United States
Environmental Protection
Agency

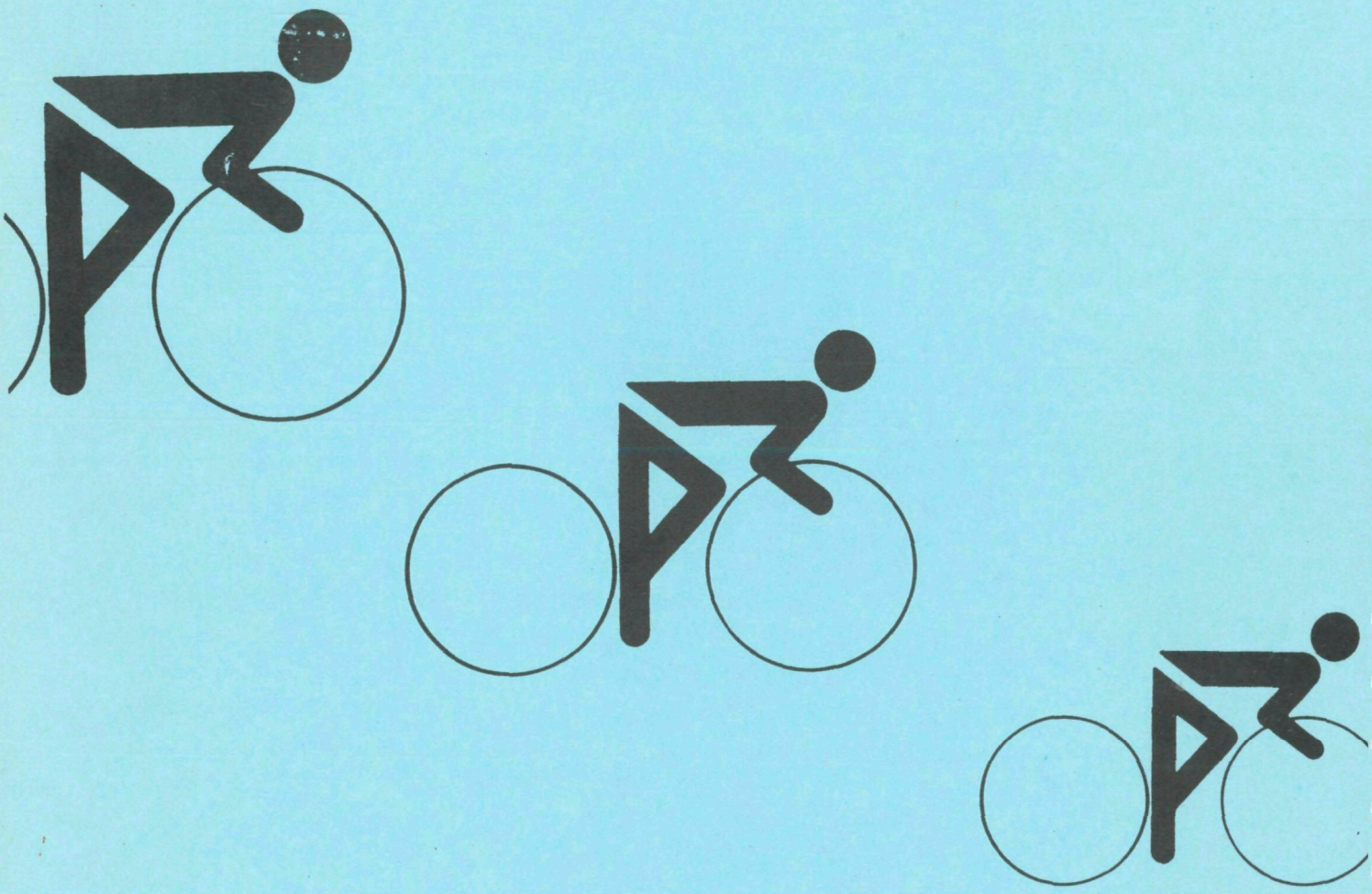
Office of Transportation
and Land Use Policy
Washington DC 20460

EPA-400/9-78-010
November 1978

Air

EPA

Bicycle Strategies to Reduce Air Pollution



Bicycle Strategies To Reduce Transportation Air Pollution As Part Of The State Implementation Plans

I. Introduction

Bicycling, as a nonpolluting mode of transportation, should be encouraged in urban areas with air pollution levels that exceed the air quality health standards caused by heavy automobile travel. Every community should consider the opportunity to promote bicycling, a very popular mode for transportation, exercise, sport and recreation. The following: (1) summarizes the requirements and opportunities under the Clean Air Act to promote bicycling; (2) suggests strategies to increase bicycle use; (3) delineates the advantages of a bicycle program; (4) describes who bicycles and where; (5) lists advantages to society with a greater bicycling public; (6) lists changes which would encourage more people to bicycle and (7) lists the Regions, States, urbanized areas, and certified agencies responsible for developing and implementing strategies in the transportation component of their SIPs.

II. Clean Air Act Requirements

The Clean Air Act as amended 1977 requires States to submit revised State Implementation Plans (SIP) by January 1, 1979, for any areas in which the national ambient air quality standards have not been attained. The SIPs must provide for attainment of the standards no later than December 31, 1982. If a State demonstrates that attainment of the standards for carbon monoxide and photochemical oxidants is not possible by 1982, an extension of the attainment deadline up to December 31, 1987, is possible. The SIPs could include a variety of strategies ranging from controlling emissions from power plants, to inspection and maintenance, to carpooling or reducing automobile travel and improving mass transit.

In most major urbanized areas the revised SIP's will require strategies designed to reduce emissions from transportation-related sources. Structural and operational changes in the transportation system to reduce automobile travel and to encourage cleaner forms of transportation will be necessary. A variety of alternative control measures will be used in the transportation control plan of the SIP.

EPA has published--and will be issuing--a number of information documents in 1978 for reasonably available transportation control measures in accordance with Section 108(f) of the Clean Air Act. The (18) measures include such things as: on-street parking controls, park and ride and fringe parking lots, carpools, improved public transit, etc. Section 108(f) specifically identifies the following three measures related to bicycling:

1. programs to limit portions of road surfaces or certain sections of the metropolitan area to the use of nonmotorized vehicles or pedestrian use, both as to time and place;

2. provisions for employer participation in programs to encourage carpooling, vanpooling, mass transit, bicycling, and walking;

3. programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists, in both public and private areas.

A detailed bicycle information document will be available in 1979.

Transportation/air quality planning and implementation required by the Clean Air Act will be integrated by the state and local governments under guidance from EPA, Department of Transportation (DOT) Housing and Urban Development (HUD) in existing planning and programming procedures. Designated lead planning organizations (see contact list in back) are responsible for insuring the integration of EPA's transportation requirements with DOT's 3-C process: the Continuing, Comprehensive transportation planning process carried on Cooperatively by States and local communities. Joint planning guidelines have been issued by EPA and DOT. Now is the time for bicycle activists,bicycle planners, transportation planners and transportation engineers, to get bicycle programs into the planning process.

III. Bicycle Program Plans

Bicycle plans included as part of State Implementation Plans to reduce air pollution should be comprehensive. One short bike path is not going to divert a great deal of people out of their cars onto bicycles. A comprehensive approach is needed, including an institutional framework, a comprehensive network of bike routes, bicycle parking facilities, educational programs and enforcement programs.

The whole community should be involved, including police, transportation departments, citizens, schools, the press, etc. The approaches will vary from community to community. Here is a preliminary list of action items to be undertaken in a comprehensive bicycle program and some alternative approaches.

1. Establish an institutional framework giving bicycling high priority.

   °Establish a bicycle coordinator's office in the Governor's office or the State Department of Transportation to serve as the central point for creating a better physical and institutional environment for bicycling.

°Develop adequate funding sources to carry out programs fostering bicycling and earmark the funds necessary.

°Establish ongoing programs to encourage bicycling.

2. Develop a comprehensive network of safe bicycle routes. Some of the elements of this comprehensive system could include:

   °Elimination of obstacles and bottlenecks which hinder safe and direct bicycle access in urban and suburban areas.

   °Bikeways along abandoned railroad rights-of-way.

   °Bikeways along sewer interceptor lines.

   °Bikeways along stream beds and through recreational parks and open space.

   °A computer map which shows the existing bikeways and interconnecting lightly traveled streets.

   °Bicycle streets closed to traffic.

   °Bike lanes on existing streets.

   °Requiring all newly constructed roads and bridges to have enough space in the right-of-way for cyclists to travel safely.

3. Install adequate bicycle parking facilities at office buildings, schools, stores, churches, recreation facilities, bus stops, and metro stations as well as clean-up and changing facilities at employment centers. (In some cities such as Polo Alto, California, bicycle parking is a requirement in the zoning ordinance).

   °Bike lockers that completely enclose the bicycle offer the best protection; cost: approximately $150 per bicycle.

   °Bicycle racks offer less protection and need surveillance. However, racks are available which completely secure both wheels and only require the cyclist to carry a lock.

4. Develop bicycle education programs for adults and children. Include the following:

   °Proficiency in riding in traffic.

   °Rules of the road.

   °Techniques for bicycle maintenance.

   °What to wear, how to carry materials, clothes, etc.

5. Develop a comprehensive enforcement program. Effective enforcement not only means keeping autos out of bike lanes but giving tickets to bicyclists who do not follow the rules of the road. Successful enforcement programs like in Santa Barbara, California involve the whole community including police, schools, media and the judiciary.

IV. Reasons for a Bicycle Program

Although a comprehensive bicycle program is sensible, it needs to be justified for needed commitment, funds, and manpower. The expected benefits from a bicycle program are many. The following facts will justify a comprehensive bicycle transportation program. The development of bicycling plans and programs should be encouraged since bicycling is:

°Air Pollution Free. The majority of Americans live in areas which do not meet national air quality standards for protecting the public health and welfare. Much of the pollution, especially in urban areas is caused by the automobile. The pollutants may cause serious long-term health risks primarily lung and respiratory damage. It is estimated that a safe and widespread bicycle system has the potential of decreasing automobile usage by at least one percent. This can be achieved by diverting 12-25 percent of urban work trips of less than four miles from auto commuting to bicycle commuting. There would be additional savings from bicycle trips for recreation, shopping or trips greater than four miles long. However, the savings will differ from city to city depending upon the extensiveness of the bicycle programs.

°Noise Free. Traffic also causes noise pollution. In many urban areas noise disturbs human activity, and can be physiologically and psychologically damaging. It would be more pleasant if only a swish of hundreds of bicycles was heard at intersections.

°Convenient. The bicycle is an alternative to the automobile, especially for short trips four miles or less. It can also be used for longer trips using two modes of travel like bike/bus, bike/car, bike/train. Forty percent of all urban work trips are four miles or less, a distance easily traveled by bicycle.

°Energy efficient. Transportation consumes 25 percent of the total energy budget with the automobile consuming 55 percent using bicycles instead of automobiles can help reduce this consumption. The bicycle ranks number one in energy efficiency. Human transport (bicycling and walking) are 10-40 times as efficient as motorized transport. Two and one-half billion gallons of gasoline could be saved each year if trips less than two miles were taken by bike.

°Healthy exercise and pleasurable recreation. Cycling has been referred to as the "perfect exercise." Medical literature reports the physical and psychological benefits (feeling of well being) of bicycle exercise and training. Lack of regular vigorous exercise is a major contributor to cardiovascular disease, a major killer in industrial countries. The benefits are great; cycling enhances the cardiovascular status, lowers blood pressure, helps control body weight, etc. Bicycling is a wonderful recreation sport for the family, the individual or with groups of people.

°Economical. The maximum annual cost for maintaining a bicycle is $50, versus approximately $1,200 on the average for operating an automobile. Buying a new car often costs over $5,000 versus $50 to $400 for a bicycle. Bikeways are less expensive than highways. A mile of interstate highway can cost $6.3 million in urban areas and $1.4 million in rural areas. In comparsion, a mile of separated bikeway eight-foot wide, costs about $40,000. Lesser road improvements such as widening the curb lane by a few feet or providing a smooth shoulder suitable for cycling are not very expensive.

°Less wasteful. One hundred bicycles can be made from the materials needed for one automobile. Bikeways can possibly be made from fly ash and incinerator ash. Thirty million tons of fly ash and five million tons of incinerator ash are discarded from utilities and incinerators each year.

°Space conserving. There would be reduced need for on-street parking and additional highway lanes. Eight bicycles can be parked in the same space as one automobile. However, when

counting the total maneuvering area in a parking lot, the figure goes up to 15-20. Bicycling does not cause as much congestion. For example, 1.4 million bicycles in an urban area, such as Washington, D.C., would cause much less congestion than the congestion caused by the 1.4 million autos.

°Independent. Bicycling provides door-to-door service.

°Timesaver. During peak period urban traffic the bicycle travels at the same speed as the average car, 13 mph. Inner city trips are faster by bicycle than by taxi in New York, Hong Kong, and Bangkok. In many commuter races the bicycle has ranked among the highest in speed.

V. Who Bicycles and Where

°Bicycling is a serious, effective and useful form of transportation in many countries, where bicycling can account for up to 43 percent of all trips.

°One out of every two Americans, 100 million, own and ride a bicycle. Since 1970, more bicycles than automobiles have been sold in the U.S. (83.5 million to 79.8 million). Adults buy 50 percent of the bicycles sold.

°Bicycles are ridden by diverse groups of people: children, recreational buffs, racers, college students, Government officials, Congressmen, secretaries, industrial workers, factory workers, and others.

°The bicycle is used for a variety of utility trips to stores, schools, recreational centers, and employment centers.

°A recent study by the Metropolitan Washington Council of Governments, "Washington Regional Bikeways Study," found that five percent of the total working population, 70,000 people, commute to work by bicycle on at least an occassional basis.

°A survey for the District of Columbia in June 1975 revealed that 60 percent of the total bicycling activity was for purposeful trips--a trip with a specific destination made for a reason other than just enjoyment. The District of Columbia study predicted that purposeful bicycle travel could increase 250 percent in the next five to 10 years given proper encouragement through improved facilities.

Who to Contact

After you've justified and identified the elements necessary for a comprehensive bicycle program, make sure your State includes bicycle programs and strategies in the transportation component of their State Air Quality Implementation Plan (SIP).

The following is a list of Regions, States, urbanized areas and certified lead agencies which will be responsible for coming up with strategies to reduce transportation related pollution.

New England - Contact - Barbara Ikalainen 617 223-5630

EPA; Region I; Room 2303; J.F. Kennedy Building; Boston, Mass. 02203

State	Urban Area	Certified Lead Agency
Connecticut	Bridgeport	Greater Bridgeport Regional Planning Agency (208)
	Hartford	Capitol Regional Council of Governments (208)(MPO) (A-95)
	New Haven	Regional Planning Agency of South Central Connecticut (208)(MPO)
Massachusetts	Boston	Joint Regional Transportation Committee (MPO)
	Lawrence-Haverhill	Transportation Planning Advisory Group
	Springfield-Chicopee-Holyhoke	Transportation Planning Advisory Group
	Worcester	(See Boston)
	Suburbs of Providence-Pawtucket-Warwick	Rhode Island Planning Council with State Department of Environmental Management, State Department of Transportation, and Office of State Planning (MPO)
New Hampshire	Suburbs of Lawrence-Haverhill	(See Massachusetts)
Rhode Island	Providence-Pawtucket-Warwick	Rhode Island Planning Council (MPO)

*This is a preliminary list. The agencies have not been officially designated as of October 1978. After each agency listed is the area-wide agency responsibilities:

MPO - Metropolitan Planning Organization;
208 - Water quality planning;
105 - Air pollution control agencies;
106 - Interstate air quality agencies or commissions;
A-95 - Agency responsible for evaluation, review and coordination of Federal and federally assisted programs and projects.

Northeast - Contact - Lou Heckman 212 264-9800

EPA; Region II; Room 1005; 26 Federal Plaza; New York, New York 10007

State	Urban Area	Certified Lead Agency
New Jersey	Trenton	Delaware Valley Regional Planning Commission (208) (MPO)(A-95)
	Allentown-Bethlehem	(See Pennsylvania)
	Easton, Pa. area	(See Pennsylvania)
	New York, N.Y. area	(See New York)
	Philadelphia, Pa area	Delaware Valley Regional Planning Commission (208) (MPO)(A-95)
	Wilmington, Del. area	(See Delaware)
New York	Albany-Schnectady-Troy	Capital District Transportation Committee (MPO)
	Buffalo-Niagara Falls	Niagara Frontier Committee (MPO)
	New York	Tristate Regional Planning Commission (MPO)(208)(A-95)
	Rochester	Tennessee Transportation Council Policy Committee (MPO)
	Syracuse	Syracuse Metropolitan Study Policy Committee (MPO)

East Central - Contacts - Peter Cosier 215 597-8179
Bill Belanger 215 597-8188

EPA; Region III; Sixth and Walnut Streets; Philadelphia, Pa. 19106

State	Urban Area	Certified Lead Agency
Delaware	Wilmington	Wilmington Metropolitan Area Planning Coordinating Council (MPO)(A-95)
District of Columbia	Washington, D.C. Metropolitan area including Md. and Va. suburbs	Metropolitan Washington Council of Governments (208)(MPO)(A-95)((105 or 106)
Maryland	Baltimore	Baltimore Regional Planning Council (MPO)(A-95)
	Suburbs to Washington, D.C.	Metropolitan Washington Council of Governments (208)(MPO)(A-95)(105 or 106)
Pennsylvania	Allentown-Bethlehem-Easton	Joint Planning Commission for Lehigh Northhampton Counties with Lehigh Valley Transportation Study Coordinating Committee (MPO)(A-95)
	Harrisburg	Tricounty Regional Planning Commission with Harrisburg Area Study Coordinating Committee (MPO)(A-95)
	Philadelphia	Delaware Valley Regional Planning Commission (208) (MPO)(A-95)
	Pittsburg	Southwestern Pennsylvania Regional Planning Commission (MPO)(A-95)

cont . . .

State	Urban Area	Certified Lead Agency
	Scranton	Lackawanna County Planning Commission with Lackawanna-Luzerne Transportation Study Coordinating Committee (A-95)
	Wilkes-Barre	Luzerne County Planning Commission, etc. (See Scranton)
	Trenton, N.J. area	(See New Jersey)
Virginia	Newsport News-Hampton	Peninsula Area Transportation Policy Committee (MPO)
	Norfolk-Portsmouth	Southeastern Va. Planning District Commission (MPO) (A-95)
	Richmond	Richmond Area Transportation Policy Committee (MPO)
	Washington, D.C. suburbs	Metropolitan Washington Council of Governments (208)(MPO)(A-95)(105 or 106)

Southeast - Contact - Ron McHenry FTS 8-257-3288
404-881-3288

EPA; Region IV; 245 Courtland Street, NE; Atlanta, Ga. 30308

State	Urban Area	Certified Lead Agency
Alabama	Birmingham	Birmingham Regional Planning Commission (208)(MPO)(A-95)
	Mobile	South Alabama Regional Planning Commission (208)(MPO)(A-95)
	Suburbs of Columbus, Georgia	(See Georgia)
Florida	Ft. Lauderdale-Hollywood	Broward County Area Planning Council (208)(MPO)(A-95)
	Jacksonville	Jacksonville Area Planning Board (MPO)
	Miami	Metropolitan Dade County Planning Department (MPO)(A-95)
	Orlando	East Central Florida Regional Planning Council (208)(MPO)(A-95)
	St. Peterburg/Tampa	Hillsborough County Environmental Protection Commission
	West Palm Beach	Palm Beach County Area Planning Board (MPO)
Georgia	Atlanta	Atlanta Regional Commission (208)(MPO)(A-95)
	Columbus	No organization certified by governor
	Chattanogga, Tenn suburbs	(See Tennessee)

cont . . .

State	Urban Area	Certified Lead Agency
Kentucky	Louisville	Kentuckian Planning and Development Agency (MPO, A-95, 208)
Mississippi	Suburbs of Memphis, Tennessee	(See Tennessee)
North Carolina	Charlotte	Charlotte-Meckenburg Transportation Advisory Committee (MPO)
South Carolina	Charleston	Berkeley-Charleston-Dorchester Council of Governments assisted by the Regional Planning Council (208)(MPO)(A-95)
	Columbia	Central Midlands Regional and Development Council (MPO)
Tennessee	Chattanooga	Chattanooga Metropolitan Planning Commission (MPO)
	Memphis	Memphis Metropolitan Planning Commission
	Nashville/Davidson	Nashville Metropolitan Planning Commission
West Virginia	Charleston, S.C. suburbs	(See South Carolina)

Great Lakes - Contacts - Michael Treitman 321 353-2205
Michelle Rockawich 321 353-2205

EPA; Region V; 230 S. Dearborn; Chicago, Illinois 60604

State	Urban Area	Certified Lead Agency
Illinois	Aurora-Elgin	(Same as Chicago)
	Chicago	Illinois Environmental Protection Agency
	Peoria	Tri-county Regional Planning Commission (MPO) (A-95)
	Rockford	Rockford Area Transportation Study Policy Committee (MPO)
	Moline, Illinois and Davenport, Illinois suburbs	Bi-state Metropolitan Planning Commission (A-95)
	St. Louis, Mo. suburbs	(See Missouri)
Indiana	Indianapolis	Indiana Department of Metropolitan Development (MPO)
	Fort Wayne	Northeastern Indiana Regional Coordinating Council (MPO)(A-95)
	South Bend	Michigan Area Council of Governments (208)(MPO) (A-95)
	Chicago, Illinois suburbs	(See Chicago)
	Louisville, Ky. suburbs	(See Kentucky)
Michigan	Detroit	Southeastern Michigan Council of Governments (208)(MPO)(A-95)

cont . . .

State	Urban Area	Certified Lead Agency
	Flint	Genesse-Labor-Shiawassi Region V Regional Planning Council (208)(MPO)
	Grand Rapids	West Michigan Regional Planning Council (208) (MPO)(A-95)
	Lansing	Tri-county Regional Planning Council (208)(MPO) (A-95)
	South Bend, Ind. suburbs	(See Indiana)
	Toledo, Ind. suburbs	(See Indiana)
Minnesota	Minneapolis-St. Paul	Metropolitan Council of Twin Cities Area (MPO) (A-95)
Ohio	Akron	Akron Metropolitan Area Transportation Policy Study (MPO)
	Dayton	Miami Valley Regional Planning Council, Transportation Control Commission (208)(A-95)
	Canton	Stark County Area Transportation Policy Study
	Cincinnati	OKI Regional Planning Council (MPO)
	Columbus	Mid-Ohio Regional Planning Commission (MPO) (A-95)
	Toledo	Toledo Metropolitan Area Council of Governments (208)(MPO)(A-95)
	Cleveland	Northeast Ohio Areawide Coordinating Agency (MPO, 208, A-95)

cont...

State	Urban Area	Certified Lead Agency
	Youngstown-Warren	Eastgate Development and Transportation Agency (208)(MPO)(A-95)
Wisconsin	Madison	Dane County Regional Planning Council (208) (MPO)(A-95)
	Milwaukee	Southeastern Wisconsin Regional Planning Commission (MPO)(A-95)

South Central - Contacts - Ragan Broyles 214 767-2742
FTS-729-2742

EPA; Region VI; 1201 Elm Street; Dallas, Texas 75270

State	Urban Area	Certified Lead Agency
Arkansas	Little Rock/North Little Rock	Arkansas Department of Pollution Control and Ecology
Louisiana	New Orleans	Louisiana Air Control Commission, with Office of Highways, Louisiana Department of Transportation and Development
	Baton Rouge	(Same as above)
	Shreveport	(Same as above)
New Mexico	Albuquerque	Middle Rio Grande Council of Governments (MPO)(A-95)
Oklahoma	Oklahoma City	Oklahoma State Department of Health
	Tulsa	(Same as above)
Texas	Austin	No organization certified by governor
	Corpus Christi	No organization certified by governor
	Dallas/Forth Worth	North Central Texas Council of Governments (MPO)
	El Paso	No organization certified by governor
	Houston/Galveston	Houston-Galveston Area Council (MPO)
	San Antonio	Steering Committee of the San Antonio-Bexar County Urban Transportation Study Committee (MPO)

Central - Contact - Thomas D. Gillard FTS 8-758-3791
816-374-3791

EPA; Region VII; Room 249; 1735 Baltimore Avenue; Kansas City, MO 64108

State	Urban Area	Certified Lead Agency
Iowa	Des Moines	Central Iowa Regional Association of local Governments (A-95)(208)(MPO)
	Davenport/Moline/ Rock Island	Bi-state Metropolitan Planning Commission (A-95)
	Omaha., Neb. suburbs	(See Nebraska)
Kansas	Wichita	No organization certified by governor
	Kansas City and Kansas City, MO. suburbs	Mid-America Regional Council (208)(MPO)(A-95)
Missouri	Kansas City	(Same as above)
	St. Louis	East-west Gateway Coordinating Council (208)(MPO)(A-95)
Nebraska	Omaha	Omaha Metropolitan Area Planning Agency (MPO)(A-95)

Rockies - Contact - Barry Levene FTS 8-327-3711
303 837-3711

EPA; Region VIII; Suite 900; 1960 Lincoln Street; Denver, CO. 80203

State	Urban Area	Certified Lead Agency
Colorado	Colorado Springs	Pikes Peak Area Council of Governments (MPO) (A-95)
	Denver	Denver Regional Council of Governments (208) (MPO)(A-95)
Utah	Salt Lake City	Wasatch Front Regional Council (MPO)(A-95)

Southwest - Contacts - Immants Kresse 415 556-2003
Steve Drew 415 556-6925

EPA; Region IX; 215 Fremont Street; San Francisco, CA 94105

State	Urban Area	Certified Lead Agency
Arizona	Phoenix	Maricopa Association of Governments (MPO) (A-95)
	Tuscon	PIMA Association of Governments (MPO)(A-95)(208)
California	Fresno	Fresno County Air Pollution Board 105/106
	Los Angeles/ Long Beach/ San Bernadino Riverside	Southern California Association of Governments (MPO, A-95, 208)
	Sacramento	Sacramento Regional Area Planning Commission
	San Diego	San Diego County Comprehensive Planning organization
	San Francisco-Oakland	Association of Bay area Governments
	San Jose	Association of Bay Area Governments
	Oxnard/Ventura/ Thousand Oaks	Southern California Association of Governments
Nevada	Las Vegas	Clark County Board of Commissioners

Northwest - Contact - Laurie Smith (202) 442-1226
FTS 8-399-1226

EPA; Region X; 1200 6th Avenue; Seattle, Washington 98101

State	Urban Area	Certified Lead Agency
Oregon	Portland	Columbia Region Association of Governments, Clark County Regional Planning Council 208, A-95, MPO
Washington	Seattle-Everett	Puget Sound Air Pollution Control Agency
	Spokane	Spokane Regional Planning Conference (MPO)(A-95)
	Tocoma	Same as Seattle
	Suburbs of Portland, Oregon	State of Oregon Department of Environmental Quality

By Nina Dougherty Rowe