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THE IMPACT OF PUBLIC TRANSPORTATION
POLICY TO AFFECT ENERGY CONSERVATION
(A CASE STUDY)

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Abstract

In order that public transportation policies relating to energy conservation might be identified, correlated, and assessed, a mail survey of local, regional, state, and federal appointed and elected officials was made. This survey also included contacting members of the regional business community. Although the responses received did not constitute the complete survey mailing, they did provide insight to the individual policymaker's perception of what public policy is now in effect and how it was enacted, particularly those pertinent to energy conservation in the transportation sector.

A review of the various regional plans that have been developed and adopted through the East-West Gateway Coordinating Council, the designated regional planning agency for the Metropolitan St. Louis area, reveals no specific public transportation policy that has been formulated and adopted that will significantly reduce energy, primarily motor fuel, consumption within the region. There is, however, an energy contingency plan presently under development; the purpose of this plan is to provide strategies that may be implemented should a national fuel shortage or crisis exist. Adoption of any energy plan will be difficult to adopt since this type of public policy is grounded in dis-incentives to the traveling public.

Energy is being conserved within the St. Louis region, but it is not caused by public transportation policy or corresponding regional planning. Home owners, local governments, and the business community are voluntarily taking the lead in conserving energy by incorporating new technology and increased insulation. Also, emphasis is being placed on reducing heating, air conditioning, and lighting costs. These actions are prompted more by the economics of

energy than by a public policy established at the local, state, and regional levels in lieu of a specific national energy policy.

Background. In the 1960's the Federal government determined that concepts for regional planning espoused by planners since the early 1920's would be an acceptable vehicle for addressing environmental issues and minimizing the duplication of required capital improvements. To accomplish the stated goals and objectives of the new Federal legislation (public policy) programs of Federal financial assistance were developed and funded. Since in many of the highly urbanized areas public policies are individually developed by local, township, county, and state governmental units, the Federal government, through legislation and regulation, established planning regions with appropriate extension of existing Federal agencies, including the creation of new ones, to coordinate local planning.

In the Metropolitan St. Louis area it was determined that the existing Bi-State Development Agency would not be used to develop the required regional plans for elements such as land use, transportation, housing, etc. A new

agency, the East-West Gateway Coordinating Council, was formed to develop these plans or statements of public policy. As a voluntary Council of Governments with equal representation by both States, Missouri and Illinois, statements of public policy at the regional level were to be coordinated with and reflect those policies created through local and state need and planning. Since its creation, the Council has adopted and revised plans for transportation (both highways and transit), housing, water quality/management, solid waste and land use; the water quality plan and un-adopted plan for air quality (TCP) represent environmental issues and have been predicated on the present public policies, stated and implied, that have been incorporated into the several adopted regional plans.

Status of regional planning. The St. Louis regional planning area (St. Louis SMSA) straddles two states and includes seven counties: Madison, St. Clair, Monroe in Illinois; St. Louis, St. Charles, Franclin, and Jefferson in Missouri; the City of St. Louis; and a multiplicity of local governmental units (cities, villages, and townships). This profusion of governmental entities is further exacerbated by fire, ambulance, school, sewer, levee, and other such districts whose boundaries are generally not co-terminus with a particular community. It is from this melange of local interest, needs and expertise that regional plans are developed, adopted, and refined.

Land use. During the formative days of the Council, a consultant prepared and presented alternate concepts for land use within the St. Louis region. These concepts included:

- (1) Expansion of the industrial/commercial core to locate expanded residential areas as an outer ring.
- (2) Expansion from the core along major highway corridors to locate industrial, commercial, and residential activities, and
- (3) Development of satellite communities that would be a balance of residential, commercial, and industrial land use.

The current Land Use Plan, adopted this year, follows the basic concept of expansion by higher residential densities from the core without

reflecting the existence of satellite or 'free-standing' communities. The Metro-East (Illinois) portion of the region is generally made up of 'free-standing' communities such as Greater Alton, Tri-Cities, East St. Louis, Greater Belleville, Edwardsville, etc. The Eastside has developed in this manner due to economic and social pressures. St. Charles County must also be viewed as a satellite community due to its being spatially separated from the main body of urbanization by the Mississippi and Missouri Rivers.

Current land use planning reflects the public concern for understanding the actual limitations to the availability of energy, especially in its form as motor fuel. To this end the Council has incorporated a set of goals and objectives for resource conservation and development. In this area of emphasis the stated goals of the Plan begin to diverge significantly; both the full use of existing investment (maintaining the Inner City of Core) and the development of residential concentrations within the proximity of industrial, commercial, and institutional job centers reflect and represent different goals. The advocacy of the redevelopment and renovation of declining areas is in direct conflict with the development of balanced satellite communities with energy conservation to be the direct by-product.

Certainly inherent in the current Land Use Plan are the public policies to renew the economic base of the core (Cities of St. Louis and East St. Louis) and to maintain and renovate the housing stock of the Inner City. Supporting this concept is the Port Plan, which proposes a large expansion of port facilities primarily along the St. Louis (City) waterfront.

The Council's executive summary of the adopted Year 2000 Land Use Plan (14) states that the Board of Directors' policy will be to "utilize the A-95 Project Notification and Review System and other procedures, as appropriate, to promote future development and improvement of the transportation system in a manner supportive of the Land Use Plan." Since the regional land use plan is generalized in nature and the actual land use controls are vested with the

Multiplicity of local governmental units, this places the conservation of energy in question in view of the adverse situation that will exist between chief elected officials should this Council policy be used.

Under the adopted land use concept, energy conservation can only be realized if the current trend for residential development in free-standing communities is slowed or eliminated. Otherwise work trip will remain by single driver vehicle and of increasing lengths thereby maintaining or increasing current levels of fuel consumption.

Transportation. Recently the transit element of the 1995 Transportation Plan has been re-studied. This revised Plan maintains and supports the land use concept of an expanding industrial/commercial core.

One of the principal positive transportation strategies for reducing the consumption of motor fuel is to increase transit ridership. The revised Mass Transit Plan maintains the focus on the St. Louis (City) CBD with proposals for freeway bus lanes and a limited version of light rail transit vehicles on a separate right-of-way. As a positive transit plan, it will not cause a significant shift from the individual passenger vehicle.

Through the availability of expanding subsidies for transit, levels and areas of existing service continue to increase without proportional increases in ridership. Fuel conservation is being realized by the Bi-State Transit System through technology by replacing older buses with both new and smaller equipment.

Although local, township, county, and state highway agencies have generally worked toward the elimination of problem or hazard areas, the current emphasis on conserving energy has spawned new terminology; today these activities are termed to be Transportation Systems Management (TSM) projects. Coupled with the higher costs of energy, the highway agencies are faced with the problem of inflation; faced with the current economics, the continued, and in some areas increased, renovation of the existing highway system represents near-term planning that will result in reduction of motor fuel consumption.

The previous and present long- and short-range highway construction plans of the responsible State agencies are predicated on expanding the residential land use ring. As such, the developed corridors emanate from the bi-state core area.

Others. Air quality, solid waste, water quality/management, and housing represent other areas of regional planning. Generally, no specific plans have been adopted in these areas; no public policies have been incorporated to conserve energy other than the conservation that may be realized through the economics of solid waste collection, transfer, and use as fuel.

Should an air quality plan actually be prepared and adopted, the dis-incentives built into such a plan should have a significant impact on the reduction of vehicular trips and trip length; thereby, fuel conservation should be a by-product.

Development of public policy. To determine what public transportation policies had been adopted relating to energy conservation, a group of local, state, and federal elected and appointed officials were contacted. Most of the responses received referred to the Council as the focal point for statement of this area of public policy.

This survey included the chief elected official of selected local and county jurisdictions, all Federal agencies at their regional office, the major transportation agencies, and members of the business community. The information generally sought in each instance may be capsulized as:

- (1) What are the public transportation policies that have been developed to conserve energy (particularly in the transportation sector)?
- (2) What programs have been implemented under the public policy?
- (3) What measurable success has been achieved to reduce the levels of energy (fuel) consumption?

The specific agencies or jurisdictions contacted included:

Missouri State Highway Department
Illinois Department of Transportation

Bi-State Development Agency
 East-West Gateway Coordinating Council
 Health Systems Agency
 Monsanto
 Regional Commerce and Growth Association
 Federal Highway Administration
 Urban Mass Transit Administration
 Environmental Protection Agency
 Department of Energy
 Department of Housing & Child Development
 City of St. Louis
 City of East St. Louis
 City of Florissant
 City of Clayton
 City of St. Peters
 City of Kirkwood
 City of Wood River
 Village of Bethalto
 Jefferson County
 St. Louis County
 St. Clair County
 St. Charles County

It would appear that most of those governmental units that responded to the survey are concerned, primarily, about the economics of energy conservation. With two exceptions, the cities responded that they were implementing energy conservation projects that would reduce the energy required for heating and lighting and were converting their vehicle fleet to compact and subcompact cars. The City of St. Peters stated (7) that they would be attempting to integrate electric vehicles throughout their fleet; the City of Florissant responded that the Bi-State Development Agency should be contacted.

The two Federal agencies that responded suggested that the East-West Gateway Coordinating Council could furnish the information requested. The EWGCC staff furnished a large number of reports (6, 8, 9, 11, 12, 13) but declined to discuss public policy stating that "general questions regarding policy development are not easily answered inasmuch as any semblance of comprehensive and cohesive policy is imbued with a host of variables." (8)

The State transportation agencies responded that energy conservation was being achieved through organizational policy. The Missouri State Highway Department (4) emphasized build-

ings and vehicle size and maintenance. The Illinois Department of Transportation (1) indicated that formal policies were under development at the State level; (2)(3) at the District level the focus has been on implementing Transportation Systems Management projects and encouraging car pooling.

The Bi-State Development Agency furnished data (10) showing that modest gains in ridership have continued since the fuel availability and price crisis of 1973. However, data provided by Bi-State showed that the miles traveled have increased more proportionally than ridership. Also, it should be noted that new equipment has allowed Bi-State to minimize increases in fuel consumption.

As a for-profit business, Monsanto has made a broad approach at energy conservation through the following programs:

- (1) "Round trip truck movements to avoid deadhead miles,
- (2) Pooling and consolidation of small shipments into truck or carload,
- (3) Direct rather than circuitous routing of shipments,
- (4) Maximum loading of equipment wherever possible,
- (5) Building transportation equipment for greater payloads,
- (6) Use of multiple car or unit trains,
- (7) Increased use of piggyback transportation,
- (8) Increased use of shipper association,
- (9) Increased use of private highway transportation, avoiding deadhead miles,
- (10) Diversion of volume tonnage from truck to rail; rail to barge; barge to ocean tanker, wherever possible,
- (11) Conversion of package shipments to bulk." (5)

Also Monsanto has encouraged car pooling and worked with Bi-State to institute service to World Headquarters complex. They stated that they are unaware of public energy related policies for siting new plants.

Of all the responses no one offered any qualification or measure of the success of public transportation policies that have been devel-

oped to reduce previous levels of energy consumption.

Public energy policy. Generally, many areas of energy conservation related to transportation were identified. Each highway agency contacted described agency operation policy(s) that will affect reduction in fuel use. Certainly the recent steps taken by the Missouri State Highway Department to hasten the completion of several major construction projects will reduce air pollution levels and energy consumption; this agency policy, although significant, must be viewed as short-term only.

It would appear that existing land use policy supports a continued high level of fuel consumption. Local, implicit or defacto, policy can be individually successful, but alone it will have little effect within the region.

Generally, the goals and objectives contained in adopted regional plans and programs of all implementing agencies have been prepared and adopted incorporating positive incentives for energy conservation. At this time these policies and programs do not appear to be achieving large measures of success.

Since it is not conceivable that public transportation policy will ever include the elimination of the existing freeway and expressway highway system, it would appear that disincentive goals and programs may be necessary should the world and national fuel (crude oil) supply be severely limited as is being suggested by some individuals and groups. It may well be necessary to change the approach to land use planning and thereby restrict the siting of new institutional, commercial, and industrial activities. Also, it may be necessary to both eliminate parking or significantly increase the price of parking; this disincentive strategy reflects the fact that during a major portion of each day the private (transit) vehicles using the regional highway system remain parked.

Implementation of a national energy plan and of a regional air quality transportation central plan would possibly achieve the objective of reducing fuel consumption, but it would, no doubt, be predicated on changing land use pat-

terns and forcing transit use through parking pricing and availability.

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BIOGRAPHIES

Dr. Ali Selim is currently an Associate Professor of Civil Engineering at South Dakota State University and has been since January, 1977. He received both his masters and doctorate degrees from the University of Missouri at Rolla. During the last twelve years, Dr. Selim's experience in the field of transportation is divided between teaching, in higher education in

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Dr. Braja M. Das is currently an Associate Professor of Civil Engineering at the University of Texas at El Paso. He received his masters degree from Iowa State University and doctorate degree from the University of Wisconsin. Dr. Das has an extensive teaching experience in both graduate and undergraduate level, in addition to professional experience with some consulting firms. Dr. Das has had several published papers and is a member of several ASCE committees. He is a registered professional engineer and a member of various organizations.