United States
Environmental Protection
Agency

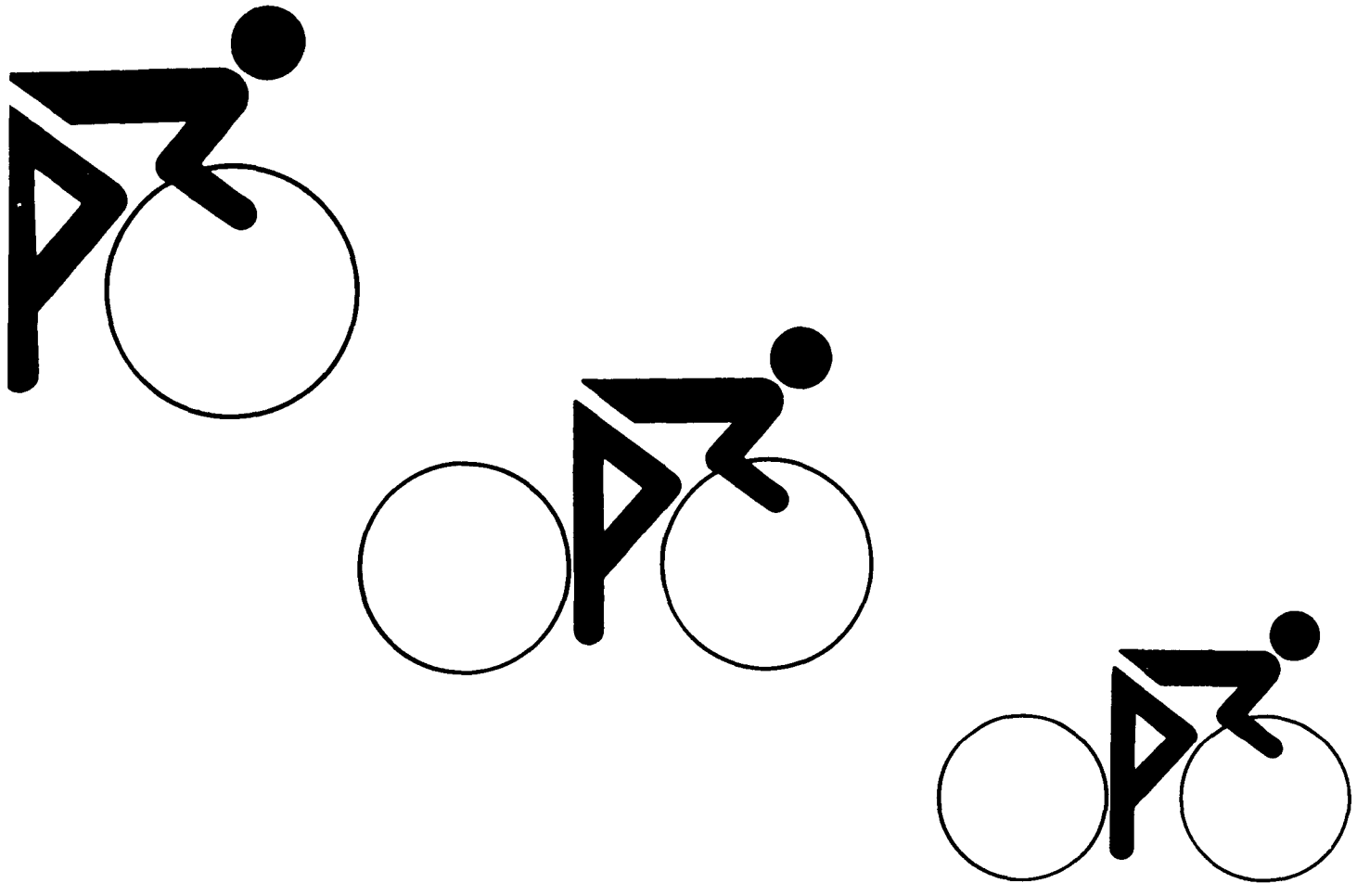
Office of Transportation
and Land Use Policy
Washington DC 20460

EPA-400/9-78-008
June 1978

Air

EPA

Bicycle Strategies to Reduce Air Pollution



Bicycle Strategies to Reduce Transportation Air Pollution as Part of State Implementation Plans

Clean Air Act Requirements

Under the Clean Air Act as amended 1977 States must revise their State Implementation Plan (SIP) for areas which do not meet air pollution control requirements. (National ambient air quality standards). The states must submit SIP revisions which will include strategies to attain air pollution standards by January 1982 to the Environmental Protection Agency, (EPA) January 1, 1979.

In most major urbanized areas of the country, the revised SIP's will require strategies designed to reduce emissions from transportation/related sources by means of structural and operational changes in the transportation system.

EPA will publish information documents in 1978 for reasonably available control measures. The measures include such things as: on-street parking controls, park and ride and fringe parking lots, carpools, improved public transit, etc. Bikeways (bicycle lanes), bicycle storage facilities, employer programs to encourage bicycling are all acceptable measures. A detailed bicycle information document will be available in the fall of 1978.

EPA, the Department of Transportation (DOT) and Housing and Urban Development (HUD) are all seeking to integrate the transportation/air quality planning and implementation required by the Clean Air Act into existing planning and programming procedures.

Now is the time for bicycle activists, bicycle planners, transportation planners, and transportation engineers, to get bicycle programs into the planning process. One of the major plans is the three C's plan, The Continuing, Comprehensive transportation planning process carried on Cooperatively by states and local communities. Administered by DOT the three C's process includes the Unified Work Program, Transportation Plan which includes Transportation System Management (TSM) and the Transportation Improvement Program (TIP) and its annual elements.

Bicycle Program Plans

Bicycle Plans 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 needs to be involved, the press, police, transportation departments, citizens, schools, etc. The approaches will vary from community to community. Here is a preliminary list of elements to be included in a comprehensive bicycle plan and some alternative approaches.

1. Establish 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.

   - 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:

   - Bikeways along abandoned railroad rights-of-ways.

   - Bikeways along sewer interceptor lines.

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

   - A commuter map, which shows the existing bikeways and interconnecting lightly traveled streets.

   - Bicycle streets or bicycle boulevards closed to traffic.

   - Bike lanes on existing streets which take up a whole lane of traffic.

   - Design policies for all newly constructed roads and bridges that will reduce hazards and increase mobility for bicyclists by allowing enough space in the right-of-way for cyclists to safely travel.

   - Eliminate obstacles and bottlenecks which hinder bicycling in urban and suburban areas.

3. Install adequate bicycle parking facilities at office buildings, schools, stores, churches, recreation facilities, bus stops, and metro stations. (Some cities have made this a requirement in their zoning ordinance).

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

- Bicycle racks are an alternative; they 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:

   (a) Proficiency of riding in traffic.

   (b) Rules of the road.

   (c) Techniques for bicycle maintenance.

   (d) What to wear, how to carry materials, clothes, etc.

5. The police, schools, and the judiciary all need to be involved in a comprehensive enforcement program that will protect bicyclists' rights on the road and insure bicyclists' compliance with traffic rules. In some States, the bicycle laws may need to be updated. Some States are helping children to learn safe bike riding practices without intimidating them. Some methods used:

   (1) A policemen on a bicycle--at the same level--gives cyclist a warning ticket.

   (2) A letter is sent to the parents with information on bicycle safety and the citation of the child.

   (3) Children and parents attend safety seminars.

   (4) Peer courts are used for trials involving children who violate traffic regulations while riding their bicycle.

Reasons for a Bicycle Program

Some facts justifying a bicycle program follow:

The Bicycle

Bicycling is:

- Nonpolluting. The majority of Americans live in areas which do not meet national air pollution standards for 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 and can cause lung and respiratory damage. Traffic also causes noise pollution. In many urban areas noise disturbs human activity, and can be physiologically and psychologically damaging. 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.

- Energy efficient. Transportation consumes 25 percent of the total energy budget in which the automobile is primarily responsible. Bicycles 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.

- Healthy exercise and pleasurable recreation. Cycling has been referred to as the "perfect exercise." 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 $1,170 for an automobile. Buying a new car often costs over $5,000 versus $50 to $400 for a bicycle. Facilitating for bicycles is also less expensive then facilitating for autos. A mile of interstate highway costs $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 is not very expensive.

- Space efficient. 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, there are over 1.4 million autos driven in the Washington area, the same number of people that are employed.

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

- Timesaver. The bicycle travels at the same speed as the average car in traffic, 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.

- Environmentally sound. Bicyclers help stop pollution and stop energy consumption.

Who Bicycles and Where

- Bicycling is a serious, effective and useful form of transportation in many countries, accounting for 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 every class 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 Washington, D.C. Council of Government's study, "Washington Regional Bikeways Study" found that five percent of the total working population 70,000 people commute to work by bicycle (2.5 percent commute regularly and 2.5 percent commute occassionally).

- 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 showed that purposeful bicycle travel would increase 250 percent in the next five to 10 years given proper encouragement through improved facilities. Forty percent of all urban work trips are four miles or less, a distance easily traveled by bicycle.

If more people bicycled there would be:

- Less air pollution. 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 program.

- Less noise. Wouldn't it be more pleasant if only a swish of hundreds of bicycles was heard at intersections?

- Less energy consumption. Two and one-half billion gallons of gasoline could be saved each year if trips less than two miles were taken by bike.

- Less waste. One hundred bicycles can be made from the materials needed for one automobile. Bikeways can possibly be made from fly ash and incinerator ash. 30 million tons of fly ash and five million tons of incinerator ash are discarded from utilities and incinerators each year.

- Less congestion, more space. There would be reduced need for on-street parking and additional highway lanes.

- Less hassle. Fewer cars on the road, fewer rush hour traffic jams. Bicycle commuters can travel independently, door-to-door, while getting their daily exercise.

- Healthier Americans. Medical literature reports the physical and psychological benefits (feeling of well being) of bicycle exercise and training.

The Bicycling Environment

More people would bicycle if there were:

- A safe bicycle transportation network.
- More bicycle safety education programs teaching people how to ride their bicycles in traffic, and how to properly and safely maintain their bicycles.
- Adequate secure bicycle parking facilities at office buildings, schools, stores, churches, recreation facilities, bus stops, metro stations.
- Cleanup and changing facilities at places of work.
- Maps of good bicycling streets and bike routes.
- Information on how to commute to work (what to wear, how to carry it).
- Consistent rules of the road for cyclists throughout the country.
- Enforcement of bicycle rules of the road.
- Equal funding possibilities for all modes of travel including bicycles.

Who to Contact

After you've justified and identified the elements for a comprehensive bicycle program take this opportunity under the Clean Air Act to make sure your State includes bicycle programs and strategies in their transportation component of their State Implementation Plan (SIP).

The following is a list of regions, states and urbanized areas which will be responsible for coming up with strategies to reduce transportation related pollution.

New England - EPA Bicycle Coordinator - Barbara Ikalainen 617-223-5630

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

State	Urban Area
Connecticut	Bridgeport
	Hartford
	New Haven
	Springfield
	Chicopee-Holyhoke, Mass. area
Massachusetts	Boston
	Lawrence-Haverhill
	Springfield-Chicopee-Holyhoke
	Worcester
	Providence-Pawtucket-Warwick, RI area
New Hampshire	Lawrence-Haverhill, Mass. area
Rhode Island	Providence-Pawtucket-Warwick area

Northeast - EPA Bicycle Coordinator - Lou Heckman 212-264-9800

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

State	Urban Area
New Jersey	Trenton
	Allentown-Bethlehem
	Easton, Pa. area
	New York, N.Y. area
	Philadelphia, Pa. area
	Wilmington, Del. area
New York	Albany-Schnectady-Troy
	Buffalo-Niagara Falls
	New York
	Rochester
	Syracuse

East Central - EPA Bicycle Coordinator - Bill Belanger 215-597-8188

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

State	Urban Areas
District of Columbia	Washington, D.C. Metropolitan area including Md. and Va. suburbs
Maryland	Baltimore
	Suburbs to Washington, D.C.
Pennsylvania	Allentown-Bethlehem-Easton
	Harrisburg
	Philadelphia
	Pittsburgh
	Scranton
	Wilkes-Barre
	Trenton, N.J. area
Virginia	Newsport News-Hampton
	Norfolk-Portsmouth
	Richmond
	Washington, D.C. Va. suburbs
Delaware	Wilmington

Southeast - EPA Bicycle Coordinator - Ron McHenry FTS 8-257-3043
404-881-3043

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

State	Urban Area
Alabama	Birmingham
	Mobile
	Alabama suburbs of Columbus, Georgia
Florida	Ft. Lauderdale-Hollywood
	Jacksonville
	Miami
	Orlando
	St. Peterburg Tampa Bay
Florida	Palm Beach County
Georgia	Atlanta
	Columbus
	Chattanooga, Tenn. GA. suburbs
Kentucky	Louisville
	Cincinnati, Ohio suburbs in Kentucky
Mississippi	Mississippi suburbs of Memphis, Tenn.
North Caroline	Charlotte
	Durham
South Carolina	Charleston
	Columbia
Tennessee	Chattanooga
	Memphis
	Nashville
West Virginia	Charleston

Great Lakes - EPA Bicycle Coordinator - Phyllis Kierig 321-353-2205

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

State	Urban Area
Illinois	Aurora-Elgin
	Chicago
	Peoria
	Rockford
	Moline, Illinois and Davenport, Illinois suburbs
	St. Louis, Mo. suburbs in Illinois
Indiana	Indianapolis
	Fort Wayne
	South Bend
	Chicago, Illinois suburbs
	Louisville, Ky. suburbs
Michigan	Detroit
	Flint
	Grand Rapids
	Lansing
	South Bend, Ind. suburbs
Michigan	Toledo, Ind. suburbs in Michigan
Minnesota	Minneapolis- St. Paul

cont...

State	Urban Area
Ohio	Akron
	Dayton
	Canton
	Cincinnati
	Columbus
	Toledo
	Youngstown-Warren
Wisconsin	Madison
	Milwaukee

South Central - EPA Bicycle Coordinator - Bill Taylor 214-767-2742
FTS 8-729-2742

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

State	Urban Area
Arkansas	Little Rock-non-Little Rock
Louisiana	Baton Rouge
	New Orleans
	Shreveport
New Mexico	Albuquerque
Oklahoma	Oklahoma City
	Tulsa
Texas	Austin
	Corpus Christi
	Dallas
	El Paso
	Fort Worth
	Houston
	San Antonio

Central - EPA Bicycle Coordinator - Thomas D. Gillard FTS 8-729-2742
214-767-2742

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

State	Urban Area
Iowa	Des Moines
	Davenport and Moline-Rock Island, Ill. suburbs
	Omaha, Neb. suburbs in Iowa
Kansas	Wichita
	Kansas City and Kansas City, MO. suburbs in Kansas
Missouri	Kansas City
	St. Louis
Nebraska	Omaha

Rockies - EPA Bicycle Coordinator - Barry Levene FTS 8-327-3711
303-837-3711

EPA; Region VIII; Suite 900; 1860 Lincoln Street; Denver, CO 80203

State	Urban Area
Colorado	Colorado Springs
	Denver
Utah	Salt Lake City

Northwest - EPA Bicycle Coordinator - Lori Smith FTS 8-399-1226
206-442-1226

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

State	Urban Area
Oregon	Portland
Washington	Seattle-Everett
	Spokane
	Tacoma
	Suburbs of Portland, Oregon

Southwest - EPA Bicycle Coordinator - Steve Drew 415-556-6925

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

State	Urban Area
Arizona	Phoenix
	Tuscon
California	Fresno
	Los Angeles-Long Beach
	Sacramento
	San Bernardino-Riverside
	San Diego
	San Francisco-Oakland
	San Jose
	Oxnard-Ventura
Hawaii	Honolulu
Nevada	Las Vegas

By: Nina D. Rowe