carolina forum

Downtown Revitalization vs. Air Quality: TSM to the Rescue in Louisville

Downtown revitalization has been an important concern of urban planning and development agencies for many years. Planners developed many such schemes in the 1950s, 1960s, and 1970s as business and residents alike fled the center city for the suburbs. Recently, air quality control agencies have also become concerned with downtown revitalization, but for different reasons. They fear that new development projects will attract large numbers of automobiles, thus aggravating the already high concentrations of pollutants generated by slow moving traffic on center city streets.

With downtown revitalization interests viewing new development as essential, and air quality interests viewing new development as a possible threat, the potential exists for conflict. In Louisville, Kentucky conflict has been reduced through a cooperative planning process for Transportation Systems Management (TSM) that will improve air quality and at the same time enhance the economic development potential of the center city.

BACKGROUND

In 1976, the Kentuckiana Regional Planning and Development Agency (KIPDA), the Metropolitan Planning Organization for a nine-county, bi-state region surrounding Louisville, began work on a Center City Transportation Planning Study. Conceived as a TSM study for downtown Louisville, the study was guided by a nineteen-member steering committee representing government on all levels (federal, state, regional, county, and city), transportation providers, the business community, and citizens' groups. A consultant was retained to help with the data collection and analysis. The project was funded with $71,500 in grants from the Federal Highway Administration, the Urban Mass Transit Administration, the Kentucky Department of Transportation, and the Louisville Community Development Cabinet.

The study resulted in a plan of twenty-two short-range (five years), low-cost transportation projects designed to improve air quality and also permit accomodation of several major development projects. The recommended improvements deal with transit service, transit marketing, traffic engineering, ridesharing, parking management, bicycle and pedestrian travel, goods delivery, work schedule changes, and vehicle emissions. The proposals include a system of elevated, climate-controlled walkways to facilitate pedestrian travel, a parking authority to coordinate parking policy with overall center city goals and objectives, a system of peripheral parking facilities for center city employees and other long-term parkers, mandatory vehicle emissions inspection and maintenance, and the introduction of some form of transit along all or part of River City Mall (an area now reserved for pedestrians).

The plan was evaluated using eleven criteria, including air quality and mobility. Figure 1 illustrates the impact that plan implementation is projected to have on center city carbon monoxide (CO), nitrogen oxide (NO_x), hydrocarbon (HC) emissions, and vehicle miles traveled (VMT):

FIGURE 1. PROJECTED IMPACT OF LOUISVILLE TRANSPORTATION PLAN

1982

	With No Transportation Improvements	With Center City Plan Implementation
CO	+26%	-23%
NO_x	+13%	- 4%
HC	-14%	-36%
VMT	+41%	+19%

These figures take into consideration twenty major development projects to be completed by 1982 and the vehicle emissions standards to be in effect at that time. Developments planned or under construction include a $90 million retail and office complex, a $24 million performing arts center, a $90 million apartment, hotel, and office complex, and a $26 million retail and office restoration project. As the chart illustrates, downtown Louisville can enjoy both air quality improvement and the proposed developments if the plan is implemented; both pollution reductions and VMT increases are possible through improved traffic flow and stricter vehicle emissions standards.

ELEMENTS OF THE PLANNING PROCESS

COMPUTER SIMULATIONS

The pollution estimates were developed with the SAPOLLUT computer model, which calculates gross emissions based on vehicle volumes and speeds. The more sophisticated APRAC 1-A defusion model was used to develop maps of the center city showing existing and projected "worst case" concentrations of CO. The APRAC model considers weather patterns and the height and arrangement of buildings as well as vehicle emissions. It is sensitive enough to reflect CO concentrations by block and is useful in relating localized impacts of TSM projects to attainment of federal ambient air quality standards for carbon monoxide.

CITIZEN PARTICIPATION

During the course of the study, a special effort was made to inform and involve the public. Press releases were periodically distributed to the media, including neighborhood newspapers. Presentations were made to, and comments solicited from, numerous neighborhood organizations and citizens' groups. A day-long public forum was held in the downtown Convention Center to present and receive comments on preliminary recommendations. Throughout the study, questionnaires were distributed, and citizen's comments noted. A summary of all public feedback was prepared and distributed to the steering committee before final recommendations were made.

LAND USE RECOMMENDATIONS

Between its inception in 1976 and final approval in 1978, the study went through several changes. Three land use plans and three interchangable transportation plans were initially proposed for a total of nine alternative plans. Early on in the planning process, however, the steering committee learned that center city land use issues would be resolved by the Mayor of Louisville, the Judge (chief executive officer) of Jefferson County, the Governor of Kentucky, the developers, and other "movers and shakers." While transportation and ease of access would presumably be considered, the land use decisions would hinge on factors outside the scope of the committee. The purpose of the study, therefore, would be to develop transportation solutions to minimize the adverse impacts of land use decisions made elsewhere.

To get a handle on these decisions, the steering committee consulted developers, elected officials, agency directors, and other knowledgeable sources. The end result was a map showing five-year land use projections for the center city. It was stressed that these were land use assumptions as opposed to land use recommendations.

Having to assume land use developments disappointed some steering committee members; they thought it would be useful to demonstrate that certain development sites were superior to others in terms of air quality. On the other hand, a ready-made land use scheme simplified work considerably. The steering committee would have had much difficulty in developing a set of unanimous land use recommendations, given representation of both air quality and redevelopment interests on the committee.

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TRANSPORTATION PROJECT PRIORITIES

Another change in the study occurred because of the consultant's recommendation to develop three alternative transportation plans: an auto-oriented plan, a transit-oriented plan, and a mixed auto-transit plan. After reviewing the plans, the steering committee felt the distinction between them was somewhat artificial and that all of the project proposals contained in the plans merited further analysis. The three plans were combined into a single core plan, and several other transportation projects were evaluated independently to determine if they should be included in the core plan. Following the evaluation, the core plan and the independent projects were combined into a single plan with two stages. Stage I projects were recommended for immediate implementation, while Stage II projects required additional study but were recommended for implementation by 1982.

IMPLEMENTATION

Because the implementing agencies were represented on the steering committee that developed the plan, most of the plan, which received final approval in 1978, is on the way to implementation. Agencies with different perspectives have compromised on transportation solutions mutually beneficial to their interest. For example, air quality control agencies as well as downtown revitalization advocates now support the concept of free, close-in, short-term parking for shoppers and other consumers of center city goods and services, if accompanied by an effective peripheral parking/ shuttle bus strategy to keep employees and other long-term parkers away from the street canyons and congested portion of the center city.

The Center City Plan was also incorporated into Kentucky's draft State Implementation Plan (SIP) to achieve federal air quality standards, along with commitments from local and state governments to implement the twenty-two project recommendations. Although downtown Louisville will not be in compliance with federal air quality standards by the 1982 deadline stipulated in the 1977 Clean Air Act Amendments, the improvements resulting from Center City Plan implementation should assist Louisville in qualifying for a five-year extension of the deadline.

Additionally, the committee planning process employed by the Center City Study was used to develop KIPDA's FY-1980 Transportation Systems Management Element (TSME) for the Louisville Urbanized Area. Previous TSMEs were primarily inventories of projects being developed by the implementing agencies. Kentucky's SIP, however, stipulates that alternative TSME plans be formulated and evaluated for their impacts on several criteria, including air quality. The most expedient and effective method of fulfilling this requirement was through the committee planning process used in the Center City Study.

KIPDA's FY-1980 Unified Planning Work Program contains funds for an update of the Center City Study; this indicates that the TSM planning process will continue to allow both air quality and downtown revitalization interests to initiate and pursue mutually beneficial transportation solutions for the improvement of downtown Louisville. Planners in other cities might try a similar planning process to coordinate both economic development and air quality activities.

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Consider the Coast

The coast suffers all the problems typical of our country today and many that are unique. It has special resources but also special conflicts. It has inflation, unemployment, rising taxes, and crime; it also has hurricanes, beach erosion, estuarine pollution, and oil drilling. In the face of these and other coastal problems, federal policy is sadly lacking. Policy reforms and efficient resource programs are urgently needed to protect our fisheries, wetlands, estuaries, beaches, and barrier islands.

FISHERIES

Both commercial and recreational fishing will be endangered without immediate national attention. The majority of commercial fishing takes place close to the continental shelf or in shallow coastal bays. Many of the fish that do live in the ocean, such as salmon and striped bass, have critical breeding links to coastal estuaries or rivers. In these nursery areas, the young stages are especially vulnerable to pollution and habitat alteration. Therefore, the water quality and general condition of the coastal environment must be maintained in good condition.

Shellfisheries are particularly vulnerable to pollution. Because shellfish can take up human pathogens from sewage in the water--hepatitis, dysentery, and others--their catch in polluted waters is prohibited by state and federal health laws. While many shellfish areas are open and prospering at present, 15 million acres are closed to shellfishing. On the Atlantic Coast this amounts to 53 percent of all shellfish waters considered to be productive as well as vulnerable to pollution (such waters are classified as "under inventory").

The war against pollution is like the war against inflation--we seem never to gain on it, but only to reduce the rate of increase. In the late 60s we were closing waters at the rate of 1.3 percent per year, but by the mid-70s closings dropped to 0.6 percent per year. A more concerted effort on the part of the federal government is needed if we hope to maintain the present level of commercial fisheries.

Equally important are the sport fishermen who catch about as much each year as the commercial fishermen. The U.S. estimated annual sportfish take is 1.6 million pounds of fish caught by 20 million salt-water sportfishers. Sportfishing is not only a popular sport, it substantially boosts G.N.P.

Recreational fishing, such as surfcasting, is an important coastal use.

Photo courtesy N.C. Travel Development Bureau

While many states and the federal government may have interest in a single species, no workable program has yet been devised to protect sportfish habitats--a most important part of protecting the future coast. This is one area, however, where incidental gains are evident. Catches of many of our coastal sport species--e.g., bluefish, croaker, flounder, and seatrouts--were nose diving through the early 1960s, probably due to rampant coastal construction and uncontrolled pollution. Catches hit bottom in 1967, and then began edging up as environmental controls began to work. For example, an annual Environmental Protection Agency (EPA) survey of 144 estuaries showed that by 1976 DDT had almost disappeared from the bodies of fish and PCBs and dieldrin also were dropping.

RECREATION

Sportfishing, recreational boating, camping and nature study are only a few of the recreational diversions that our coastal resources offer, but the foremost recreation resource is the beach itself.

The lower forty-eight states have 27,000 miles of coastline suitable for recreation, of which 4,350 miles are sandy beaches. Gains in public beachfront have inched slowly ahead since 1960. Consider the Atlantic coast, for example: to a base of 336 miles of beachfront in 1960, we had added only sixty miles by 1974; but over the same fifteen years, private development exploded along the coastline, locking off thousands of miles of shoreline.

General growth of coastal communities--coastal sprawl--is probably the leading cause of diminishing access to beaches and waters. Large-scale condominium projects and private home development have caused heavy demand for bridges and causeways to open up new lands and have created a need for sewers and other capital items to service new communities. Carelessly planned, intense private use of land closes out the public and endangers coastal resources. Reserving beaches for the public has been ignored or aggressively obstructed by local governments, driving those denied beach rights into the courts where policy is being made by default. Federal and state action is the only hope.

Sprawl also encourages bulkheading, groins, and jetties that erode the beach because of a complex of physical reactions of waves to hard structures. The problem is greatly exacerbated by the slow and relentless rise of sea level throughout the world. The rate of rise on U.S. shores is about one foot in vertical height per century, which is no problem for Maine, but creeping disaster for the thin coasts to the south.

Erosion due to reckless development and natural forces is a serious and costly national problem. According to the Army Corps of Engineers, it will cost $743 million to protect the 1,100 mile coastline of the Northeast (Virginia to Maine), which was experiencing critical erosion in 1970. In view of the fact that the federal government is the undisputed owner of most of our beachfront, the main custodian of the adjacent waters, and does nearly all

major beachfront protection work, it is shocking that there is no federal policy dealing with beaches as a whole.

CRITICAL AREAS

A most important part of coastal planning is identifying critical areas that need special attention. For example, the barrier islands are on the critical areas list for many reasons. These long, narrow, sandy islands that fringe much of the Atlantic and Gulf coasts are unstable, ecologically vital, fragile, and the worst of the hurricane traps. Fortunately, the barrier island problem was formally recognized in 1977 when President Carter set up a task force to deal with the issue. Unfortunately, the task force ran aground for bureaucratic reasons and no action has yet been taken. Nevertheless, the campaign has heightened the public's awareness and alerted state agencies to the problem. The President's task force could improve further the prospects for a stronger national policy if it ever finishes its work.

Estuaries are on the critical list because of their biotic richness, their recreational importance, and their great vulnerability to pollution and physical disruption. These values can be disrupted when watersheds and river courses, which supply fresh water to the estuarine life, are altered. The quality of the river waters can be greatly affected by land uses in the watershed of the coastal shoreland, which can produce sediment from construction, natural soil erosion and fertilizer and pesticide runoff from cropland.

Because of the intractibility of local governments when it comes to effectively controlling land use, it does not appear that the federal government or the states will be able to get very far very fast in estuarine protection under the powers provided by the two principal control programs--the Coastal Zone Management Program and Section 208 (the regional planning provision of the Clean Water Act). For example, no federal or state program has been able to effectively resolve the problem of the buildup of huge superfarms on the low lying shorelands of North Carolina's Albemarle Sound. In any event, the gross misuses of the past will not be repeated as often and some improvement for the future coast may be expected through the heightening of public concern over soil erosion and other development induced non-point pollution.

Wetlands are also well-recognized nationally as vital areas. Their protection is well-advanced because they are defined as part of the public waters of the United States and because many states have risen to the challenge of protecting them. For instance, Georgia, which has 100,000 acres along the coast has permitted alteration of only twenty-three acres in ten years; and New Jersey's wetlands protection program brought losses down from 2,000 acres per year six years ago to less than eighty acres in the past few years. Any significant wetlands use now must have a federal permit from the Corps of Engineers, approved by Interior, Commerce, EPA and the state (often the states require a separate permit). In the future, coastal wetlands will no longer be converted wholesale to real estate. The future coast will, in all probability, have healthy wetlands, and those sacrificed will be lost only for the most necessary public purposes.

Boat slips are often created by dredging, which has adverse impacts on the coastal environment.

Photo by M. Fahay

THREATS TO CRITICAL AREAS

Industrial facilities siting poses a critical threat to all of these resources. The Department of the Interior (in the "National Environmental Pollution Study"--1969 statistics) estimated that there were 126,000 industrial plants in the U.S. coastal zone. Primary water users and potential polluters--paper, chemicals, hydrocarbons, metals --made up 4,500 of these. While EPA now regulates industrial discharges, no resources agency monitors EPA routinely to ensure that coastal resources are protected. EPA priorities are aligned with human health and the human milieu, not with resource conservation. The National Marine Fisheries Service (NMFS), a resources agency legally responsible

for review of EPA permits, has no personnel or money to do so.

The sticky problem of how to blend local rule with federal authority for energy facilities siting also is far from being resolved. For example, a long-term, large-scale controversy concerning a refinery at Portsmouth, Virginia, which involved all the federal, state, and local forces, was resolved by the Corps of Engineers. The Corps has taken on itself the power to evaluate all alternative sites while the Office of Coastal Zone Management stands by helplessly with no direct power. Policy guidance which could resolve such problems is badly needed from the federal government.

Oil drilling is another critical threat. It is, thankfully, moving outwards from the marshlands of Louisiana and the bays of Texas to ecologically safer off-shore sites. Yet refineries, and onshore support facilities for the booming offshore industry, are often thrown up recklessly, pushed by forces that overwhelm local planners and officials. Much of our offshore oil will be piped to shore from deep water platforms, thereby reducing the risk of tanker accidents; but our accelerating imports of oil and liquified natural gas present a strong threat to the future coast. There are now 12,000 spills per year reported to the U.S. Coast Guard, of which only twenty to twenty-five involve more than 100,000 gallons. Responsible operations and good housekeeping are needed to protect our valuable bird and fish resources and the amenity values of the coast. Slowly, international controls are improving the quality of crews as well as navigation and operation equipment, but much stronger federal initiative on controlling tankers is needed.

The conclusion that follows this survey of our coastal resources is obvious: there is no central federal policy or program in the most important problem areas--beaches, wetlands, estuaries, coastal fisheries, or barrier islands. The present policy framework is a patchwork of bits and pieces of legislation and regulation. States participating in the Federal Coastal Zone Management program have little effective policy guidance to assist them in framing coastal programs that are consistent with national needs. In my opinion, the most urgent policy needs include:

--*Beaches:* National policy is required to: 1) guarantee access to beaches for all Americans, 2) guide development along dangerous beachfronts, 3) govern Federal/state beach protection programs.

--*Wetlands:* National policy is required to protect the wetlands of the United States against all types of adverse use (not just dredging and filling as it now stands).

--*Estuaries:* National policy is needed to protect the rich resources of estuaries and territorial waters of the coast against pollution, physical alteration, and destruction of vital habitat.

--*Barrier Islands:* National policy is needed to protect the fragile barrier islands of the coast from federally-sponsored development which destroys resources and endangers life and property.

--*Fisheries:* National policy is needed to conserve coastal fish and shellfish resources against environmental degradation and over-harvesting (present policy is related to U.S. and international waters only).

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Valuable estuarine habitat is often lost due to drainage ditches.

Photo by M. Fahay