of days they do not drive alone to work annually. Employees receive $300 annually if they use alternatives to solo driving an average of three days per week, $200 if they average two days per week. To support the program, the county offers a guaranteed ride home program, preferential parking, and bike-walk facilities.

- At Bellevue City Hall in Bellevue, Wash., transit service at the site is limited, making access dependent upon private vehicles. Yet nearly 50 percent of the employees use carpools, vanpools, transit, or other alternatives to solo driving. This represents 25 percent fewer vehicle trips than other sites in the region. The city's plan includes a $30-per-month parking charge. Free, priority parking is available to employees who carpool or vanpool at least 60 percent of the time. Employees who use commute alternatives at least 80 percent of the time receive a subsidy of $15 to $25 per month. Because parking fees are used to subsidize alternative modes, the net cost of the program to the city is zero.

**ECO -- Promoting public-private solutions to transportation problems**

In the Chicago suburbs, a transportation management association, made up of local employers, has worked jointly with local government to promote ridesharing for employees and the public at large. Computer kiosks for ride-matching were installed at little cost to participating

[1] "A Guidance Manual for Implementing Effective Employer-based Travel Demand Management Programs", November 1993, Federal Highway Administration number DOT-T-94-05.

employers using federal highway funds allocated to congestion mitigation and air quality improvement projects. Within a few months, seven vanpools and 28 carpools have been established, enabling participating employees to save thousands of dollars. The ECO program was a significant impetus for this effort.

**Update on the**
**Employee Commute Options (ECO) Program**

On March 15, 1995, Assistant Administrator Mary Nichols asked the Clean Air Act Advisory Committee (CAAAC) to form a working group to explore ways that EPA could provide additional flexibility to states implementing Employee Commute Options (ECO) programs and to recommend a range of model ECO programs that could be adapted to local areas. The CAAAC was established in accordance with the Federal Advisory Committee Act (FACA) in 1990 to advise EPA on implementation of the Clean Air Act.

The ECO Flexibilities Work Group met in person on two occasions, once in Washington, DC, and once in Chicago, and once via a conference call. One-half of the Chicago meeting was dedicated to hearing from major employers and from states or regions subject to the program. Based on these discussions, the Work Group released a draft report of its recommendations for flexibility, along with several concept papers describing alternative ECO program options, on April 26, 1995.

After discussing the Work Group's draft report at its meeting on June 1, the CAAAC's Subcommittee on Linking Energy, Transportation and Air Quality passed on to the full Committee a resolution containing its recommendations from the report. The full Committee adopted that resolution on June 2 and submitted it to EPA. The CAAAC's five recommendations are attached.

EPA is evaluating the CAAAC's recommendations, and is preparing a response that we hope to release soon. We expect to be able to offer states and employers additional flexibilities as a result of the Committee's work.

We believe that these new flexibilities, combined with those we have already identified, will provide a wide range of options that will address the concerns raised about ECO and ease its implementation. Regional programs, for example, allow states to replace individual employer requirements with regional approaches, such that employers are relieved of any potential liability. We believe that this option and the other flexibilities that are available will enable states to implement their ECO programs smoothly within the requirements of the Act.

As the only specifically required measure to address the growth in automobile travel, which threatens to overwhelm the emission reductions this country is achieving through cleaner vehicles and fuels, the ECO program is an important first step in bringing attention to this growing source of emissions and in building an infrastructure for efforts that will be useful for achieving and maintaining air quality over the long-term.

EPA continues to be committed to seeking flexibilities in the ECO program in cooperation with states. As a result of the Clean Air Act Advisory Committee's work, we believe that we will be even better able to identify ways that we can more effectively assist states in crafting ECO programs that respond to their local situations, minimize the burdens on both states and employers, and set the foundation for trip reduction efforts that will continue to provide benefits for air quality into the future.

Adopted by the full Clean Air Act Advisory Committee
on June 2, 1995 and Submitted to EPA

**RESOLUTION OF THE SUBCOMMITTEE**
**LINKING ENERGY, TRANSPORTATION AND AIR QUALITY**

This Subcommittee recommends adoption of the following five recommendations from the Report of the ECO Flexibilities Work Group, dated April 26, 1995.

1. State or Regional Plans. Allow states or regions to assume some or all of an employer's responsibility under the ECO program by implementing a state or regional trip reduction program.

2. Emissions Equivalence. Allow employers to substitute equivalent emissions reductions in lieu of submitting a plan to increase vehicle ridership.

3. Good Faith Efforts. Retain the ability of individual states to define and recognize good faith efforts as a measure of compliance with the program.

4. Credit for All Trip Reductions. Allow full credit for the reduction of any trips, whether work-related or not, and for the participation of any group including driving-age students.

5. Seasonal Plans. Allow states, regions, or employers to implement seasonal plans.

Further, we state that EPA has the authority under the existing Clean Air Act to implement these recommendations.

**Bulletin Board Access to the ECO Flexibilities Work Group Draft Report**

The draft report of the ECO Flexibilities Working Group is available through the USEPA Office of Air Quality Standards and Technology Transfer Network (TTN) in North Carolina. First time users need to follow an initial registration process. If you need help with using the TTN you can have voice contact with the TTN at (919) 541-5384. The modem access number is: (919) 541-5742. The six steps in the access path are:

1)<T> Gateway to TTN Technical Areas
2)<M> OMS - Mobile Source information
3)<K> Rulemaking & Reporting
4)<8> Transportation Rulemaking Areas
5)File area #3... Employee Commute Options
6)FLEXREPT.ZIP

On March 15, 1995, EPA Assistant Administrator Mary Nichols asked a work group of the Clean Air Act Advisory Committee (CAAAC) to examine program design options available to states under current law for the Employee Commute Options (ECO) program as indicated by the Clean Air Act . The CAAAC was established in accordance with the Federal Advisory Committee Act (FACA) in 1990 to advise EPA on implementation of the Clean Air Act. Specifically, Assistant Administrator Nichols asked that the ECO Flexibilities Work Group review the flexibility EPA has currently provided to states and employers implementing ECO and to recommend any additional flexibility that can be granted under existing law. The Work Group's draft report addresses the concerns of employers and the states regarding the program, what EPA policy currently provides and a discussion of recommendations.

The Work Group draft report does not represent a final recommendation of the Clean Air Act Advisory Committee or its Subcommittee on Linking Transportation, Energy and Air Quality (the "Subcommittee"). In accordance with FACA requirements, the Work Group report will be forwarded to the Subcommittee at its next publicly noticed meeting on June 1, 1995. If the Subcommittee approves the report, it will forward it to the full Clean Air Act Advisory Committee for consideration at its next publicly noticed meeting on June 2, 1995. At that time the Committee will decide whether to endorse the report and submit it to EPA for formal consideration. The draft report does not constitute EPA policy.

The Work Group members were drawn from the CAAAC Subcommittee Linking Transportation, Energy and Air Quality and others who represent a broad range of interests including employers, state and local government, transportation planners and environmental interest groups. The Work Group met in person on two occasions, once in Washington, DC, and once in Chicago and held one conference call. One-half of the Chicago meeting was dedicated to hearing informal testimony from major employers and from states or regions subject to ECO.

# State and EPA Contacts for ECO Programs

| Agency/Contact | Phone | Fax |
|---|---|---|
| **U.S. EPA Office of Mobile Sources** | | |
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# Mobility Coalition for Clean Air

FOR IMMEDIATE RELEASE
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APRIL 21, 1995

## Coalition Hails Recommendations of an EPA Working Group To Allow Further Flexibilities in ECO Implementation

WASHINGTON, DC -- The Mobility Coalition for Clean Air today hailed the recommendations of a working group of EPA's Clean Air Act Advisory Committee to allow further flexibilities in the implementation of the employee trip reduction (also known as Employee Commute Options or ECO) provision of the Clean Air Act. The group, known as the "ECO Flexibilities Working Group," was convened at the request of EPA Assistant Administrator Mary Nichols to evaluate the current operation of the ECO program, to identify any additional flexibilities that can be granted under existing law, and to recommend whether and how the statute should be amended.

"We commend the Working Group and its co-chairs, Bob Wyman and Cecilia Estolano, for reaching a consensus on a set of significant conclusions," said the Coalition's spokesman, C. Kenneth Orski. "The Group's recommendations respond to many of the Coalition's earlier demands, and go a long way toward relieving the concerns of our members. We hope that the full Advisory Comittee will endorse the Group's report and that the EPA will proceed to implement them promptly. However, we still believe that a legislative change making ECO voluntary is needed to remove any potential threats of court challenges and employer liability, and we shall continue to press for Congressional action."

The ECO Working Group has recommended that EPA should revise its policy and expressly allow states to demonstrate "equivalent efforts of performance" measured by vehicle emissions. This approach, long advocated by the Coalition and recently adopted by Southern California's South Coast Air Quality Management District in its overhaul of Rule 1501 (Regulation XV), would allow employers to substitute alternative emissions reductions measures for the currently required trip reduction programs. Among such measures — all of which are thought to be more cost-effective and less burdensome than ECO programs — are fleet conversion to clean fuels, use of remote sensing to identify and repair gross polluting vehicles, and scrappage of older, high-polluting cars. In a significant departure from EPA's charge to the Group not to consider legislative changes, the report recommends that "an amendment that clarified EPA's authority to approve equivalent state programs, based either on trip or emissions equivalency, would be desirable." The report notes that, while an amendment is probably not absolutely necessary, "it is always preferable for Congress to articulate its intention when EPA is faced with a circumstance demanding such an

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expansive reading of a statutory provision." Earlier EPA directives warned California and Texas officials that any proposals involving equivalent emissions reductions measures, such as vehicle scrappage programs, would be unacceptable under current law.

The Working Group also has recommended that states be allowed to take over employers' responsibilities under ECO by implementing regional trip reduction programs. While states would still have to "convincingly demonstrate" the required trip or equivalent emissions reductions, they could receive credit for the reduction of any trips, whether work-related or not, and arising from continuous as well as seasonal and episodic programs. Regionwide trip reduction programs in lieu of worksite-based programs are already being contemplated by Texas and Maryland.

The report states that the Group was divided on the question of whether it should recommend a statutory change to make ECO programs voluntary. In support of a voluntary program, the report notes, some members cited long standing efforts by the business community to promote commute options and reduce traffic congestion on a voluntary basis.

* * *

The Mobility Coalition for Clean Air, an alliance of employers, business organizations and transportation management associations in non-attainment areas, is coordinating a nationwide campaign to make the employee trip reduction programs voluntary. The Coalition is working closely with the National Association of Manufacturers, the Highway Users Federation and other groups dedicated to regulatory reform, continued mobility and freedom of choice in transportation.

## Employee Commute Options (ECO) Requirement

1. **Even if fully implemented, the ECO requirement will only yield insignificant emission reduction benefits.** According to an independent study by the Institute of Transportation Engineers, ECO programs will result at most in a one to two percent reduction in mobile source emissions. This conclusion has been confirmed by a Joint DOT/EPA Report to Congress, *Clean Air Through Transportation* (August 1993). EPA Assistant Administrator Mary Nichols, herself has admitted that emissions reductions from ECO programs would be "miniscule."

2. **The cost of achieving these modest reductions promises to be extremely high.** The U.S. Environmental Protection Agency has estimated the cost of implementing the ECO program at $1.2 to $1.4 billion annually. Data from Southern California, where a similar requirement has been in effect since 1988, indicates annual implementation costs of over $100 per employee and $3,000 per each vehicle taken off the road. (Ernst & Young, *Regulation XV Cost Survey*, November 1992). This does not include the unfunded costs incurred by states in administering and enforcing the regulation.

3. **Southern California's experience with employee trip reduction regulations has been widely acknowledged to be a failure.** Despite an agressively promoted employee trip reduction program promulgated by Regulation XV, now in its seventh year of operation, the vehicle occupancy ratio has increased only marginally — from 1.13 to 1.31 persons per car — and there are more Angelenos driving to work alone now than there were two years ago: the drive-alone rate has increased from 77.2% in 1992 to 80.6% in 1994.

4. **The goal of a uniform 25 percent increase in average vehicle occupancy bears no relation to the air quality attainment objectives of the Clean Air Act.** A single national target requires every affected non-attainment area to make the same effort regardless of actual air quality conditions and regardless of past efforts to promote transit usage and ridesharing. What is more, only 10-15 percent of cars on the road are serious polluters. To penalize all commuters for pollution caused only by a small fraction of vehicles is to practice a one-size-fits-all approach to regulation that even the EPA has condemned as inappropriate.

5. **Driving restrictions are only one of many potential approaches to reducing mobile source emissions.** Other methods include conversion of company fleets to clean fuel, detecting and repairing high emitters, and the so-called "cash-for-clunkers" programs that offer incentives to scrap older, highly polluting cars. The choice of control strategies should be influenced by criteria of cost and effectiveness — not by a misguided desire to reduce automobile dependency or modify commuters' driving behavior.

6. **At the very least, states should have the option to enforce trip reduction requirements on an episodic basis.** Continuous driving restrictions are a regulatory overkill — they are not needed to meet the attainment goals of the Clean Air Act. Even during the summer months, most non-attainment areas register only a few isolated episodes of pollution exceedances, which could be prevented through emergency driving restrictions during "ozone alerts." Occasional restrictions would not require fundamental changes in commuting habits and thus would be more likely to elicit public cooperation.

7. **Opposition to the ECO requirement is widespread.** Seven of the ten states with affected non-attainment jurisdictions have suspended their ECO programs, calling them "a costly federal mandate that, by the federal government's own admission, produces little environmental benefit." The business community in the affected jurisdictions is unanimous in its opposition. Both houses of Congress have approved a rider to the FY 1995 rescissions bill that denies funds to the EPA to "impose or enforce" the ECO requirements.

# INNOVATION BRIEFS

Urban Mobility Corporation

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## Transportation and the Changing Political Landscape III

***The aftershocks of the political realignment in Congress and state capitals continue to reverberate across the transportation sector. INNOVATION BRIEFS continues its coverage of the changing transportation/clean air scene with a report covering events since March 1995. This Brief draws in part on interviews with Congressional staff, senior federal and state agency officials and executives of trade associations and interest groups.***

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### DOT's Reorganization Proposal Submitted to Congress

On April 6, Transportation Secretary Frederico Peña unveiled a legislative proposal to restructure US DOT's organization and programs. As previously reported (see, "Transportation and the Changing Political Landscape II," *Innovation Briefs*, April 1995) the proposal would consolidate eight operating modal administrations into a single Intermodal Transportation Administration. The Federal Aviation Administration and the Coast Guard would retain their current autonomy. The reorganization proposal confirms the Administration's previously announced intention to merge 30 existing grant programs into three, and to finance all surface transportation and maritime programs out of a Surface Transportation Account funded with Highway Trust Fund revenues. Many issues, notably distribution formulas for funding, are yet to be decided.

***Consolidation proposals eliminating modal baronies have been made as far back as the early 1970s when William T. Coleman, President Ford's Transportation Secretary first proposed merging DOT's modal administrations and creating a single Surface Transportation Administration. These proposals inevitably have met with polite indifference from Congressional committees and interest groups, bent on preserving their respective spheres of influence. This time around, the outcome is even more uncertain because of the Administration's related proposal to finance all surface transportation programs — including some not currently eligible to receive highway funds — out of the Highway Trust Fund. That is something that Rep. Bud Shuster, chairman of the House Transportation and Infrastructure Committee, has already vowed he will not allow, "over his dead body." Establishing a single surface transportation administration while maintaining separately funded modal programs, each subject to different rules and eligibility criteria, would go only part way toward the goal espoused by the Administration — that of creating a truly "seamless" multi-modal surface transportation system.***


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## States Proclaim ECO Program "Inoperative"

Responding to growing pressures from the public and facing mounting signs of Congressional restiveness (see below), seven of the ten states with affected non-attainment jurisdictions have suspended their employee trip reduction (also known as employee commute options, or ECO) programs. The seven jurisdictions are:

- **Illinois**, where Governor Jim Edgar has announced that he was suspending implementation of the ECO program, calling it "a costly federal mandate that, by the federal government's own admission, produces little environmental benefit." In a related development, the Illinois EPA has just launched a voluntary program to reduce polluting activities on summer days when high ozone levels are forecast (see below).

- **Pennsylvania**, where Governor Tom Ridge, acting pursuant to a mandate of the state legislature, has likewise suspended the implementation and enforcement of the ECO program "until further notice."

- **New Jersey**, whose Department of Transportation has announced that it was disbanding the Enforcement and Compliance Unit of its Employer Trip Reduction Program and shifting its emphasis to cooperation and voluntary compliance.

- **Texas**, whose legislature has voted to suspend implementation of the ETR program for 180 days in order to give the Natural Resources Conservation Commission (TNRCC) a chance to revise the current program into one that encourages voluntary employer participation (see below).

- **California**, where the Board of the South Coast Air Quality Management District approved sweeping changes in its Rule 1501 (Regulation XV) to allow employers to substitute emission reduction measures for the traditional trip reduction programs. The Board's 9-1 vote culminated a 15-month process that began when the Board created a task force of business and community leaders to find ways to revamp the widely unpopular requirement.

- **Maryland**, where a proposal to suspend the ECO program and substitute a voluntary regional commute assistance program is under active consideration (see below).

- **Delaware**, whose Department of Transportation has convened a working group of state and county officials, transportation management association representatives and chambers of commerce to identify areas where "flexibility should be exercised."

***This does not mean that states are openly defying the law. Rather, they are putting ECO's implementation on hold, hoping that the cumulative effect of a public outcry, Congressional pressure, lack of support from mainstream environmental organizations, and EPA's own growing self-doubts about the policy and its political fallout, will lead to ECO's modification — either through administrative or Congresional action. In the meantime, states are shifting emphasis to voluntary compliance. As one senior state environmental agency official put it to us, "let's face it, mandating behavior when it comes to personal auto use isn't good politics... I know of noone in my agency who still believes it is worth fighting for."***

### ... as Congress Strips EPA Budget of Funds to Implement ECO

In the meantime, both the House and Senate versions of the Fiscal Year 1995 rescissions bill include a rider denying funds to the EPA to "impose or enforce" employee trip reduction requirements.

***The Congressional prohibition applies only to the current fiscal year, ending September 30, 1995, and hence its practical effect is negligible. However, the action, even though largely symbolic, sends a clear message that Congress has the votes to overturn the ECO mandate.***

## EPA Shows Further Signs of Accommodation

Faced with mounting Congressional pressure and with evidence of a massive disaffection — and defection — among state officials, the Environmental Protection Agency is showing further signs of accommodation. A special working group of EPA's Clean Air Act Advisory Committee, convened at the request of Assistant Administrator Mary Nichols, has concluded that there is, indeed, a need for further flexibilities in the implementation of the ECO requirement. On April 21, the Group has submitted a set of recommendations to EPA, following a day-long meeting in Chicago on April 11. The working group reached a consensus on two major recommendations:

1. **"Equivalent Emissions Reductions" Programs.** EPA should revise its policy and expressly allow states to demonstrate "equivalent efforts of performance" measured by reductions in vehicle emissions. This approach, recently adopted by Southern California's South Coast Air Quality Management District in its overhaul of Rule 1501 (Regulation XV), would allow employers to substitute emissions reductions measures for the currently required trip reduction programs. The most widely mentioned such measures — considered to be less costly and more effective than ECO programs — are fleet conversion to clean fuels, use of remote sensing to identify and repair gross emitters, and scrappage of older, high-polluting cars. "These efforts will advance air quality objectives and deserve active EPA encouragement and approval," says the Working Group's report.

2. **State-Administered Regionwide Programs.** States should be allowed to take over employers' responsibilities under ECO by implementing regional trip reduction programs. While states would still have to "convincingly

demonstrate" the required trip or equivalent emissions reductions, they could receive credit for the reduction of any trips, whether work-related or not, and arising from continuous as well as seasonal and episodic programs (the latter as a supplement to a basic program). Regionwide trip reduction programs that will rely on voluntary rather than mandatory employer participation are actively being considered by Texas and Maryland (see below).

In a significant departure from EPA's charge not to consider legislative changes, the Working Group's report recommends that "an amendment that clarified EPA's authority to approve equivalent state programs... would be desirable." The report notes that, while an amendment is probably not absolutely necessary, "it is always preferable for Congress to articulate its intention when EPA is faced with a circumstance demanding such an expansive reading of a statutory provision." Earlier EPA directives warned California and Texas officials that any proposals involving equivalent emissions reductions measures, such as vehicle scrappage programs, do not meet the stated objectives of the ECO program of reducing vehicle trips and thus are unacceptable under current law. It remains to be seen whether EPA will accept the Group's recommendation and seek a clarifying amendment to the Clean Air Act, or decide to re-interpret the current law as permitting such programs.

***And what about making ECO programs voluntary, as proposed in bills now pending in Congress? Members of the Working Group were divided on the question of whether they should recommend a statutory change to that effect. However, that option is still open to EPA leadership, which may well conclude, along with state officials, that ECO is no longer "worth fighting for." That would eliminate once and for all an issue that, some White House officials privately acknowledge, may become a political liability to the Democrats in the presidential election year.***

## Plans for "Corrections Days" Advance

A Congressional plan to hold "Corrections Days" to repeal or modify existing rules and statutes deemed especially burdensome and unpopular is moving forward. Under the Correction Days concept, "corrections" bills would be dealt with under a procedure patterned after the existing suspension calendar. Items could be brought up for floor consideration bypassing the normal committee approval process. The Speaker and committee chairmen would be allowed to place items on the corrections calendar, with the Speaker making the final decision on when a measure goes to the floor. House backers of the proposal plan to urge the Senate to adopt a similar procedure.

***Aside from the Clean Air Act-related inspection/maintenance and ECO requirements it is not clear whether any other transportation-related rules are on the House leadership's "hit list." One possible candidate, pushed by some interest groups, is the so-called "Section 13(c)" labor protection provision of the Federal Transit Act. That provision gives transit unions an effective veto power over any labor-saving arrangements (such as contracting for service with private operators) in federally-funded transit programs. While the Section 13(c) provision has long been opposed by the transit industry and its repeal has the active support of Rep. Frank Wolf, the influential chairman of the Transportation Subcommittee of the House Committee on Appropriations, any move to get rid of the provision may be expected to provoke vehement opposition from organized labor.***

## Washington State's "New Partners" Initiative Suffers a Further Setback

The Washington state legislature approved a bill that would kill a proposed privately-financed widening of State Route 522, one of the five "New Partners" initiative projects. This action follows in the wake of a January 1995 cancellation of another private toll road project, the extension and widening of State Route 18 (see, "Opposition to Tolls Threatens Private Road Projects, *Innovation Briefs*, April 1995).

The state legislation would subject the four remaining projects to corridor-specific public referenda. Whether these projects will garner sufficient local support to survive the political process remains an open question. While the initiative clearly responds to the public's desire for congestion relief, it also introduces the notion of paying for road use in a region that has never known toll roads before. The issue is complicated by Seattle's geography that often precludes offering residents the alternative of a parallel "free" road, and thus raises a potentially contentious question of equity: is it fair to charge residents for the use of roads that may provide the only access to their homes?

***The defeat of the private toll road proposals in the State of Washington coincides with a significant shift to the right in the political balance of power in the State legislature. How does one reconcile the negative votes with the conservatives' avowed predilection for "privatization" and public-private infrastructure partnerships? In all probability, the legislature's action had more to do with the strong anti-highway sentiments of their constituents than with any bias against privately financed toll roads. Also contributing to the defeat was a rising mood of fiscal conservatism, as evidenced by the defeat (by a vote of 53 to 47 percent) of another Puget Sound infrastructure project — a $6.7 billion regional light rail system.***

## Texas, Maryland and Illinois Seek Alternatives to Current ETR Programs

Three states — Texas, Maryland and Illinois — are actively pursuing alternatives to the mandatory trip reduction programs that would relieve employers of many of the burdens imposed under the current ECO mandate.

Under an approach considered by Texas and Maryland, the burden of program implementation will be shifted from individual employers to public agencies and the program will be implemented on a regionwide rather than individual worksite basis. Emphasis will be placed on public education, targeted at employers, commuters and the general public. The program will offer facilitation of ridesharing through regionwide ridematching services, and through commuter support services such as vanpool programs, shuttle services and guaranteed ride home programs. Support services will be offered to employers and Transportation Management Associations in the form of worksite surveys, trip reduction plan development and program monitoring.

The Illinois EPA is following another approach. It has just launched an "Ozone Action Days" program — a voluntary effort by Chicago businesses, governmental agencies and the media to reduce polluting activities — including driving to work — on summer days when high ozone levels are forecast. The Illinois authorities expect 10 to 15 Ozone Action Days each summer, when people will be asked to carpool, take transit, bike or work from home. Chicago is the latest jurisdiction to have embraced this approach to maintaining federal ozone standards. At least eight other non-attainment areas have episodic control programs currently in operation (Baltimore, Denver, Detroit, Dallas/Fort Worth, Richmond, San Francisco, Tulsa and the State of Maine — see, "Episodic Emission Control Programs During High Ozone Days," *Innovation Briefs*, October 1994)

***The Texas, Maryland and Illinois initiatives serve as possible prototypes for future vehicle emission reduction programs, and are being watched with interest by other affected non-attainment jurisdictions. All three initiatives are still in early stages of development. They will be described in greater detail in a future issue of Innovation Briefs.***

## In Other Congressional Developments...

The National Highway System (NHS) legislation, once a top Administration and Congressional priority, continues to languish, caught up in complicated Congressional maneuvering.

Passage of the NHS bill is of crucial importance to the states, for without an official Congressional NHS designation in place by October 1, there can be no FY 1996 apportionment of the $6.5 billion in federal aid highway funds. A bill (S. 440) has been introduced by Senator Warner (R-VA) in the Senate, but on the House side there is no discernible movement. Some observers believe that Rep. Bud Shuster (R-PA), chairman of the House Transportation & Infrastructure Committee, intends to hold the NHS bill hostage until some action is taken on his proposal to take the highway trust fund "off budget." That initiative (HR 842) has garnered 190 co-sponsors and, reportedly, has the tacit approval of Speaker Newt Gingrich, but is being opposed by the powerful chairmen of the Budget and Appropriation committees in both houses of Congress. The former do not want to see a reduction in the size of the budget pool from which future budget cuts must be made, while the appropriators do not want to lose jurisdiction over transportation spending.

***The outcome of these maneuvers is uncertain. While highway supporters would like to see the highway trust fund revenue protected and have mounted an aggressive campaign to promote their cause, any movement to shelter the highway trust fund could snowball into an avalanche of requests for similar treatment of other federal trust funds. This could result in excluding about one-third of all federal spending from the budget, according to OMB director, Alice Rivlin. Removing trust funds from the general budget also has an impact on the budget deficit, which must be offset by other revenue or program savings. Most observers believe that the efforts to take transportation spending off budget will fail — as they have in the past. As for the NHS bill, the consensus is that it will pass — before the October 1 deadline.***

**Low-Emission Vehicles -- OTC-LEV and the 49-State Car**

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*Bruce S. Carhart*, Executive Director, Ozone Transport Commission;

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Robert D. Brenner is Director of U.S. EPA's Air Policy Office, playing a key role in the development and review of air regulations and policies -- especially relating to the Clean Air Act. In addition, he serves on the agency's Steering Committee, which manages the development of all EPA regulations. Rob's previous positions at EPA include staff director of the agency's effort to reauthorize the Clean Air Act, and senior policy analyst on electric-utility issues. Before joining EPA in 1979, he worked at Princeton University's Center for International Studies. At Princeton, he worked for the Department of Energy, the university's Fusion Energy Laboratory, and the National Academy of Public Administration. Rob holds Bachelor's and Master's degrees in economics and public policy from Princeton's Woodrow Wilson School of Public & International Affairs.

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Bruce S. Carhart is the Executive Director of the Ozone Transport Commission, the organization of 12 states and the District of Columbia created by Congress in 1990 to assess and coordinate the control of regional ground-level ozone in the Northeast and Mid-Atlantic states. He has been responsible for managing and implementing OTC policy initiatives in motor-vehicle pollution control (including the OTC Low-Emission Vehicle program), the development of interstate market-based air-pollution control programs, and the control of nitrogen oxides from both stationary and mobile sources. In addition, Mr. Carhart has chaired the ROMNET Management Review Committee, coordinating regional ozone modeling. Prior to joining OTC, Mr. Carhart had over 20 years of experience in state, federal, and international air-quality planning, as well as air-quality impact studies for both government and industry. He received an MSc in environmental systems engineering from Cornell University and a BSc in Engineering in chemical engineering from Princeton University.

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Richard L. Klimisch is Vice President of the Engineering Affairs Division, American Automobile Manufacturers Association, which represents Chrysler, Ford, and General Motors. He oversees joint research and policy development on pollution, safety, noise, intelligent vehicle highway systems, OSHA, fuels, and lubricants. He also represents the industry in a variety of media and government forums. From 1983 to 1993, Dr. Klimisch was Executive Director of the General Motors Environmental Activities Staff and was the GM spokesman on recycling, fuel economy, and alternative fuels. He was one of the founders of the Vehicle Recycling Partnership. From 1975 to 1983, he was head of the Environmental Science Department of GM Research Laboratories, which he joined in 1967 as the company's first resident expert on catalysis. After receiving his PhD in chemistry under Nobel laureate H.C. Brown at Purdue University, Dr. Klimisch was employed as a Research Chemist for the DuPont Co. He received his BS in chemistry from Loras College, Dubuque, IA.

DAVID W. RANEY

David W. Raney is Manager of Environmental and Safety Affairs at American Honda Motor Co., Inc., responsible for regulatory development and engineering liaison on emissions and regulatory matters with the company's overseas factory and R&D staff as well as the U.S. Honda R&D facility. He has been with Honda for almost two years and prior to this spent 10 years working with Saab in the same capacity as at Honda. Mr. Raney received a BSME from the University of Oklahoma.

**OTC/LEV Process Summary**
**June 15, 1995**

The Ozone Transport Commission and its petition process were authorized by the 1990 Amendments. The OTC provisions originated from a bi-partisan group of Northeastern Governors and air quality administrators and were supported by members of Congress representing the region.

The OTC Low Emission Vehicle Program (OTC/LEV), which would impose the California Low Emission Vehicle standards in the northeast was initiated by the OTC member states as a means of controlling air pollution in the region. A majority of the OTC member states supported sending the OTC/LEV petition to EPA (9 to 4 vote). On December 19, 1994, EPA approved the OTC/LEV petition but the Agency suggested a more cost-effective alternative. EPA has encouraged the states and the auto makers to voluntarily agree to a 49-state low emission vehicle alternative.

The 49-state alternative could result in equivalent emission reductions and would have significant advantages compared to OTC/LEV. The 49-state program would provide for earlier introduction of TLEVs in the NE than would be required under the OTC program. In addition, 2001 and later model year vehicles that are originally purchased outside the OTR and then move into the region will be cleaner than current new cars. By requiring vehicles to meet the same standard in the rest of the country manufacturing costs will be reduced and other efficiencies will result. The program will provide both air quality attainment and health benefits for the rest of the country. There are more than 50 nonattainment areas besides the Northeast and California ---50 million people breathing dirty air that will benefit from the program.

Discussions between the states and auto makers on a voluntary 49-state program continue and are progressing. The parties are drafting a comprehensive Memorandum of Understanding (MOU) and EPA intends to publish a NPRM detailing the 49-state program by mid-summer. The litigation by the auto makers against the states of Mass. and NY concerning the ZEV sales mandates is still pending and is subject to the discussion between the states and auto companies. The Advanced Technology Vehicle (ATV) Component of the agreement would not be subject to EPA rule making.

A voluntary 49-state program would be unprecedented and will result in needed reductions of automobile emissions. Support from Governors outside the region for the 49-state alternative is significant and wide spread. In an era when there is a desire for more flexibility in the regulatory process, the 49-state Low Emission Vehicle Program could be a harbinger of the inclusive and cooperative process which states, the regulated community and the public all desire.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 22 1995

OFFICE OF
AIR AND RADIATION

MEMORANDUM

TO: Members of the Subcommittee on Mobile Source Emissions and Air Quality in the Northeastern States, Clean Air Act Advisory Committee

Members of the Clean Air Act Advisory Committee

FROM: Mary Nichols
Assistant Administrator for Air and Radiation

RE: Voluntary National Low Emission Vehicle Program

EPA is considering proposing regulations that would establish the National Low Emission Vehicle Program (National LEV) and is seeking the advice of the Clean Air Act Advisory Committee on the elements that should be included in such a program.

Attached is a description of possible elements to be included in such a program. They were developed to aid in focussing discussion at the May 25th meeting of the Subcommittee on Mobile Source Emission and Air Quality in the Northeastern States and the June 2nd meeting of the Clean Air Act Advisory Committee.

Any Subcommittee members that wish to present comments in writing for the Committee's consideration should ensure that EPA receives those comments no later than May 31. (Comments should be sent to Mike Shields, Office of Mobile Sources, US EPA, Mail Code 6401, 401 M Street, S.W., Washington, D.C., 20460 (fax: 202-260-6011).) EPA will then provide these comments to the Committee members when they arrive for the June 2nd meeting. EPA requests that any written comments from Committee members be received by June 9, 1995.

EPA will not decide what to include in the proposal on the National LEV program until after it has met with the Subcommittee and Committee and has reviewed any comments received from the Committee members. The Agency intends then to propose a National LEV rule and follow normal notice-and-comment rulemaking proceedings.

In addition to seeking advice on the National LEV proposal, the May 25th meeting will also include updates on issues that had been discussed by Subcommittee working groups. At the May 25th meeting, there will be available a brief update on the primary topics addressed by the Subcommittee working groups last fall and a description of the advanced technology program being discussed by the auto manufacturers and the OTC States.

## VOLUNTARY NATIONAL LOW EMISSIONS VEHICLE PROGRAM

EPA seeks the advice of the Clean Air Act Advisory Committee and its Subcommittee on Mobile Source Emissions and Air Quality in the Northeastern States on possible elements to be included in proposed regulations establishing a voluntary national low emissions vehicle program (National LEV). This program could only be implemented after normal notice-and-comment procedures.

### CONTEXT

- **National LEV is intended to provide an acceptable alternative to OTC LEV.**

  - ♦ In December 1994, EPA approved the Northeast Ozone Transport Commission (OTC) petition and issued a SIP call, requiring the OTC States to adopt OTC LEV (the OTC's California car program) by February 15, 1996. Under EPA's decision, the OTC States were allowed, but not required, to adopt zero emission vehicle (ZEV) mandates.

  - ♦ EPA's decision was based on the determination that new motor vehicle emissions reductions are necessary in OTC States to mitigate air pollution transport and to demonstrate attainment (including maintenance) of ozone NAAQS by the applicable deadline.

  - ♦ EPA stated that, in lieu of adopting OTC LEV, the SIP inadequacy could be cured by establishment of an acceptable alternative new motor vehicle program.

- **The OTC States and auto manufacturers have been negotiating an agreement on a voluntary motor vehicle emissions control program for light-duty vehicles and light-duty trucks that is intended to establish an acceptable alternative to OTC LEV.** The negotiations contemplate a 49-state car program that would include the following elements:

  - ♦ A Memorandum of Understanding (MOU) signed by the OTC States, the auto manufacturers and EPA setting forth the agreement and the proposed elements of a new nationwide motor vehicle program.

  - ♦ An EPA regulation establishing the National LEV program, under which the auto manufacturers would make binding commitments to meet tighter emission standards nationwide. The regulation would be promulgated pursuant to normal notice-and-comment rulemaking procedures.

  - ♦ An agreement between auto manufacturers and the OTC States to establish a program to introduce advanced technology vehicles in the OTC States. (A description of this agreement will be provided by the auto manufacturers and the OTC States at the Subcommittee and Committee meetings on May 25 and June 2, respectively.)

  - ♦ Other legal documents as necessary to implement the agreements made by the parties.

## OVERVIEW OF NATIONAL LEV PROGRAM

Following is a description of possible elements to be included in an EPA regulation that would establish the National LEV program.

Emission Standards

- **National LEV program vehicles would be required to meet California exhaust emissions standards for NMOG, CO, NOx, PM, and formaldehyde (for TLEVs, LEVs, ULEVs, and ZEVs).**

- **Manufacturers would meet a fleet average NMOG standard that would become increasingly stringent over time.**

  - ♦ In the OTR, the standard would achieve NMOG emissions reductions equivalent to:

    40% TLEVs for model years 1997-2000
    30% LEVs for model year 1999
    60% LEVs for model year 2000
    100% LEVs for model year 2001 and later

  - ♦ In the rest of the United States, except California, the standard would achieve NMOG emissions reductions equivalent to:

    100% LEVs for model years 2001 and later

  - ♦ To meet the fleet average NMOG standard, manufacturers could use an averaging, banking and trading program comparable to that allowed under the California LEV program.

    - ▸ Two regions would be established for purposes of meeting the fleet average -- the Ozone Transport Region and the remainder of the country (except California).

  - ♦ To protect NOx reductions in the OTR, an industry-wide cap of 5% would be set on the total annual sales of Tier 1 and TLEV vehicles in the OTR after model year 2000.

    - ▸ If the industry-wide cap was exceeded, each individual manufacturer would be responsible for its TLEV and LEV sales over 5%, taking into account any credits the manufacturer had obtained.

♦ Certain purchases of advanced technology vehicles in the OTR (such as government purchases under the advanced technology vehicle program under discussion by the OTC States and the auto manufacturers) are intended to supplement emissions reductions from the National LEV program. Therefore, such purchases would not generate credits to meet the fleet average standard, provided appropriate tracking mechanisms are available.

• **Low volume manufacturers would not need to meet the NMOG average until MY 2001.**

♦ Low volume manufacturers would be defined the same as in California -- manufacturers with sales of 3000 vehicles in California. In addition, a nationwide cap of 25,000 to 40,000 vehicle sales annually is being considered.

Harmonization of Other Standards

• **National LEVs would also be required to comply with other federal motor vehicle requirements, but EPA would work with the California Air Resources Board to harmonize comparable federal and California standards where practicable.**

♦ This would reduce regulatory burdens by allowing manufacturers to consolidate testing for California and federal motor vehicle programs without compromising emissions control.

♦ Following is a list of the standards and harmonization status:

▸ **Federal Test Procedure:** EPA and CARB are working together to revise the conventional FTP and anticipate that both agencies will adopt identical changes. Both agencies are working together to adopt new "off-cycle" standards; neither CARB nor EPA anticipate adopting these standards prior to finalization of a National LEV regulation. The auto manufacturers have agreed to meet the federal Tier 1 standards, and have agreed that, if CARB adopts more stringent standards for LEVs and ULEVs, EPA could change the National LEV regulations to require that the CARB "off-cycle" standards be met instead. California Phase II reformulated gasoline (RFG) would be used as the certification test fuel.

▸ **On-Board Diagnostics:** National LEVs would use systems complying with California requirements.

▸ **Evaporative Emissions:** EPA is currently working with CARB and the auto manufacturers to harmonize these standards and test procedures. The auto manufacturers would like California Phase II RFG to be used as the test fuel and recognize that this might require changes to the test procedure to ensure the same level of control. EPA is reviewing this issue.

▸ **On-Board Refueling Vapor Recovery:** CARB is expected to adopt the federal standards and test procedures. The auto manufacturers would like California Phase II RFG to be used as the test fuel and recognize that this might require changes to the test procedure to ensure the same level of control. EPA is reviewing this issue.

▸ **Cold Temperature CO:** These standards and test procedures are harmonized. Federal certification fuel would be used.

▸ **Certification Short Test:** Federal standards, test procedures and test fuel would be required. (California's test does not meet the minimum Clean Air Act requirements for national certification.)

▸ **High Altitude Testing:** EPA is reviewing California's high altitude requirements to determine whether California or federal requirements should be used.

♦ The following federal requirements would apply: certification requirements, Selective Enforcement Audits, recall, warranty, and other federal enforcement provisions. Some changes in these programs may be required to account for the need to conduct certain emission tests using California Phase 2 RFG.

Structural Provisions

- **Manufacturers would have the opportunity to voluntarily opt into the National LEV program.**

- **Once a manufacturer opted in, the emission standards would be enforced in the same manner as mandatory federal motor vehicle standards.**

• **Once a manufacturer opted in, it would be able to opt <u>out</u> only in certain limited circumstances. The offramps under discussion are:**

♦ failure of an OTC State to make an agreed-upon commitment regarding adoption of the CAL LEV program under § 177 of the Clean Air Act. · The form of state commitment is still under discussion, but might include:

▸ state implementation plan revision,

▸ letter from state attorney general,

▸ executive order,

▸ legislative action, and

▸ consent decree.

♦ failure of an OTC State to meet any commitment it might make (as part of the 49-state car agreement) regarding adoption of the CAL LEV program under § 177 of the Clean Air Act. These commitments are still under discussion, but might include:

▸ agreeing to allow National LEV as a compliance alternative to the NMOG fleet average portion of an existing or future LEV program, and

▸ agreeing to a linkage between National LEV and the ZEV mandate portion of an existing or future LEV program.

♦ EPA modification of specified standards over manufacturer objection.

▸ Minor, technical changes or changes that harmonize federal standards with California's standards would not give manufacturers the right to opt out of the program.

▸ It has been suggested that other changes to some or all of the following standards or requirements, which are still under discussion, would give auto manufacturers the ability to opt out:

→ the tighter tailpipe emission standards required under National LEV;

→ fleet average NMOG standard;

→ California on-board diagnostic II requirements;

→ California RFG Phase II for certification test fuel for tailpipe standards and possibly others;

→ averaging, banking and trading provisions;

→ revised conventional federal test procedure as adopted by EPA in its current rulemaking;

→ revised "off-cycle" federal test procedures and standards;

→ evaporative emissions standards and test procedures;

→ on-board refueling vapor recovery standards and test procedures; and

→ cold CO standards and test procedures.

- **If a manufacturer opts out, its vehicles will be subject to the emissions standards that would otherwise apply.**

  - ♦ In states that have adopted California emissions standards pursuant to § 177 programs, those state standards would apply.

  - ♦ In all other states, federal standards would apply.

- **The duration of the program is still under discussion. Following are two options being considered:**

  - ♦ Option 1:

    - ▸ If there are not Tier II standards at least as stringent as the National LEV program, then the program would terminate effective with the start of MY 2004.

    - ▸ If there are Tier II standards at least as stringent as National LEV, adopted prior to January 1, 2001, and commencing in MY 2004, 2005 or 2006, the National LEV program will terminate as of the effective date of such Tier II standards. OTC States' commitments with respect to adoption of the CAL LEV program would extend until MY 2006.

  - ♦ Option 2:

    - ▸ The National LEV program would remain in effect until the first applicable model year for new, mandatory federal standards that are at least as stringent as the National LEV standards. OTC States' commitments with respect to adoption of the CAL LEV program would extend until MY 200X (as agreed upon by OTC States and auto manufacturers).

## ACCEPTABLE ALTERNATIVE PROGRAM

Based on the following criteria, EPA would find that the National LEV program is an acceptable alternative to OTC LEV, which would relieve the OTC States of their obligation to adopt OTC LEV:

- **Emissions reductions in the OTR must be equivalent.**

  - ♦ Cleaner vehicles will be introduced into OTR earlier under National LEV program (MY 1997) than under OTC LEV program (MY 1999).

  - ♦ Because cleaner vehicles will be introduced nationwide beginning in MY 2001, the OTR will realize emissions benefits due to the reduced migration of dirtier Tier 1 cars into the OTR from 2001 on.

  - ♦ According to EPA's preliminary analysis, National LEV would produce equivalent or better emissions reductions in the OTR as would OTC LEV (with or without state ZEV mandates). This analysis was discussed by the Subcommittee at length last fall and appears in the Federal Register at 59 F.R. 53401 (Oct. 24, 1994).

- **The program must be enforceable.**

  - ♦ EPA has authority to establish the National LEV standards under section 202, which gives EPA broad authority to set motor vehicle emission standards.

    - ▸ The prohibition on modifying Tier 1 standards precludes EPA from establishing mandatory standards prior to model year 2004, but does not preclude establishment of voluntary standards.

  - ♦ EPA could enforce National LEV standards in the same manner as the Agency enforces mandatory federal standards.

  - ♦ EPA would need to find that the program is stable (i.e., that opportunities for manufacturers to opt out are limited and unlikely).

- **EPA must determine that the program is in effect.**

  - ♦ If all manufacturers opt in within 60 days of the Final Rule, EPA will find National LEV is "in effect," satisfying the OTC LEV SIP call.

- **The OTC States and auto manufacturers would also agree to a program for the introduction of advanced technology vehicles into the OTR. This would meet an important policy concern of the OTC States and EPA, but is not legally compelled. A description of this program will be distributed at the May 25th and June 2nd Subcommittee and Committee meetings.**

# MEMORANDUM OF UNDERSTANDING

CONCERNING MOTOR VEHICLE EMISSIONS
REDUCTION PROGRAM FOR THE OTC

PRESENTED TO:

SUBCOMMITTEE ON MOBILE SOURCE EMISSIONS
AND AIR QUALITY IN TI'E NORTHEAST STATES

MAY 25, 1995

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

## CHARACTER OF DISCUSSIONS BETWEEN OTC AND MOTOR VEHICLE MANUFACTURERS

- TRUST REACHED ENABLED IN-DEPTH DISCUSSION OF ALL ISSUES ASSOCIATED WITH CONSTRUCTION OF A MEMORANDUM OF UNDERSTANDING (MOU)

- UNDERSTANDING OF OPPOSING VIEWS NOTED ON TOPICS WHERE AGREEMENT HAS NOT BEEN REACHED

- RESOLUTION OF UNRESOLVED ISSUES AND OTHER OPEN ITEMS COULD BE ATTEMPTED BY CONTINUATION OF THE RELATIONSHIP

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

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## PURPOSE OF THE MOU

- TO TARGET EMISSIONS REDUCTIONS FROM NEW MOTOR VEHICLES IN THE OTR EQUIVALENT TO, OR GREATER THAN, AVAILABLE FROM THE OTC LEV PROGRAM

- TO PROVIDE CLEANER AIR NATIONWIDE BY REDUCING NEW MOTOR VEHICLE EMISSIONS

- TO INTRODUCE ADVANCED TECHNOLOGY VEHICLES (ATVs) IN THE OTR IN A COST EFFECTIVE MANNER

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

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## STRUCTURE OF THE MOU

- ESTABLISHES PURPOSE
- IDENTIFIES PARTIES
- INDICATES COMMITMENT FOR A 49 STATE LOW EMISSIONS VEHICLE (49 SLEV) REGULATION TO BE DRAFTED BY EPA
- INDICATES COMMITMENT TO SUPPORT INTRODUCTION OF ATVs VIA A UNIQUE AGREEMENT BETWEEN OTC STATES AND MOTOR VEHICLE MANUFACTURERS

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

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## PARTIES TO THE MOU

OTC STATES - CONNECTICUT, DELAWARE, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, VERMONT, VIRGINIA, AND THE DISTRICT OF COLUMBIA

MANUFACTURERS - AMERICAN HONDA MOTOR CO., INC.; AMERICAN SUZUKI MOTOR CORP.; BMW OF NORTH AMERICA, INC ; CHRYSLER CORPORATION; FIAT AUTO USA, INC.; FORD MOTOR COMPANY; GENERAL MOTORS CORPORATION; HYUNDIA MOTOR AMERICA; ISUZU MOTORS AMERICA INC.; KIA MOTORS AMERICA, INC.; LAND ROVER NORTH AMERICA, INC.; MAZDA MOTOR OF AMERICA, INC.; MERCEDES BENZ; MITSUBISHI MOTOR SALES OF AMERICA, INC.; NISSAN NORTH AMERICA, INC.; PORSCHE CARS NORTH AMERICA, INC.; ROLLS-ROYCE MOTOR CARS INC.; SAAB CARS USA, INC.; SUBARU OF AMERICA, INC.; TOYOTA MOTOR SALES USA, INC.; VOLKSWAGON OF AMERICA, INC.; AND VOLVO NORTH AMERICA CORPORATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

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## 49 STATE LEV PROGRAM REQUIREMENTS

- THE 49 SLEV REGULATION SHOULD BE DESIGNED TO PROVIDE A SOLID BASE FOR OTC STATES TO REACH EMISSIONS REDUCTION GOALS AND TO PROVIDE REDUCED EMISSIONS FOR THE COUNTRY
- THE MOU IDENTIFIES PARAMETERS FOR A 49 SLEV REGULATION
- EPA WILL WRITE THE REGULATION
- MANUFACTURERS WILL ELECT TO COMPLY WITH THE REGULATION

*THE INTENT OF THE PARTIES IS FOR EMISSIONS PERFORMANCE AND SIP CREDIT TO BE EQUIVALENT TO THE OTC LEV PROGRAM*

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

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## UNRESOLVED ISSUES

**MANDATES -** ELECTRIC VEHICLE MANDATES IN MASSACHUSETTS AND NEW YORK AND POTENTIAL FOR ADOPTION BY OTHER STATES IN THE OTR

OTC STATES HAVE DECLARED THAT SOVEREIGN RIGHTS TO ADOPT PROGRAMS IN THEIR INTEREST CANNOT BY LIMITED BY THIS AGREEMENT.

MANUFACTURERS HAVE DECLARED THAT THE MOU WILL NOT BE SIGNED UNLESS THE MANDATE ISSUES ARE ADEQUATELY ADDRESSED

**COMMITMENT -** COMMITMENT BY ALL PARTIES MUST BE MEASURABLE AND ASSURE STABILITY FOR THE TERM OF THE AGREEMENT

OTC STATES HAVE OFFERED COMMITMENT VIA SIP PROVISIONS AND ENFORCEMENT BY THE EPA.

MANUFACTURERS FEEL THAT SIP PROVISIONS CANNOT BE COMPARED TO THE RIGIDITY OF EPA ENFORCEMENT OF MOTOR VEHICLE EMISSION REGULATIONS.

# MEMORANDUM OF UNDERSTANDING
# STRUCTURE AND CONTENT

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## ADDRESSING FUEL (GASOLINE)

- THE 49 SLEV PROGRAM DOES NOT CALL ON STATES TO USE ANY PARTICULAR GASOLINE

- GASOLINE THAT MAY BE USED IN THE OTR IS THE SAME AS WOULD BE EXPECTED FOR THE OTC LEV PROGRAM

# MEMORANDUM OF UNDERSTANDING STRUCTURE AND CONTENT

## ADVANCED TECHNOLOGY VEHICLE COMPONENT

THE ADVANCED TECHNOLOGY VEHICLE (ATV) COMPONENT IDENTIFIES A PARTNERSHIP BETWEEN GOVERNMENT, MOTOR VEHICLE MANUFACTURERS AND OTHER INTERESTED PARTIES TO INTRODUCE ATVs

- ATV COMPONENT IS AN AGREEMENT BETWEEN THE OTC STATES AND THE MANUFACTURERS FOR INTRODUCTION OF ATVs INTO THE OTR
- OTC STATES AND MANUFACTURERS ARE EACH ACCOUNTABLE FOR MEETING COMMITMENTS AND WILL JOINTLY ANNOUNCE SALES ESTIMATES AND ACCOMPLISHMENTS
- AGREEMENT WILL NOT BE ENFORCEABLE AGAINST ANY OF THE PARTIES
- MANUFACTURERS ARE NOT OBLIGATED TO SALE OF SPECIFIC NUMBERS OR MARKET PERCENTAGES OF ANY SPECIFIC TECHNOLOGY
- THE ATV COMPONENT WILL NOT BE A PART OF THE EPA 49 SLEV REGULATION

# MEMORANDUM OF UNDERSTANDING
# ATV COMPONENT

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## ADVANCED TECHNOLOGY VEHICLE - DEFINITION

VEHICLES CERTIFIED FOR SALE IN CALIFORNIA THAT ARE:

- ULEV OF ILEV CERTIFIED USING ANY FUEL

OR

- ELECTRIC VEHICLES, EITHER DEDICATED OF HYBRID

OR

- OTHER ALTERNATIVE FUEL VEHICLES AND DEFINED BY EPACT (CERTIFICATION LEVEL AND TIMING NOT RESOLVED)

# MEMORANDUM OR UNDERSTANDING
# ATV COMPONENT

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## COOPERATIVE WORKING RELATIONSHIP

SHARED RESPONSIBILITY BETWEEN ALL PARTIES INTERESTED IN INTRODUCTION OF ATVs

OTC STATES AND MAJOR MOTOR VEHICLE MANUFACTURERS

- OTHER STATES OUTSIDE OF THE OTR
- EPA AND DOE
- FUEL PROVIDERS
- CONVERTERS, FLEET OPERATORS
- OTHER MANUFACTURERS OF SPECIALTY MOTOR VEHICLES

# MEMORANDUM OF UNDERSTANDING
# ATV COMPONENT

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## PROCESS CREATED TO INTRODUCE ATVs

MOU ATTACHMENT OUTLINES A PROCESS TO ORCHESTRATE INTRODUCTION OF ATVs

- JOINT IDENTIFICATION OF VEHICLE SALES ESTIMATES
- INTEGRATE DEVELOPMENT AND EXECUTION OF NECESSARY TASKS
- MEASURE AND REPORT PERFORMANCE

# MEMORANDUM OF UNDERSTANDING
# ATV COMPONENT

---

## SUGGESTED TIMELINE

1996 - 1998 INVOLVE FEDERAL, STATE AND FUEL PROVIDER FLEETS

- MARKET ATVs TO FLEETS
- BEGINN DEVELOPMENT OF REFUELING INFRASTRUCTURE
- SURVEY POTENTIAL DEMAND FOR 1999 - 2001

1999 - 2001 ADD MUNICIPAL AND PRIVATE FLEETS

- EXPAND PRODUCT OFFERINGS AND INFRASTRUCTURE
- EXPAND INCENTIVE PROGRAMS
- SURVEY POTENTIAL DEMAND FOR 2002 - 2004
- IDENTIFY CRITERIA NEEDED TO SUSTAIN RETAIL SALES

2002 - 2004 ADD RETAIL COSTUMER OFFERINGS

# MEMORANDUM OF UNDERSTANDING
# ATV COMPONENT

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## ATV MONITORING GROUP STRUCTURE

OTC STATES AND MOTOR VEHICLE MANUFACTURERS PRINCIPALS

- ANNUAL MEETING TO ASSESS PROGRESS AND AGREE TO OBJECTIVES
- PUBLIC PORTION OF ANNUAL MEETING TO SEEK ADVICE OF INTERESTED PARTIES
- EXECUTIVE SESSION AVAILABLE

STANDING WORKING GROUP

- COMPILE INFORMATION FOR ANNUAL MEETING OF PRINCIPALS
- DESIGN ANNUAL MEETING STRUCTURE
- MEET AS NEEDED TO EVALUATE PROGRESS, OUTLINE ISSUES AND SUGGEST SOLUTIONS

**Luncheon. Resolving the ZEV Mandate Tangle**

*Hon. Trudy Coxe*, Secretary of Environmental Affairs, Commonwealth of Massachusetts.

TRUDY COXE

Trudy Coxe is Environmental Affairs Secretary for the Commonwealth of Massachusetts and one of America's foremost environmental advocates. She combines the experience of more than 17 years of leadership as an environmental activist in the nonprofit sector with state and federal environmental-management posts. She served 11 years as Executive Director of Rhode Island's Save The Bay, turning it into one of New England's citizen-action organizations. Before being appointed to her present position in 1993, Ms. Coxe served in the Bush Administration as Director of Ocean & Coastal Resource Management at NOAA. She currently leads five key Massachusetts agencies -- the Departments of Environmental Protection; Environmental Management; Fisheries, Wildlife & Environmental Law Enforcement; Food & Agriculture; and the Metropolitan District Commission. She also chairs the board of the Massachusetts Water Resources Authority, the agency charged with cleaning up Boston Harbor.

**Nonroad Engines and Vehicles**

*Deborah S. Dalton*, Deputy Director, Consensus & Dispute Resolution Program, Office of Policy, Planning & Evaluation, U.S. Environmental Protection Agency;

*Gary H. Baise*, Partner, Gabeler, Baise & Miller, and Washington Environmental Counsel, Equipment Manufacturers Institute;

*William M. Guerry, Jr.*, Partner, Collier, Shannon, Rill & Scott, and Counsel to the Outdoor Power Equipment Institute;

*Gary E. Cross*, Partner, Dunaway & Cross, and Counsel to the Portable Power Equipment Manufacturers Association.

DEBORAH S. DALTON

Deborah S. Dalton is Deputy Director of the Consensus & Dispute Resolution Program (formerly the Regulatory Negotiation Project) in the Office of Policy, Planning & Evaluation, at U.S. EPA. She advises EPA program office and regional office management on the selection and implementation of various consultation, consensus-building, and dispute-resolution procedures for use in developing rules, implementing policy, and prosecuting enforcement actions. She is co-author/co-editor of the primary reference book on regulatory negotiation, *Sourcebook on Negotiated Rulemaking*, published by the Administrative Conference of the United States in 1990. Ms. Dalton has been with EPA since 1976, first in pesticides and toxic-substances enforcement and then in Superfund enforcement. She holds a BS in psychology/biology from the College of William & Mary, an MS in biology from the University of Virginia, and has done advanced graduate work in environmental toxicology at the University of Maryland.

GARY H. BAISE

Gary H. Baise is a Partner with Gabeler, Baise & Miller. Between 1992 and 1994, he was a Partner with Jenner & Block, responsible for developing the law firm's regulatory and litigation environmental practice. Representative clients included the pulp and paper industry, industrial trade associations, pesticide manufacturers, and pollution-control companies. Prior to this, he was a corporate officer and Vice President, External Affairs, with Browning-Ferris Industries, responsible for addressing the corporation's potential criminal liabilities. Previous positions include Founder and Partner, Beveridge & Diamond; Acting Deputy Attorney General, U.S. Department of Justice; and Executive Assistant to the Acting Director of the FBI. Mr. Baise is admitted to the Indiana State and District of Columbia Bars, the U.S. Supreme Court, and various U.S. District and Circuit Courts. He received a BS from Western Illinois University and a JD from Indiana University.

WILLIAM M. GUERRY, JR.

William M. Guerry, Jr. is a Partner with Collier, Shannon, Rill & Scott in its Washington, DC office. He counsels and represents trade associations and corporate clients on all aspects of environmental law, including the Clean Air Act, RCRA, the Clean Water Act, CERCLA, and the Emergency Planning & Community Right-to-Know Act. He is an industry spokesman at the U.S. EPA Regulatory Negotiation charged with developing mobile-source emission standards for outdoor power equipment. He prepares comments and provides counsel on strategies to mitigate the impact of the Clean Air Act Amendments of 1990. Mr. Guerry is admitted to the Virginia and District of Columbia Bars. He received a BA, magna cum laude, and a JD from the University of Virginia and attended Wolfson College of Cambridge University, England.

GARY E. CROSS

Gary E. Cross is a founding Partner of the law firm Dunaway & Cross and practices principally in the areas of administrative law, civil litigation, appellate advocacy, and trade association counseling. He has represented corporations and associations in numerous federal rulemaking matters, including judicial review of agency regulations, throughout his legal career. Mr. Cross received a BA in government from the College of William and Mary and a law degree from Georgetown University Law Center.

U.S. Environmental Protection Agency

# Improving the Clean Air Act: The Mobile Source Issues June 21, 1995

Office of Mobile Sources

# Mission Statement

*"The Office of Mobile Sources seeks to protect public health and the environment by minimizing the harmful effects of pollution from mobile sources."*

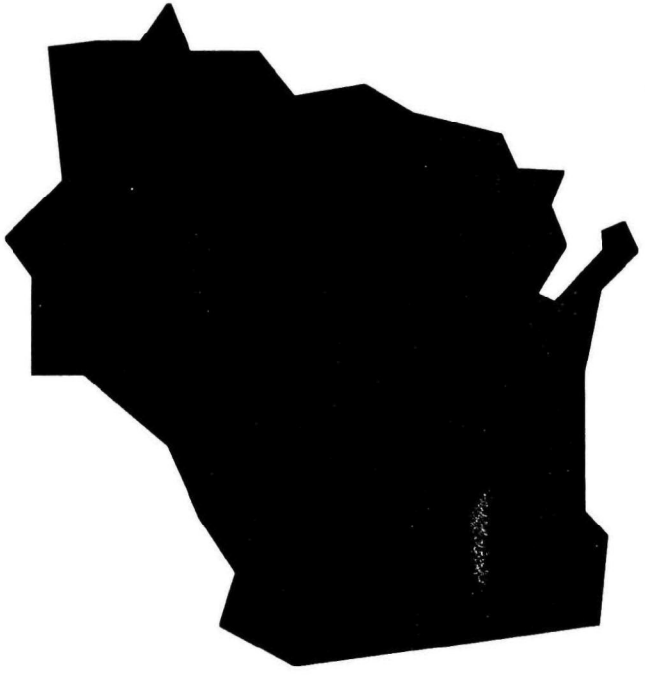
# Ozone and Health

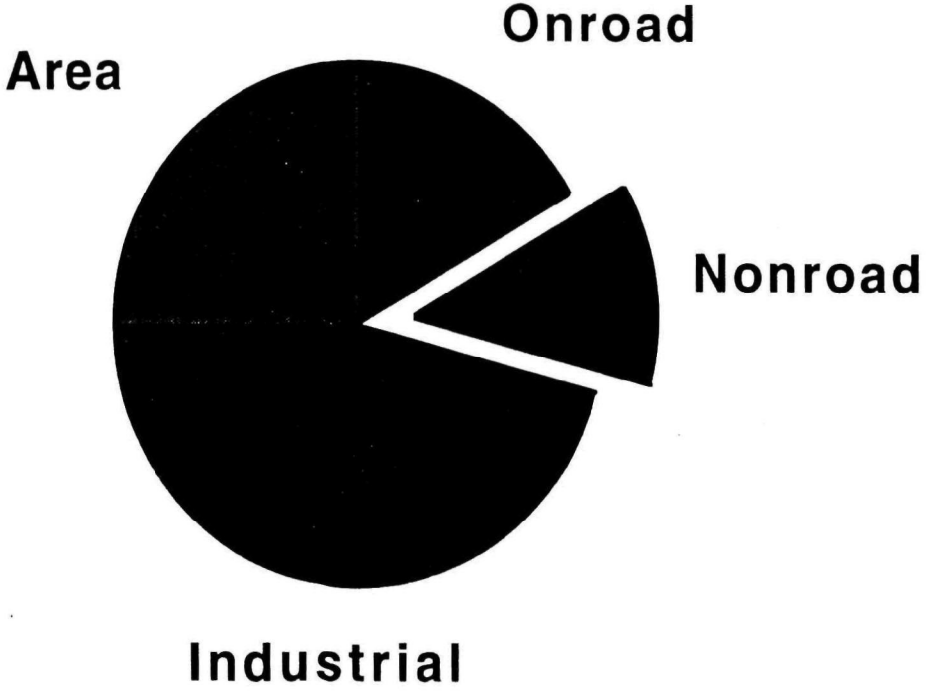
- caused by HC and NOx combining in sunlight
- summer problem
- reduced lung function
- impaired respiratory immune response and increased infection
- accelerated lung aging
- stunted lung growth in children
- 57 million live in unhealthy areas

# CO and Health

- colorless, odorless, poisonous gas
- winter problem
- impairs exercise ability, visual perception, manual dexterity
- impairs learning ability
- affects infants, elderly, those with respiratory problems
- 22 million live in unhealthy areas

# One State's HC Problems





# State Options

- rely on federal emission standards
- opt-in to California emission standards
- encourage alternative technologies
- institute no-mow days
- ban products
- encourage alternative landscaping

# Clean Air Act

- set technology-based standards
  - first consider on-highway stringency
  - then consider cost, leadtime, noise, energy and safety
- utilize useful life standards
- require earliest possible effective date
- apply current on-highway enforcement requirements
  - allows administrative discretion in modifying regulations

# So Much To Do, So Little Time

# Sierra Club Suit

| | |
|---|---|
| • Large Compression-Ignition Engines | May, 1994 |
| • Small Gasoline Engines -- Phase I | May, 1995 |
| • Marine Engines | Nov, 1995 |
| • Small Gasoline Engines -- Phase II | May, 1997 |
| • Large Gas/Small CI Schedule | Nov, 1996 |

# Nonroad Rules
# Complete or Underway

- Small Spark-Ignition Engines (2 phases)
- Large Compression-Ignition Engines
- Marine Engines
- Locomotive Engines

# Potential Future Nonroad Rules

- Recreational Vehicles
- Large Spark-Ignition Engines
- Small Compression-Ignition Engines

# Nonroad Program Principles

- Educate
- Listen
- Focus on Interests
- Be Flexible
- Keep It Simple

# EPA's Interests

- protect public health
- achieve greatest reduction at lowest cost to society
- promote clean, durable engine technology
- promote market-based incentives
- encourage competition and technological innovation
- construct legally defensible program

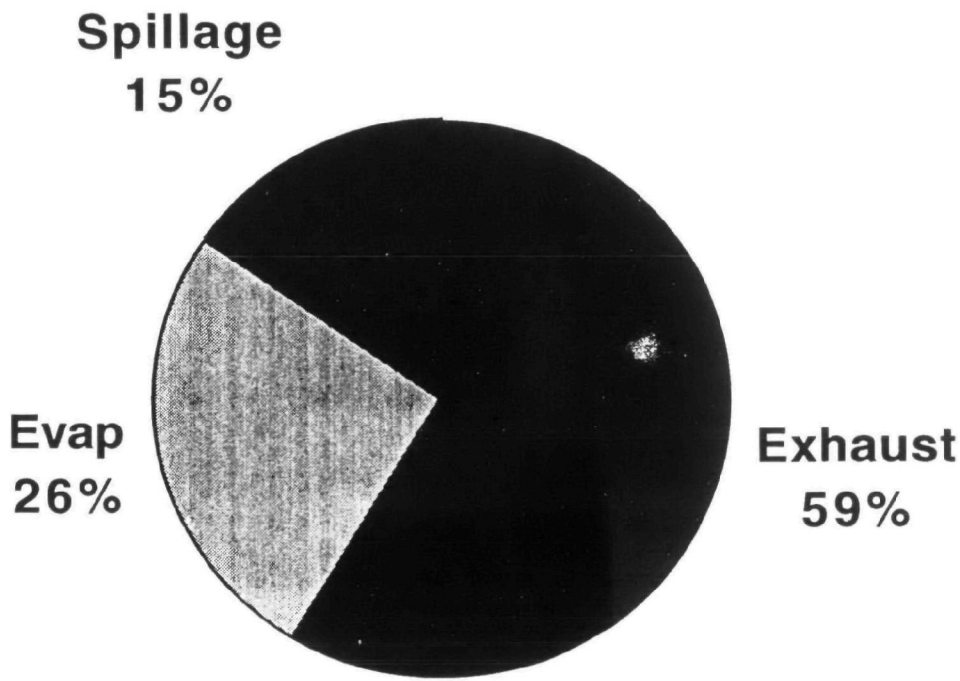
# Large Diesels

- rule finalized June 17, 1994
- new nonroad compression-ignition engines
- 37 kilowatts (50 horsepower) and above
- HC, CO, NOx, PM, smoke
- certification, production line audit, recall
- effective date depends on engine size
- standards depend on engine size

# Small Gasoline Engines

- rule finalized May 30, 1995
- new nonroad spark-ignition engines
- 19 kilowatts (25 horsepower) and below
- HC, CO, NOx
- certification, production line audit; no recall
- model year 1997 effective date
- standards depend on engine size and equipment type

# Small Engine HC Sources



# What Phase 1 Does

- gets early benefits for public and states
- looks like California, except for
  - CO levels
  - two-stroke walk-behind lawnmowers
  - snowthrowers
  - effective date
  - engine classification
  - production line auditing
  - streamlined certification

# Benefits and Costs

## big diesel

- 37% NOx decrease
- $188 per ton

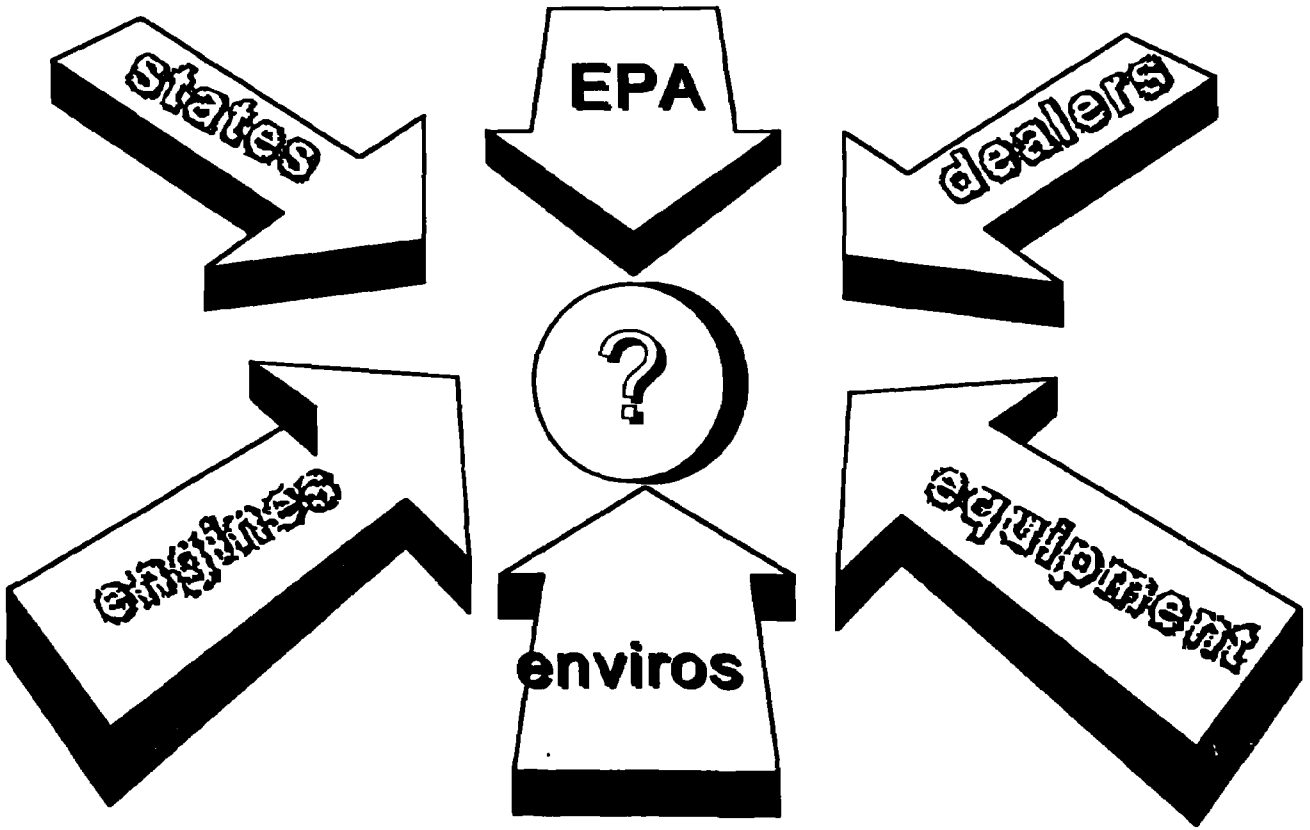
## small gas phase 1

- 32% HC decrease
- $280 per ton

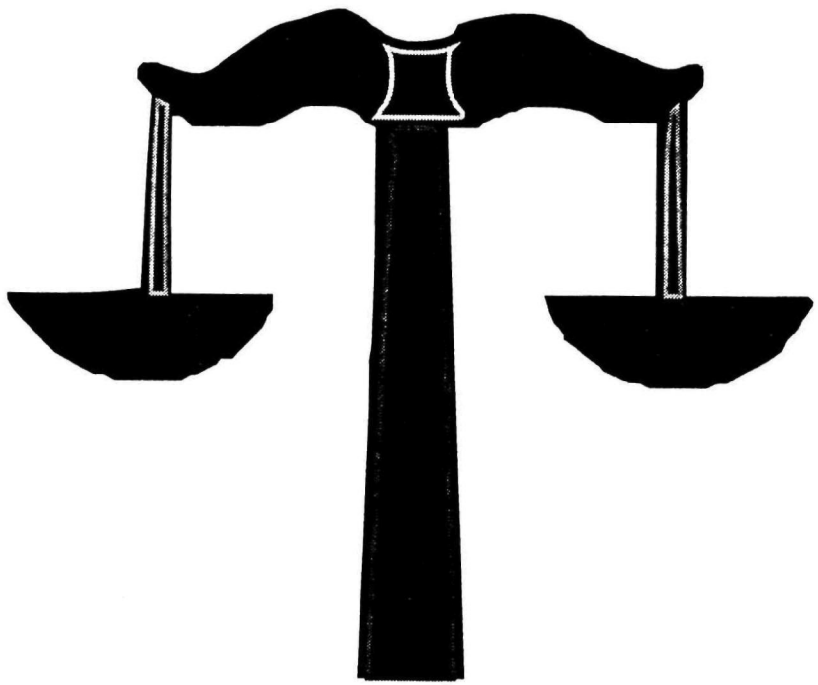
# Only These Sources Exceed Nonroad Contribution

- VOC
  - light-duty highway vehicles
  - solvent evaporation
- CO
  - light-duty highway vehicles
  - residential fuel use
- NOx
  - electric power generation

# Phase 2: Reg Neg

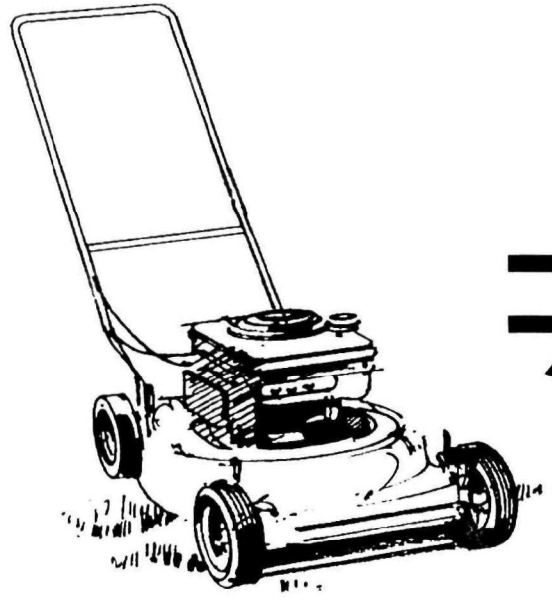


# EPA's Role



- balance
- CBI conduit
- catalyst for consensus
- translation
- analysis

# Consensus:



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# Common Ground

- no recall
- in-use noncompliance remedies
- test procedure
- manufacturer-based production line testing
- fleet and/or bench-aged in-use testing
- gas can spillage control
- evaporative emission control

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Of Counsel
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+Admitted also in the District of Columbia

°Admitted only in the District of Columbia

# Clean Air Act: The Mobile Source Issues
# Regulation of Nonroad Vehicles and Engines

**Gary H. Baise**

## Statutory Provisions

States and localities are prohibited from adopting or enforcing any standard or other requirement relating to the control of emissions from new nonroad engines, smaller than 175 horsepower, used in farm or construction equipment. CAA § 209(e)(1).

EPA may authorize California to adopt emission standards for nonroad engines and vehicles other than those covered by the Section 209(e)(1) prohibition. CAA § 209(e)(2).

Other States may then adopt the California standards. CAA § 209(e)(2)(B).

EPA must study emissions from nonroad engines and vehicles to determine if such emissions cause, or significantly contribute to, air pollution that may reasonably be anticipated to endanger public health or welfare. EPA then determines, based on this study, whether emissions of CO, NOx, and VOCs from new and existing nonroad engines and vehicles are "significant contributors" to ozone or CO concentrations in more than one nonattainment area. If EPA makes a determination that nonroad engines and vehicles are such "significant contributors," then it must regulate emissions from those classes or categories of new nonroad engines and vehicles that cause, or contribute to, this air pollution. These emissions standards must achieve the greatest degree of emission reduction achievable, based on technology that will be available, giving appropriate consideration to the cost, noise, energy, and safety factors associated with that technology. CAA § 213(a).

## EPA Rulemaking

In its recent rulemakings on nonroad engines and vehicles, EPA dramatically limited the statutory provisions. See 59 Fed. Reg. 36,969 (July 20, 1994) (Section 209) and 59 Fed. Reg. 31,306 (June 17, 1994) (Section 213).

EPA drastically narrowed the definition of "new." Under the EPA regulations, "new" means only until title passes to the ultimate purchaser or until the engine, vehicle, or equipment is placed into service, whichever occurs first.

EPA's regulations would narrow the scope of the preemption intended by Section 209(e)(2) to cover only "new" nonroad engines or vehicles not covered by Section 209(e)(1). This limits the preemption of regulation by States other than California to only "new" engines or vehicles. As a practical matter, EPA's regulations allow States to impose a patchwork of different in-use standards on nonroad sources.

EPA determined that federal preemption does not apply to engines manufactured prior to the effective date of the nonroad engine definition, July 18, 1994.
EPA described broadly the scope of permissible State "in-use" regulation of nonroad sources.

EPA developed a "primary use test" to determine whether equipment qualifies as farm or construction equipment. EPA's regulations define farm and construction equipment to include only equipment used 51 percent or more for construction or the commercial production, harvesting, or processing of food.

EPA determined that nonroad sources are significant contributors to total NOx emissions nationwide.

Petitioners' View

The Clean Air Act prohibits States and localities from adopting emission standards for farm and construction engines or equipment built after November 15, 1990. CAA § 209(e). The statutory preemption for "new" nonroad sources must be distinguished from then-existing sources. The scope of preemption must be read broadly, including "other requirements", not only numerical emissions standards, that relate to the control of emissions. The effective date of this preemption is the date of enactment of the Clean Air Act Amendments of 1990, November 15, 1990, not the effective date of the nonroad engine definition, July 18, 1994.

The Clean Air Act prohibits the imposition by States of emission regulations on new nonroad sources, except to the extent specific "in-use" regulations do not constitute attempts to adopt State emission standards. CAA § 209(e)(1). The Clean Air Act prohibits the imposition by States of any regulation of nonroad sources identified in Section 209(e)(2), without federal authorization. CAA § 209(e)(2).

The Equipment Manufacturers Institute has suggested using the purpose for which equipment was designed as a test of whether it is farm and construction equipment or not. The "primary use test" impermissibly narrows the preemption provided by the Clean Air Act, and may subject many classes of equipment to State and local regulation, rather than only to federal control.

The Clean Air Act requires a determination that nonroad sources are a significant contributor to ozone noncompliance. CAA § 213(a). EPA used the wrong basis for this determination. NOx emissions do not necessarily translate into ozone noncompliance in the area of emissions.