Making the Exception the Norm

Innovative Planning and Financing of Transportation and Related Infrastructure

Final Report

March 2000

State and Local Policy Program
Hubert H. Humphrey Institute of Public Affairs

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Introduction

Like other areas across the country, Hennepin County faces conflicting priorities for addressing transportation, fiscal, and environmental needs. Increasingly, areas around the country are using smart growth policies as a resolution to these issues. Hennepin Community Works has taken a lead in designing several projects with integrated policies (previously identified as policy in an integrated framework (Fulton, 1998)\(^1\)). Making projects like the Midtown Greenway the norm and not the exception is what Hennepin County seeks to accomplish.

The present research examines the policy and planning milieu that Hennepin County currently faces and probes the question of how communities can fund innovative projects that promote community livability. Specifically, transportation policy and planning have become a tool used by decision-makers to promote livable community goals, but because resources are limited, policy makers need to consider innovative financing of projects that meet these livability goals. In this report, various cities around the country are highlighted to illustrate ways that Hennepin County, building on what it already has, can become a national model. Through interviews and extensive research, this report documents how transportation policy and planning can lead the way for cities to integrate smart growth policies into their community thereby improving community livability and sustainability.

This report aims to provide valuable information to decision-makers and stakeholders. Starting with a review of the policy context, smart growth policies are examined at the federal, state, and regional level to show the wide variety of projects underway. The researchers then review infrastructure impacts and different methods of assessing the impacts. This paper will show how transportation policy and planning is moving beyond the narrow focus of transportation policy as an economic impact to show that transportation impacts can be measured at the economic, environmental, and social level. The planning, governance, and financing framework is explored. Planning and governance models that encourage coordinated planning are reviewed; the North Metro I-35W Corridor models a new planning and governance framework. Traditional financing of infrastructure has been pay-as-you-go; the writers explore new innovative techniques. Lastly, case studies of Portland, Chattanooga, Austin, and St. Louis are presented to illustrate how various components of the proposed model operate in various locales. A model framework is then proposed to guide Hennepin County in its development of a national model.

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\(^1\) The integrated framework discussed in Fulton is similar to smart growth policies. Smart growth policies, as defined in this report, are an integrated series of planning, fiscal, environmental policies. Elements of a smart growth policy include open space preservation, investment in existing infrastructure and areas such as central cities, compact development where necessary, mixed use, and multimodal transportation options.
The Changing Context of Transportation Policy

Across the country, needed investments in transportation infrastructure are outpacing available federal, state, and local funds. Financing is inflexible and there is a lack of sufficient discretionary funds. It is no longer possible to fund transportation infrastructure primarily through grants on a pay-as-you-go basis. Moreover, it is no longer sufficient to approach transportation infrastructure from a conventional level-of-service perspective. Instead, policy makers and planners need to approach transportation infrastructure investment from a community building and access perspective. In conjunction, they need to creatively use existing financing mechanisms, develop new ones, and identify other funding sources to accomplish infrastructure and community goals.

The need for innovative financing of projects is driving government and private partners to look for new ways to plan, implement, and manage transportation projects. In addition, recent research on the total cost of transportation is leading to a change in traditional planning practices. Increasingly, social costs and equity concerns are being considered in the transportation planning process, and, as a result, the public is becoming more involved.

For 30 years, transportation policy focused mainly on infrastructure development. This included building an interstate system to move people and goods efficiently. Increasing capacity was the dominant paradigm although as early as the 1960s, transportation policy did mandate some community planning. Prior to 1991, a disconnect often arose between transportation projects and community needs (Horan, 1999).

With passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, a new holistic policy and planning paradigm emerged. Prior research by the State and Local Policy Program and Claremont Graduate School demonstrated how the Midtown (or 29th Street) Corridor in Minneapolis served as an example of this new integrated and holistic paradigm. The 1997 project analyzed the greenway corridor from a transportation, community, and policy perspective and illustrated how the project addressed several policy goals of the ISTEA legislation.

Included in this report are discussions of the impacts of infrastructure, innovative planning models and financing mechanisms, and implications for public policy. The findings are synthesized and presented in a framework for innovative planning, financing, and management of transportation infrastructure investment projects. Although the framework has applicability across the nation, it is illustrated in the context of Hennepin County, Minnesota. Because of this, it is useful to give a brief overview of transportation financing and planning in Hennepin County.
Hennepin County

Current Process
In Minnesota, conventional financing of state highways is by gas tax, license tab fees, and federal aid. (The Motor Vehicle Excise Tax (MVET) goes to general fund.) County roads are funded by county property taxes and the state aid highway fund. State aid can be used for up to two-thirds of a county’s road miles. Overall, the county road funding works out to be about 50 percent property tax and 50 percent state aid. In cities with a population greater than 5,000, property taxes and the state aid funds to cities are used. A maximum of 20 percent of city roads are eligible for state aid. In smaller cities, only property taxes are used to fund road improvements.

One of the limitations of transportation financing in Minnesota is the Highway Trust Fund Act. The act mandates that 62 percent of the fund goes to state roads, 29 percent goes to counties, and 8.5 percent goes to cities with populations greater than 5,000. Although state aid can be used for maintenance, environmental studies, preliminary engineering, and design engineering, there are restrictions on how it can be used for sidewalks and other amenities. Furthermore, funds in the Highway Trust Fund cannot be used for transit projects. Transit funds come from biennial appropriations from the state’s general fund and are comprised of fare box revenue (31 percent) and property taxes.

On one hand, Hennepin County benefits from the current financing situation because there is a guaranteed fund for road projects. On the other hand, the county is hindered by the lack of a dedicated fund for transit projects and by the over-reliance on property taxes for transit funding. Furthermore, the inflexible nature of Minnesota’s transportation financing system reduces the county’s ability to fully take advantage of innovative transportation financing mechanisms and opportunities.

Although Hennepin County can do its own planning for its own roads, to access TEA-21 funds, it must work with the Metro Division of the Minnesota Department of Transportation (MnDOT) and the Metropolitan Council. The Metro Division of MnDOT is responsible for all state highway/interstate projects within the seven-county metropolitan area, and the Metropolitan Council, as the metropolitan planning organization (MPO), is the lead transportation planning agency in the metropolitan area.

The Transportation Advisory Board (TAB), within the Metropolitan Council, advises the Metropolitan Council in transportation planning and in coordinating the agencies implementing the plans. It also provides a venue for discussion of regional transportation issues. The Transportation Advisory Board is comprised of municipal and county elected officials (including one Hennepin County commissioner), private citizens, and representatives from state agencies and different transportation modes. The TAB adopts the Regional Transportation Improvement Program (TIP) and involves the public for TIP adoption. The Technical Advisory Committee (TAC) provides technical assistance and coordination to the TAB. It is composed of professional staff from governmental units.

2 The Transportation Equity Act for the 21st Century, passed in 1998, reauthorizes federal transportation funding for six years.
involved in transportation including counties, cities, MnDOT, and Minnesota Pollution Control Agency.

The metropolitan TIP and TIPs from across Minnesota are used to develop a State Transportation Improvement Program (STIP). The STIP is a comprehensive document on a three-year schedule of planned transportation projects. The TAB (and Area Transportation Partnerships (ATPs) in the rest of Minnesota) ensures that citizens are involved in the transportation planning process.

Besides its involvement in the TAB for planning and financing of projects at the regional level, Hennepin County works with municipalities in planning transportation projects. These projects span the spectrum from small streetscape improvements to traffic flow amelioration to multi-jurisdictional projects such as the Northstar Commuter Rail corridor and the Hiawatha Light Rail Transit (LRT) corridor.

\textit{Impacts of LRT}

\textbf{Fiscal Impact}

The planning for the proposed Hiawatha LRT line has changed the transportation planning and policy context. The 11.4 mile line is planned to run from downtown Minneapolis, to the airport, and then on to the Mall of America. The Minnesota Legislature has approved a total of $100 million towards the $548.6 million project.\textsuperscript{3} Indications from the FTA are that the case for federal funding for the Hiawatha LRT project is strong; however, it has not been approved yet.

The elections of 1998 resulted in a very different and unique political landscape in the state. The Governor is a member of the Reform Party, the Senate retained Democratic control, and the House became controlled by Republicans. Governor Ventura appointed Elwyn Tinklenberg as commissioner of MnDOT and Ted Mondale as chair of the Metropolitan Council. Both are staunch advocates of transit in general and of the Hiawatha LRT project in particular. In the 1998 session, the democratically-controlled Legislature appropriated an initial $40 million for LRT. In 1999 with strong encouragement from Governor Ventura, the divided Legislature appropriated an additional $60 million for LRT.

The LRT project has helped to raise the profile of transportation financing in Minnesota. Currently, transportation is more dependent upon property taxes in Minnesota than in any other state. Because Minnesota’s Constitution requires that all monies in the Highway Trust Fund be used for highways and be allocated according to the 62/29/8.5 split described above, funds for transit are limited to fare box revenues and property taxes. There is no dedicated transit fund. Some people contend that the amount of money required to maintain and operate LRT will be the impetus for transportation financing reform and result in the establishment of a dedicated transit fund. Others are doubtful any reform will pass in the Legislature due to rural and perhaps suburban opposition.

\textsuperscript{3} Funding for the LRT projects is as follows: federal request: $274 million, State of Minnesota: $100 million, Hennepin County: $87 million, Metropolitan Airports Commission: $70 million, and MnDOT: $17 million.
Planning Impact
The LRT project is also leading to different types of collaboration in the planning process. MnDOT is the agency with the responsibility to build the project. The Metropolitan Council (through MetroTransit) is the agency that will operate the system once it is built. Both agencies are participating in the planning process in collaboration with the cities of Minneapolis and Bloomington, and Hennepin County. Although all the partners are working together, each has a different part of the planning process and a different organizational culture which have led to difficulties at times.

For example, community involvement in the planning process for LRT is seen as being very important. The Metropolitan Council and the City of Minneapolis have considerable experience in successful community involvement. In the metro area, MnDOT has not been as successful. This presents an opportunity for one organization’s strengths to complement another’s weaknesses; however, this sort of thinking has not fully been achieved. Another complication is the fact that planning for the station designs and the land use around the stations is occurring independently. The Metropolitan Council has had the lead on the former, and Minneapolis is responsible for the latter. The different timelines have been confusing to the community and meant that important information is not available when needed. A more successful planning collaboration has occurred at the proposed Lake Street station. Although Minneapolis was mandated to do the land use planning, it did not have funds allocated for the task. Hennepin County provided the funding, and the two jurisdictions have initiated the land use planning for the station.

In addition to the Lake Street LRT station and the Midtown Greenway, Hennepin County, through Hennepin Community Works, is involved in a number of other infrastructure projects that strive for increasing the tax base while promoting sustainable communities. Among these projects are the Humboldt Greenway and Bassett Creek. Both of these projects have had substantial community involvement in the planning process and have taken a holistic approach to transportation, housing, environmental enhancements, access, and social services.

In contrast, Hennepin County Transportation Department has taken a much more conventional planning approach to projects. Interviews with several city administrators consistently faulted the department for its exclusive focus on motorized vehicles and level of service (see Appendix A for a summary of interviews). Its policies are still oriented toward the efficient movement of vehicles without much regard to pedestrians or cyclists. Funds are not available for pedestrian scale lighting, sidewalks, retaining walls, or their maintenance. Such policies fly in the face of livable communities redevelopment efforts. The county is also criticized for delaying projects due to its own bureaucracy.

Despite a more conventional view towards planning transportation infrastructure, the Transportation Department has adopted innovative approaches to financing. It applied for and has received initial certification for financing through the Transportation Revolving Loan Fund (TRLF), Minnesota’s state infrastructure bank. Furthermore, the county is aggressive with municipalities when it comes to sharing the costs of certain projects. Several municipalities feel current cost sharing with the county is skewed and balk at attempts by the county to shift even more financial responsibilities to them.

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Relationship with Metropolitan Council

Just as there are tensions between municipalities and the county transportation department, the relationship between the county and the Metropolitan Council has historically not been close. In fact, the county, to a large extent, has tried to avoid working with the Metropolitan Council. In part, this is due to “turf” issues, but also, because of guaranteed funds from the state road financing system, counties do not have a natural incentive to work with the Metropolitan Council. Hennepin County has realized, however, that the Metropolitan Council is a key resource to innovative financing and funding especially with TEA-21 funds. The planning and financing work for the Hiawatha LRT line has also allowed the two organizations to work more closely together.

Municipalities reported a good working relationship with the Metropolitan Council in general and MetroTransit in particular. MetroTransit has been an enthusiastic partner in planning studies and in looking at service enhancements. The principle concerns expressed by municipalities about the Metropolitan Council were in terms of unfunded mandates. The TAB process is reasonably well-regarded; however, municipalities would like a longer window for preliminary project approval.

In terms of community involvement in the planning process, Hennepin County has a good record of engaging the community. Although earlier community involvement in the Humboldt Greenway was likely warranted, the county has been actively engaged with community members on the Ford Bridge reconstruction, Midtown Greenway, and Hiawatha LRT line. The county is limited, though, by what it can do because of fiscal constraints. Furthermore, different areas of the county administration are at different points along the continuum of innovation.

It is important for the county to approach transportation investments from a holistic perspective and think of infrastructure development as community development. By doing so, new financing methods, funding sources and partners, and planning approaches may become more apparent.

Policy Context Supporting Innovation

Decision-makers today face two issues that have made them focus on smart growth as a policy option: devolution and the negative impacts of increasing road capacity. Devolution has forced entities to do more with less. Increasingly, the negative impacts of focusing on road capacity and building more roads has lead decision-makers to consider policy goals that focus on community livability.

With devolution, Hennepin County and all local jurisdictions in the country are experiencing more fiscal responsibility for financing transportation projects at the same time that demand for such projects is increasing. These demands are requiring jurisdictions to think creatively, not only in terms of financing and planning, but also in terms of the projects themselves. Transportation projects that are able to be viewed as community building projects are better able to identify potential project partners, access additional funding sources, and make use of innovative financing strategies. Innovative planning and financing strategies can help yield
projects that meet community goals while getting the most accomplished from the public dollar.

Innovative financing is any strategy that is not pay-as-you-go. Innovative planning, at its simplest, provides opportunities for communities to participate in developing and deciding their infrastructure investments.

**Background**

Historically, transportation infrastructure development has been used as a policy instrument with the primary goal of economic development. Federal spending on infrastructure has been designed to increase the efficient movement of people and freight. If successful, transportation infrastructure spending has the potential to increase economic output by lowering the cost of transportation. Policies during much of the second half of the century have sought to increase road capacity in order to keep people and goods flowing. Demand is outpacing capacity though, and as a result traffic congestion is becoming worse. Among its many impacts, congestion causes a loss in productivity due to wasted time and worsens the quality of the air and water.

The policies that focused on increasing road capacity have also resulted in dramatic changes to the urban form. Investments in the Interstate Highway System beginning in the 1950's have not only changed the way cities look but also the way they function. Instead of the traditional city with the majority of economic activity concentrated in the urban center, today's cities are sprawling polycentric metropolitan landscapes with economic, residential, and recreational centers scattered throughout the area. The transportation investment policies that supported this development pattern are being reexamined and a new emphasis on transit, non-auto-oriented infrastructure, and the improvement of existing infrastructure (rather than the building of new) is emerging.

This new emphasis, often referred to as "smart growth," is an attempt to deal with the issues arising from unchecked growth by looking at wise land use and efficient resource use. Because smart growth approaches look beyond level-of-service and road capacity, they provide a means for policy makers to approach transportation infrastructure investment from a more holistic and integrated perspective.

**Smart Growth**

Increasingly popular with constituents and policy makers, smart growth has become a policy tool for encouraging livable communities. In the November 1998 elections, voters overwhelming said "yes" to smart growth and open space initiatives. Of the 240 measures on the ballot at all levels of government, voters approved 72 percent and agreed to more than $7.5 billion in financing for these measures (Myers, 1999).

Smart growth polices deal with the issues arising from unchecked growth by looking at wise land use and efficient resource use through reducing congestion and preserving open space. From the development side, smart growth encourages efficient land use through preservation of open space, infill development, compact development where appropriate, and multimodal transportation access. From the policy perspective, smart growth advances integrated policies that encourage mixed use, investment in transportation infrastructure, and
development of transportation options that decrease auto-dependence. Because smart growth approaches look beyond level-of-service and road capacity, they provide a means for policy makers to approach transportation infrastructure investment from a more holistic and integrated perspective.

Smart growth has become one policy tool which decision-makers can implement to manage growth. It is not that cities struggle with the issue of growth or no growth scenarios, but increased awareness of the impacts arising from unchecked growth has focused the attention of policy makers at the federal, state, and regional levels on smart growth.

Federal Role
Although a recent General Accounting Office report found that federal policies did not have a direct, measurable impact on sprawl, several past federal policies have contributed to sprawl. In addition to policies focused on increasing road capacity, the mortgage interest deduction on taxes encourages homeownership and the capital gains tax on the sale of a home encourages trading up. Even policies which were designed to have a positive impact on urban areas such as the 1980 Comprehensive Environmental Response Compensation and Liability Act (CERLA a/k/a Superfund) have discouraged infill redevelopment.

Federal transportation policy has played an important role in building the infrastructure outwards from urban areas and facilitating travel through and around these areas. Until 1991, when George Bush signed into law the Intermodal Surface Transportation Efficiency Act (ISTEA), transportation policy was based on capacity (Carlson, 1995). The Interstate and Highway Defense System initiated under Eisenhower in 1956 focused on moving people and goods efficiently and facilitated growth into the suburbs. In urban areas, the goal was to move more cars while easing increasing congestion.

ISTEA changed that by encouraging a more holistic approach to transportation, and policy moved from focusing on building and moving more people and more cars. Transportation was to “consist of all forms of transportation in a unified, interconnected manner . . . to reduce energy consumption and air pollution while promoting economic development and supporting the Nation’s pre- eminent position in international commerce.” The successor to ISTEA, Transportation Equity Act for the 21st Century (TEA-21) passed in 1998, builds upon this by encouraging communities to deal with transportation infrastructure development in a holistic manner.

The Environmental Protection Agency (EPA) is another government department with policies and programs supporting smart growth. The EPA is a partner in the Smart Growth Network. The network provides toolkits and policy information to a broad array of

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4 This report found that there is little quantitative data to support the argument that federal policies lead to sprawl but there is anecdotal data that supports this assumption. A variety of federal programs were examined such as CMAQ, tax provisions, water and sewage funding, and Farmland Protection Program, but no federal program or policy empirically could be linked to sprawl.

5 The Environmental Law Institute confirmed that urban migration was partially due to capital gains tax. The ELI estimates that the capital gains repeal will affect up to 305,000 moves by encouraging moves either in the same urban area or not as far out.


7 See www.smartgrowth.org.
stakeholders. Current policy research centers on reforming capital gains tax law, using air quality controls to foster smart growth, linking small businesses and smart growth, and researching site preparation techniques. The Smart Growth Network also seeks to develop a Location Efficient Mortgages program, design industrial ecosystems, and develop a smart growth index tool.

In addition to the EPA, the Department of Housing and Urban Development (HUD) has initiated various smart growth programs. As jobs and people have moved outward, stabilizing urban areas has become a priority. In conjunction with the EPA, HUD seeks to revitalize urban areas through brownfields redevelopment. HUD has released Community 2020, a software mapping program that encourages smart growth planning decisions by allowing citizens to interactively see how and where tax dollars are spent. Realizing that land use codes are hampering smart growth projects, HUD has partnered with the American Planning Association on providing a database and guidebook on planning legislation at the state, regional, and local level. The database contains information on all 50 states, best practices, and model legislation.  

At the White House, two smart growth initiatives are underway: the Clinton-Gore Livability Agenda and the President’s Council on Sustainable Development. The Livability Agenda, announced on January 11, 1999, seeks to protect green space, alleviate traffic congestion, promote sense of place, encourage cooperation at the regional level, and promote economic competitiveness. These five elements taken together encourage livable community development.

The second initiative is the President’s Council on Sustainable Development. The Council has issued a report on sustainability including issues and suggestions for dealing with land use issues. The Council has argued for five development strategies: green infrastructure, land use and development, community revitalization, rural enterprise and community development, and material reuse and resource efficiency. The Council also argues for tools and resources (such as information assistance, economic incentives, and local partnerships) to help communities.

Interest in transportation and land use issues is also occurring in the legislative branch of the federal government. In both the House and the Senate, task forces have been convened to examine smart growth issues. Rep. Earl Blumenauer (D-Oregon) started the Livable Communities Task Force in 1998. The goals of the Task Force are to encourage local decision-making, provide communities ways to solve problems, support sustainable solutions to infrastructure issues, encourage integrated policy outcomes, help communities find ways to work in the global competition, and encourage partnerships at all levels.  

Senator James M. Jeffords, (R-Vermont), and Senator Carl Levin, (D-Michigan) started the Senate Smart Growth Task Force in January of 1999. This task force will examine the role of federal policies in creating or exacerbating sprawl.

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8 See www.planning.org/plnginfo/GROWSMAR/gsindex.html.
9 See www.house.gov/blumenauer/lfct.htm.

Making the Exception the Norm
State Role
A number of states now have smart growth laws. These laws generally are open space initiatives or land use initiatives. The two best-known programs are Oregon’s plan adopted in 1973 and Maryland’s plan adopted in 1997. Other states such as New Jersey, Utah, Colorado and Washington have similar smart growth policies; highlighted below are state policies for Maryland, Minnesota, and Tennessee.

In 1997 Governor Parris Glendening of Maryland signed into law the Neighborhood Conservation and Smart Growth Initiative. Maryland enacted a growth plan based on financial incentives. State funds can only be used for infrastructure development in specified areas known as “Priority Funding Areas.” The areas are designated by local governments and will have an average density of 3.5 dwellings per acre and a ten-year sewer and water plan. Growth can occur in other areas but without state funds. Thus, the plan seeks to channel growth into areas that are better equipped for it. In doing so, public investment is safeguarded and open spaces are protected. The Rural Legacy Program protects open space through monies raised by bond sales. The program has protected 32,000 acres and aims to protect 200,000 acres by 2011.

Minnesota’s Community-Based Planning Act, passed in 1997, encourages communities to develop livable community plans by providing technical and financial assistance to local governments for planning. There are eleven goals for community planning including citizen participation, livable community design, conservation and economic development. In a pilot project in Carlton County, a joint powers board was formed between the county, a reservation, and several cities and townships. The project will use GIS to help develop a comprehensive growth plan.

Tennessee passed a smart growth plan in 1998 (English, 1999). In its plan, urban growth boundaries must be designated based on a 20-year plan to be developed by all stakeholders of the community. Areas that fail to develop a plan can have one developed by the state. Like Maryland, state funding will be withheld from those areas that do not adopt a plan by July 2001, and those that have completed the process by July 2000 will be eligible for a five percent increase in the state allocation formula.

Regional Role
In much of the country, regional level institutions have limited authority and would not be likely to implement significant smart growth policies or programs. Yet, many of the problems smart growth policies seek to resolve occur at the regional level. Thus, municipalities (which tend to have land use authority) need to work more closely with regional and/or state entities (which have transportation authority) to implement smart growth policies and programs. Such partnerships can achieve community livability goals whereas balkanized answers to these regional problems result in a zero sum game. By jointly leveraging infrastructure investments, cities can provide innovative solutions to these problems.

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10 See www.op.state.md.us/smartgrowth/index.html.
11 See www.mnplan.state.mn.us/press/cbpact.html and www.mnplan.state.mn.us/commplan/index.html.
In order to tackle regional problems such as infrastructure investment, many researchers have argued for different forms of regional governance. Neil Pierce, author of *Citistates*, argues that as regions compete in an increasingly global environment they will need to form regional alliances to be competitive in the new economy. David Rusk, former mayor of Albuquerque, makes a spatial argument for regional growth management. He examines the difference between elastic cities—those that can expand their boundaries through annexation—and inelastic cities. Elastic cities have more advantages and can use their regional power to control government.\(^{12}\) Like Myron Orfield, Rusk argues that the tax base plays an important part in regional growth and management. Orfield argues for curbing growth at the fringe of the Twin Cities through a regional smart growth policy approach involving tax base sharing and regional governance (Orfield, 1997). He asserts that schools, the bellwether of a community’s health, indicate that poverty is becoming more concentrated in inner suburban areas. Orfield discusses the impact of suburban growth on communities and infrastructure as the suburbs attract jobs, high end homes, and infrastructure. In his study he found that core taxes were financing suburban growth to the detriment of the core infrastructure. Lastly, Anthony Downs argues for regional allocation agencies. These agencies would be responsible for allocating federal resources in a given area (Downs, 1994).

Since many of the economic, environmental, and equity issues that cities face are cross jurisdictional and regional in nature, regional policy solutions may be the most appropriate. At the very least, awareness of the interplay between regional problems and local solutions should be enhanced. Regional approaches come in many different forms, but the basic common element is that successful governance structures match the needs of the community. According to William Dodge, regional governance “encompasses the roles and relationships of all community leaders and citizens guiding and empowering the design of strategies to address common concerns and the delivery of services to provide for the common good” (Parzen, 1997, p. 23). There are a variety of formal and informal governance structures from formal city-county governance structures to special districts. Real world examples of regional governance can be seen in Portland, Atlanta, and the Twin Cities. By increasing the authority of regional entities over financing to support smart growth, more livable communities can be developed at the same time as meeting the transportation needs of moving people and freight efficiently and multimodally.

\(^{12}\) He argues that the number of metro areas has not increased but their size has thorough annexation.
Accounting for Infrastructure Impacts

In addition to recent policy changes away from increasing road capacity and towards smart growth strategies, the concept of infrastructure and the analysis of its impacts are also changing. This is significant to developing an integrated planning and financing approach because it is necessary to determine complete costs before making investment decisions. Complete cost determination identifies communities that are impacted and that should be included in planning. Furthermore, it may lead to the identification of additional funding sources.

Infrastructure is defined as “the basic facilities, equipment, and installations needed for the functioning of a system or organization” (American Heritage Dictionary). In the context of a transportation system, infrastructure is often considered to be comprised of roads, bridges, sidewalks, rail lines, telecommunications, etc. A broader definition can include many other factors such as the travel destinations (e.g., employment, housing, education, recreation, shopping), the people who use the transportation system, and the services that support people and their development such as health services, education, and welfare. The level to which these increasingly broader components of the transportation system are considered in the planning of transportation projects varies; however, in general there is increasing emphasis on social, human, and community aspects.

Impact Analysis Models

Conventional analysis takes into account land assembly, right-of-way acquisition, engineering, and construction costs, congestion reduction benefits, vehicle operating costs, and transit fares. However, these direct costs are only part of the total cost of transportation and exclude numerous social and community aspects such as questions about the social and psychological aspects, physical aspects, visual environment, land use, economic conditions, mobility and access, provision of public services, safety, and displacement. In addition, some impacts will be indirect and may occur later in time or further away geographically but still need to be considered (Forkenbrock, 1997). Failure to measure these costs results in an incomplete analysis and could lead to incorrect investment decisions. Equity questions of who is affected by the project and how also need to be addressed.

One way to examine costs is through a cost-benefit analysis. Such an analysis allows for a comparison of alternatives to be made and for an evaluation between economic benefits and social and environmental impacts to occur. The National Environmental Protection Act (NEPA) calls for economic, environmental, and social concerns to be balanced in projects. However, the focus of transportation planning has tended to be on environmental impacts, and to a lesser degree, economic impacts. Due in part to federal mandates on environmental justice, concern for social costs—which include the impact on a community’s well-being, livability, and historical resources—are of increasing importance. Determining social costs is difficult though, because they are not easily put in terms of money. Fortunately, during the mid to late 1990’s, several costing models have been developed in an effort to calculate the true costs of transportation including direct, environmental, economic, and social costs. Brief descriptions of these models follow.

Making the Exception the Norm
Litman

In a summary of *Transportation Cost Analysis: Techniques, Estimates and Implications* (Litman, 1999a) discusses the importance of transportation costing. He creates a framework for comparing travel costs that categorizes costs according to whether they are internal or external, fixed or variable, market or non-market. Market costs are the financial expenses; non-market costs are "intangible" costs such as time, discomfort, and environmental damage that are often considered unmeasurable. He looks at both horizontal and vertical equity.

The costs that Litman includes are user expenses, travel time, traffic crash and risk, parking, congestion, roadway costs, air pollution, noise pollution, land use impacts, and option and equity value. (Land use impacts and option and equity value should be considered in planning and policy making, but there is not agreement as to whether or not they should be considered as a cost of motor vehicle use.)

Litman summarizes the costs as follows:

**Motor Vehicle Cost Distribution (italics is non-market costs)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal (user)</td>
<td>Fixed</td>
</tr>
<tr>
<td>Fuel</td>
<td>Vehicle purchase</td>
</tr>
<tr>
<td>Short term parking</td>
<td>Vehicle registration</td>
</tr>
<tr>
<td>Vehicle maintenance (part)</td>
<td>Insurance payments</td>
</tr>
<tr>
<td>User time &amp; stress</td>
<td>Long-term parking facilities</td>
</tr>
<tr>
<td>User accident risk</td>
<td>Vehicle maintenance (part)</td>
</tr>
<tr>
<td>External</td>
<td>Fixed</td>
</tr>
<tr>
<td>Road maintenance</td>
<td>Road construction</td>
</tr>
<tr>
<td>Traffic law enforcement</td>
<td>&quot;Free&quot; or subsidized parking</td>
</tr>
<tr>
<td>Insurance disbursements</td>
<td>Traffic planning</td>
</tr>
<tr>
<td>Congestion delays</td>
<td>Street lighting</td>
</tr>
<tr>
<td>Environmental impacts</td>
<td>Land use impacts</td>
</tr>
<tr>
<td>Uncompensated accident risk</td>
<td>Social inequity</td>
</tr>
</tbody>
</table>

The costing information can be used to evaluate investment and policy options, optimal pricing, prioritizing transportation problems and solutions, identifying win-win strategies, and equity analysis. (Example: how much is it worth to build a new school with increased access and reduced travel costs?)

**STEAM**

The Surface Transportation Efficiency Analysis Model (STEAM) was developed by the Federal Highway Administration (FHWA) to assist planners with corridor analyses to compare the economic efficiency of different modal and demand management strategies. STEAM is based on principles of economic analysis and allows impact estimates for age of investments (e.g., capital projects, pricing, travel demand management (TDM)) to be determined. Estimates of natural resource usage and environmental impacts are also provided. External costs quantified by STEAM are accident costs, noise damage, pollution, and greenhouse gas emissions.

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13 See www.ota.fhwa.dot.gov/steam/.
SCALDS\textsuperscript{14}

The Full Social Cost of Alternative Land Development Scenarios (SCALDS) is an accounting framework that offers a summary of costs and benefits associated with infrastructure investments including both public and private costs, capital and operating costs, internal and external costs. The framework was developed by Parsons Brinckerhoff Quade & Douglas, Inc. for FHWA. It accounts for all significant benefits and costs and each is only counted once. It accounts for benefits and costs whether or not they are internalized in prices. Some benefits and costs that are included in the framework do not have obvious market prices; however, as a full-cost accounting framework, all impacts must be looked at and all people affected by the change need to be considered.

The travel cost section of the framework includes: depreciation and financing costs, vehicle insurance cost, registration and licensing, gasoline cost, maintenance cost, transit fares, residential parking cost, non-residential parking cost user paid, non-residential parking costs—societal costs, accident costs not covered by insurance, travel time, federal/state highway investment, municipal services, government net transit costs, deferred maintenance cost, and air pollution cost.

Puget Sound Regional Council
(PSRC, 1996)

The Puget Sound Regional Council used the work of Litman and others in developing its cost model. The Council did not include costs where a market value cannot be assigned, influenced, or reasonably measured. It categorized costs as follows:

| Direct Private Costs | Personal transportation costs (owning a car, walking, bus fare) |
| Direct Public Costs  | Maintaining and improving roads, building sidewalks and bike trails, operating transit routes, police work, emergency services for accidents, court costs |
| Indirect public/private costs | Wasted fuel and time due to congestion, Environmental impacts, Waste disposal |

Transportation and Regional Growth Project

The Transportation and Regional Growth Project at the Center for Transportation Studies (Anderson, 1998) at the University of Minnesota provides another example of an accounting system. It includes a complete account of the full costs of transportation and reflects a consensus on costs derived from the economic, environmental, and transportation literature. The project uses Lee’s definition of social costs: “Social costs include all costs to society, direct or indirect, monetized or in-kind, incurred by private individuals and firms or by collective entities up to and including the planet” (Lee, 1997 in Anderson, 1998, p. 12). Traditionally, certain costs are ignored because they are not monetary, are difficult to measure, are imposed outside of the geographic area, or there is no policy available to affect the costs. However, this system attempts to include everything possible. Thus, in addition to the typically included externalities of crashes, congestion, noise, and air pollution, the system includes effects on land use, barrier effects, land and water pollution, and fiscal effects on local governments. The costs are grouped in three categories: government.

\textsuperscript{14} See www.ota.fhwa.dot.gov/scalds/.

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(public spending), internal (monetary and non-monetary), and external (monetary and non-monetary).

**Least-Cost Planning**
A different type of costing model is least-cost planning. In least-cost planning, all options are compared and those with the least cost are pursued. Thus, instead of increasing capacity, strategies that reduce demand may be employed. Least cost planning has been used by utility companies to reduce demand through strategies such as insulating homes and providing incentives to replace inefficient appliances. Although insulating a hot water heater may seem like a small strategy, when multiplied hundreds of thousands of times, energy savings can be realized. An example of application in transportation would be subsidizing carpools instead of increasing capacity or building light rail if the subsidy were the least expensive and yielded at least as good results.

Each of these models differs, but all are attempts to allow for better transportation investment decisions to be made. By including social costs, a project that had net benefits under conventional analysis may prove to have net costs. Moreover, in contrast to conventional analysis, a broader conception of infrastructure and a more comprehensive analysis of its impacts help to enable innovation. This conception is embodied by an approach to infrastructure development as community building. Through use of comprehensive social cost accounting tools, planners and policy makers can make better informed decisions by more fully knowing the economic, environmental, and social impacts.

**Economic Development Impacts**
Although the direct public and private costs of transportation such as owning a car and building a road are included in transportation cost accounting systems along with environmental and social costs, the economic development impacts of infrastructure investment often are not included. This is due to difficulty in accurately quantifying the impacts and disagreement as to how valid the impacts are. Generally, economic impacts are in terms of access to opportunities (e.g., auto and transit access, access to public and private services) and in terms of impacts of proximity to facilities (e.g., property values, business displacement, construction and land acquisition).

Investment in transportation infrastructure is often seen as a way to promote economic development by making an area attractive to companies to locate and to help retain and grow existing businesses. However, there is considerable debate as to what the true economic impact of infrastructure is, especially in an urbanized region. Does infrastructure increase productivity or do increases in productivity create need for additional infrastructure? There is not agreement; however, there is consensus that at worst the impact of infrastructure on productivity is neutral, and at best, it increases private productivity.

Since the goal of economic development is to improve people’s standard of living by increasing net income, the appropriate way to measure the effects of infrastructure investment is to measure the project-induced changes in people’s real income. Infrastructure improvements can increase real income by reducing transportation costs (e.g., vehicle cost savings, accident cost savings, reduced travel time, reduced environmental costs). The
savings cause changes in real income and asset values, but these cannot be counted too, because that would be double counting (Forkenbrock, 1990).

When looking at economic impacts, the level of analysis used is important. For instance, what is seen as a gain at the local level may not matter at the regional level since the gain in one community occurs at the loss of another community. Likewise, a “gain” in the region may not be so at the state level. In a 1989 study, Sheppard examined whether the effects of highways on development were differentiated from the effects of development on highways. Results indicated a long-term employment increase in the wholesale and natural-resource-based service sectors from increased highway expenditures. The results were substantial regionally but negligible statewide (Sheppard, 1989).

From the national perspective, productivity is what leads to additional income and business growth. Productivity is the ratio of output per unit of total factor inputs. Technology and supporting infrastructure (such as education and transportation) affect productivity. Thus, if public spending on infrastructure improves these factors, then productivity may increase and wage income may increase. The increased productivity may also increase a region’s competitive advantage. In so doing, more jobs may come to the region. Productivity may occur through cost savings in three cost categories: 1. Reduced travel costs for serving existing trips; 2. Reduced inventory/logistic costs; and 3. Greater operating scale and accessibility economies (Weisbrod, 1998).

There is, however, controversy over the extent to which public infrastructure investment results in productivity increases. Aschauer (1989) finds that investments in core infrastructure have a strong effect on total productivity in the economy. By isolating the impact of infrastructure from land, labor, and capital, he concluded that investments in core infrastructure have a greater effect on productivity than many other forms of investment. Eberts (1986) notes that public infrastructure has been considered “to be an important element of agglomeration economies” (Eberts, 1986, p. 18). However, in contrast to Aschauer, Griisfield and Panggabean (1995), find that the effect of infrastructure investment on productivity is relatively small.

Although it is common to see infrastructure investment heralded as a means to attract economic activity, it is widely held that economic activity resulting from the investment is a zero-sum gain. Bartik (1991), however, finds that the location of investment does matter. For instance, areas with high unemployment will benefit more at the margin from additional job opportunities than an area with low unemployment. The increased demand for labor can impact the long term income of the workers in the high unemployment area more than in the low.

Anderson (1998) supports the zero-sum argument stating that “improvements in transportation are more likely to reallocate growth from one place to another than to generate new economic growth” (Anderson, p. 2). Furthermore, sometimes increased accessibility from new or improved infrastructure leads to increased competition that can hurt one area’s economic vitality because other areas are now more accessible. Anderson concludes that “there is no easily predictable effect of transportation investment on local economic development” (Anderson, p. 17).
Similarly, in estimating the effect of bike trails on home values in three Twin Cities communities, Luce (1998) found that bike trails had a positive effect on home values, but the magnitude of the effect was difficult to predict. This finding is consistent with the effect of property values near transit stations. Contributing to the difficulty in predicting the magnitude is the difficulty in entirely separating the effect of the infrastructure from other processes going on in the economy.15

In addition, these levels of gain are likely to be localized, reflecting decreased activity (e.g., demand for housing) in other parts of the larger economy. For this reason, many economists argue that the economic development impacts of transportation infrastructure should not be included when determining whether or not to undertake a project. Rather, the investment should be justified solely on the basis of its transportation benefits. Mohring argues that “transportation investments should be judged only on the transportation cost savings they bring, not on associated land value changes or other effects. When these cost savings are sufficient, economic growth will be encouraged if the potential for that growth otherwise exists” (in Forkenbrock, 1990, p. 40).

Despite calls by individuals such as Mohring for projects to be decided based solely on their transportation cost savings, economic development will continue to be used as a justification for them. The political value of bringing infrastructure and its associated economic activity to an area is great, and even if economic gains from infrastructure investment are a transfer of economic activity within a region, the investment can advance related policy objectives. For instance, by reinvesting in developed areas, smart growth policies and sustainable community goals can be furthered. The economic activity (even if it is a transfer) is real and can be used to justify other investments. In addition, the infrastructure and its associated economic development can be a great source of pride for a community and help to strengthen its social fabric. Two examples of the level of economic activity resulting from infrastructure investment can be seen by the North Central Rail Trail and Metrorail.

**Northern Central Rail Trail**

The Northern Central Rail Trail in Baltimore County, MD, is a recreational biking and walking trail developed in an abandoned rail bed. The trail has been shown to influence tourism, property values, commercial uses, local resident expenditures, public sector expenditures, and qualitative factors in users' and nearby property owners' quality of life. An analysis by PKF Consulting showed that the direct economic inputs via tax revenue were $303,750, which exceeds the $191,893 used to build the trail. It is estimated that the trail supports 264 jobs statewide and that the value of goods purchased because of NCRT is in excess of $3,380,000.

The trail is viewed as an asset and as having enhanced nearby property values. Furthermore, the former dumping ground is now an attractive and vibrant recreational space. In addition to public financing, MCI offered the state Department of Natural Resources $200,000 in exchange for a non-exclusive perpetual license agreement to use 7.6 miles of the corridor.

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15 It should be noted that the infrastructure needs to actually be perceived as an amenity. To some, a bike trail or transit stop would be a disamenity and, if the view were widely shared, the investment in the infrastructure could actually decrease the property value.

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right-of-way for fiber optics routing. Thus, it’s more than just a recreational corridor; it’s an infrastructure corridor.

Other benefits of the trail (and other greenways) are ecological. Greenways can be used to help shape growth patterns while preserving landscape and offering plant and animal habitats and protecting waterways. “Greenways can also reduce the need for public expenditures for water treatment, flood insurance and a variety of restoration efforts, and they can increase the value of neighboring properties” (PFK Consulting, p. III-3).

**Metrorail**

Metrorail is the heavy rail transit system in metropolitan Washington, D.C. Arlington County, Virginia, demonstrates the positive economic impacts realized from the system. The county has conducted several studies concerning the net rate of return of the state’s public investment. As a result of increasing development activity and tax generating capacity, the rate of return was found to be 12 percent net return on investment through 1995. A return of 19.6 percent annually has been identified for the period going beyond 1995. From Arlington County’s perspective, the state could hardly find a better use of its money. The analysis was a very effective tool to increase funding for the service.

The North Central Rail Trail and Arlington’s Metrorail stations demonstrate the potential economic impacts infrastructure investment can have. The effect of local policies on economic impact can be seen by contrasting Arlington with its neighbor, Fairfax County, Virginia. Unlike Arlington, Fairfax did not want development around its Metrorail stations and down-zoned areas around them to ensure that retail development did not occur. This demonstrates that the same infrastructure can have very different impacts based on the nature of a community, its desires, and its policies.

Although economic outcomes cannot always be accurately predicted, it is important to examine what they might be. An examination of the environmental and social impacts of the investment is also needed. Once all of the impacts are identified, their distribution among different communities can be examined and environmental justice or equity considerations can be evaluated.

**Other Impacts**

Environmental justice seeks to ensure that adverse impacts do not affect minority and low-income communities disproportionately more than other communities. Communities need to know what the economic, environmental, and social impacts are likely to be as a result of the construction of transportation infrastructure. It is important to look at the distribution of impacts to ensure that there is an equitable outcome.

Impacts on the environment include air and noise pollution, runoff into waterways, disturbance of plant and wildlife habitats. Mandates in NEPA and the Clean Air Act and

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16 Fairfax County residents successfully fought increased density and/or further development within their neighborhoods. The primary differences are found in the demographic mix, income levels, and density of development within the two regions. Arlington County is totally urban and although it enjoys a fairly high average median income, Fairfax has a much wealthier populace. Fairfax County is also much less densely populated. Arlington tends to be denser and has a higher immigrant population.
Amendments have resulted in a high level of examination of environmental impacts over the past 30 years. Guidelines exist for how environmental impacts are to be analyzed. Some, such as air and noise pollution, contain specific indicators and distances by which to measure impacts.

Social impacts are those that affect neighborhood cohesion and functioning (sociability, safety within neighborhoods), aesthetics (views and lighting, landmarks, signage and fencing, scale or stimuli balance, landscaping), mobility, safety, employment effects, relocation, isolation, and other community issues that are important to people. Community impact assessment is important for quality of life, responsive decision-making, coordination of independent plans for land use, economics, and transportation to achieve common goals, and environmental justice. Community impacts are important and should be considered during project planning and development, not just added on at the end.17 The community’s goals and concerns should contribute to a project’s purpose-and-need statement. Information from the community impact assessment should be considered equally to environmental studies.

Defining the Impacted Area
Critical to the analysis of how and where costs occur is determining the area that is impacted. This can be challenging since many impacts differ geographically and temporally; however, having a clearly defined area of impact is critical to the analysis.

Some technical analyses (e.g., air quality, noise pollution) have clearly mandated study areas. However, for social and community impacts, the impact area is often not readily apparent. Analysis tools used with socio-economic impact analysis include public involvement, economic impact analysis, social impact analysis, land use, trend analysis, and geographic information systems. Through these tools and by working with local agencies, a geographic region can be identified for impact assessment. Typically, communities within and adjacent to the study area are included; however, communities outside of the immediate geographic area may be impacted and should therefore be studied. This leads to the question of what a community is. There is no simple definition.

The Federal Highway Administration provides the following definition:

"Community is defined in part by behavior patterns which individuals or groups of individuals hold in common. These behavior patterns are expressed through daily social interactions, the use of local facilities, participation in local organizations, and involvement in activities that satisfy the population's economic and social needs. A

community is also defined by shared perceptions or attitudes, typically expressed through individuals’ identification with, commitment to, and attitude toward a particular identifiable area. In addition, there are other concepts of community which are not based on spatial relationships. Communities may be based on a common characteristic or interest, such as religion, ethnicity, income strata, or concern for the economic viability of a region, which provides a psychological unity among members” (Federal Highway Administration, 1996, p. 7).

Since community may be place-based or based on a cultural commonality, it is challenging to define an area for analysis. Recognized neighborhoods—whether formal or informal—are a place to begin; however, defining a neighborhood’s boundaries is not a simple matter. Despite defined geographic borders, people may identify and interact more with a different neighborhood than the one in which their residence is located. Thus, land use patterns and people’s perceptions can also be used to define boundaries of a community. School districts and watersheds are other possibilities.

With travel demand models, the level of study is usually the traffic analysis zone. Such a zone is about 10 to 20 times the size of a census block. Use of a census block, block groups, and tracts are also common. Blocks are the smallest unit, groups are about 30 blocks, and tracts have approximately 3,000 people. While the smallest level would be good, less information is available at that level because of privacy concerns. There is not one simple way to determine the area of impact, but it is critical that as accurate and inclusive an area as possible be included in the analyses.

In summary, if a project is economically efficient, then the total benefits should be greater than the total costs. In determining whether the total benefits are greater than the total costs, it is important to include social benefits and costs as well. Given an economically efficient outcome, it would seem to make sense to go ahead with the project. However, it is important to also determine who is receiving the benefits and who is receiving the costs. To do this, it may be useful to look at the net costs (count all benefits and costs in a community) to see how community fares and compares to neighboring communities. In doing so, equity and environmental justice concerns can be identified and addressed. Clearly, the scale of analysis has implications for whether or not benefits will outweigh costs. At a small scale, most projects will look as though they generate net benefits. Even if the most logical scale excludes some costs, there should be recognition of them in the analysis.
Planning, Governance, and Financing

As previously noted, transportation infrastructure development was traditionally seen as a way to increase the efficient movement of people and goods. As a result of this policy objective, conventional transportation planning approaches were focused on roads and their level-of-service. Transportation investment was seen as a way to increase the movement of people and goods on roads. It was rare that related community needs or opportunities for environmental enhancements were taken into consideration, and the community was often not involved until after the major decisions had been made. Furthermore, transportation financing focused on road projects and did not provide incentives for creative approaches to infrastructure investment.

Although these characteristics of transportation planning still exist, ISTEA and TEA-21 have led to dramatic changes. Transportation planning is more regional, holistic in approach, and engaging of community members. Financing tools have been developed and innovative financing methods are preferred. This section examines these changes and discusses innovative planning, governance, and financing.

Innovative Planning
Increasingly, transportation planning is more holistic in approach and takes into account the economic, social, and environmental aspects of projects. Community participation is widely sought, and legislative mandates require transportation planning to occur at the regional level through metropolitan planning organizations (MPOs). This encourages regional thinking to solve regional transportation issues and allows MPOs to coordinate public transportation investments with land use planning.

Coordinated Planning
Under ISTEA and now TEA-21, regions are encouraged to act in a coordinated fashion that encourages system innovation and mitigation of transportation problems. TEA-21 has streamlined the process, encouraging MPOs to consider plans that encourage competitiveness and efficiency, protect the environment, and improve the quality of life.

In addition, the TEA-21’s MPO process demonstrates how the federal government is encouraging innovative local decision-making to devise and implement plans that work for the local community. Communities benefit from the MPO process because it gives them access to innovative financing and matching funds to leverage transportation monies, provides technical assistance, and encourages dialogue between and among communities so they can build on local synergies. Under TEA-21, MPOs are to consider seven broad areas in the planning process:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- Increase the safety and security of the transportation system for motorized and non-motorized users;
- Increase the accessibility and mobility options available to people and for freight;
• Protect and enhance the environment, promote energy conservation, and improve quality of life;
• Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
• Promote efficient system management and operation; and
• Emphasize the preservation of the existing transportation system.\textsuperscript{18}

\textbf{Major Investment Study (MIS)}
Another federal requirement initiated under ISTEA that has been important in making transportation planning more holistic in approach and engaging of community members in process is the Major Investment Study (MIS). Under TEA-21, the MIS is no longer mandated, and its requirements are now part of NEPA. Because the MIS was a success and helped to change how transportation planning was approached, a number of states (including Minnesota) intend to continue to follow its basic process. A brief discussion of the MIS follows. The objectives of the MIS were to:

• Provide a streamlined process for identifying and solving transportation problems;
• Consider multimodal alternatives where appropriate;
• Connect the regional planning process with the development of discrete projects;
• Incorporate consideration of environmental factors early in the decision-making process;
• Assess transportation proposals in relation to total system performance;
• Consider a broad range of evaluation criteria, including safety, economic development and urban form, as well as mobility; and
• Foster public involvement and collaboration among all the affected parties in an effort to seek consensus.

The intent of MIS was to identify which investment alternatives were the most effective and cost-effective in relation to multimodalism, social, economic, and environmental considerations. It emphasized public involvement and de-emphasized adding road capacity. In essence, it was an attempt to get people back to good planning principles. Its successes include interagency collaboration, public involvement, and the removal of the perception of highway solution policy bias. MIS differed from past models in that it emphasized a clear problem statement, required that the widest set of alternatives be analyzed (thus, transit alternatives had to be looked at), and it forced a real evaluation of alternatives by identifying benefits and costs.

Two examples of planning models that exemplify holistic approach and community involvement are Minnesota’s Transportation Action Model and Oregon’s Area Transportation Commissions.

\textbf{Transportation Action Model (TAM)}
MnDOT is using a planning model called the Transportation Action Model (TAM) to engage citizens in developing their own transportation plan. The TAM is a 21-week process

\textsuperscript{11} Public Law 105-178, Section 1203.

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requiring the participation of at least 25 community participants from a broad range of transportation stakeholders and citizens. Created to form a bridge between transportation planners and local leaders, the TAM has been a key tool in efforts to design a new model of responding to citizen values and concerns in the state of Minnesota.

The application of the TAM rests upon three basic assumptions (Munnich, 1999):

1. To become truly engaged in informed local transportation planning, some education and training is needed;
2. Planners need to work closely with community leaders if local plans are to be successfully applied; and
3. The process of education, reaching community consensus and the development of new working relationships take time and should not be rushed when applied to complex transportation issues.

Designed as an approach to increase dialog between local leaders and transportation planners, it was not the intention of the TAM design team to develop a means to replace current transportation planning efforts but rather to augment them. The steps of the TAM process are meant to create public dialogue, identify transportation issues, and develop solutions. Successful completion of the program by a community provides a blueprint for local action as it relates to transportation planning.

**Area Transportation Commissions (ATC)**

A new community-based planning system is also being developed in the state of Oregon. Regional commissions are being established to serve an advisory role to the Oregon Transportation Commission. Their purpose is to provide local consensus regarding local priorities for transportation resources. The commissions reflect local concerns and issues, set priorities unique to the region, and provide local perspective on proposed initiatives and long-range plans. The commission membership is a mix of public and private sectors and decisions are made by consensus. The establishment of the commissions has led to the development of area strategies, increased the focus on safety and modernization in Oregon Highway Plan Policies, improved STIP responsiveness to rapidly changing traffic conditions, increased the understanding of transportation issues and funding sources, and moved ownership of problems/issues/solutions from state agencies to local partners. Minnesota has also established Area Transportation Partnerships to incorporate regional input into transportation priorities.

A major difference between the TAM and ATC is financing. The TAM results in a plan which may not have financing secured or even identified. The ATC, in contrast, does have financing identified for its project plans. Both the TAM and ATC are public sector efforts at community involvement and holistic transportation planning. The private sector is also playing an important role in transportation planning.

**Private Sector**

In fact, without private sector involvement, many public sector transportation initiatives would not succeed. The private sector is often an active partner with public agencies in planning a region's infrastructure needs and is often key to building support for initiatives.
and investments. The private sector is certainly involved with planning specific projects and the infrastructure necessary to support them. The private sector is also typically involved with pressuring elected officials to make certain public infrastructure investments. Although less common, private sector entities have also initiated large-scale planning projects to address regional issues and needs.

One of the more ambitious recent planning initiatives is Chicago’s Metropolis 2020 project. Undertaken by the Chicago Commercial Club, Metropolis 2020 developed a plan for the metropolitan region. Metropolitan Chicago has fiercely independent governments and jurisdictions with many different land use and transportation authorities. This creates a challenge to integrated planning and financing. As a result, the Commercial Club is calling for the establishment of a regional authority to help combat sprawl, alleviate the spatial-mismatch problem, and make the region more livable and sustainable. The Commercial Club sees these needs as critical to the economic future of the Chicago metropolitan area.

The public and private sectors can and must work together in planning transportation infrastructure projects. They can each learn from and support the other. For projects to be successful, it is important that they take an integrated and holistic approach and involve community members in real decision-making.

**Innovative Governance and Management**

One of the fundamental problems with transportation planning, financing, and management is that much of the authority for transportation rests at the regional and state levels of government while authority for land use generally rests at the local level. The success of the development in Arlington County, Virginia is due to the zoning that allowed it to occur. Land use policies in neighboring Fairfax prevented the same type of development from occurring. Although Fairfax’s policies were an expression of the local community’s desires, they result in a less than best use of the station area land and, therefore, a less than best return on the public investment. To the extent that authority can be coordinated and/or consolidated, transportation infrastructure can be built and managed in ways that can be more financially more successful.

Examples of different types of coordinated governance come from across the country. Governance structures can be formal or informal and operate at different levels of service. Traditional regional governance structures include the elected metropolitan governing body for Nashville and its surrounding county which was charted in 1963. Subsequent mergers include Jacksonville-Duval County in 1968 and Indianapolis and Marion County in 1970. Less formal but regional in scope include Portland’s Metro, created in 1979 with land use and transportation planning authority, and the Twin Cities’ appointed Metropolitan Council, formed in 1967. The Metropolitan Council has control of wastewater and transit services, sets regional transportation priorities, and is also involved in land use issues. The newest governance structure is the recently created Georgia Regional Transportation Authority (GTRA), a transportation supra-agency for Atlanta, which has a 15-person governor-appointed board. Responsible for land use and transportation issues in the Atlanta regional

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19 Recently elected Governor Roy Barnes of Georgia campaigned on a smart growth platform and one of his initiatives was the Georgia Regional Transportation Authority. This agency is responsible for all land use and
area, it has the power to withhold state funds, issue bonds, operate mass transit, and veto transportation projects. Other formal regional structures are single issue agencies such as the South Coast Air Quality Management District, which is responsible for regional attainment of the Clean Air Act in the Los Angeles basin, and the Washington Metro Area Transit Authority (WMATA) which, through an interstate compact, governs the Metrorail system.

Other approaches to corridor governance and management include transportation corridor authorities, multi-jurisdiction land use commissions, nonprofit “virtual authorities,” and public-private partnerships (Carlson & Billen, 1996). Examples of these approaches are the following:

- Transportation corridor authorities in California are joint powers entities comprised of local jurisdictions that have authority over transportation and land use.
- The Lexington-Paris Pike Corridor in Kentucky used an interjurisdictional Memorandum of Understanding for road design and construction. A corridor-wide land use commission (made up of four jurisdictions) has responsibility for land use.
- The Mountains to Sound Greenway Trust near Seattle is a non-profit organization that defined a corridor-wide vision for the project area. Although it has no formal or official powers, it created a vision and framework for public and private action in the greenway, and through its use of persuasion and citizen support, acts as a “virtual” corridor management authority.
- Formalized public-private partnerships are also successful approaches. The Midtown Greenway in Minneapolis is guided and supported by a public-private partnership primarily comprised of local elected officials and business people from institutions along the corridor. Lastly, a $100 million transit-oriented development at the Fruitvale BART station in Oakland, California is a partnership between a local CDC, BART, and the City of Oakland.

Whether at the regional or corridor level, a variety of innovative governance structures are being used to coordinate investment and land use. A final example from the Twin Cities demonstrates this as well.

**North Metro I-35W Corridor Coalition**

An innovative planning and governance model at the sub-regional level is the North Metro I-35W Corridor Coalition. In 1996, seven northern Twin Cities suburban communities formed a joint powers organization called the North Metro I-35W Corridor Coalition. The cities have agreed to work together to plan for the future of the sub-region. The Coalition grew out of a conventional transportation study focused on increasing the capacity and efficiency of the main artery. The initial study has evolved into an interdisciplinary, phases study that seeks to establish "livable community" principles for the sub-region and then use those principles to develop a multimodal transportation plan that addresses all levels of the transportation network.

transportation issues in the Atlanta regional area. It is hoped that this agency will bring Atlanta into attainment status so that the region does not lose federal funds.

*Making the Exception the Norm*
The goals of the Coalition are regional community development, quality growth, and diversification. The strategies the Coalition is using are research and inventory, joint programs and policies, and joint funding. The objectives are:

- to apply livable community goals and objectives to expand conventional land-use planning methods;
- to approach physical, social, and economic development issues in an integrated and multifaceted manner;
- to bridge the gap between regional policies and local circumstances; and
- to implement the policies and strategies outlined in the Metropolitan Council’s Regional Blueprint.

(DCAUL, 1998b)

The seven cities developed a Sub-regional Urban Design and Planning Framework that seeks to move towards integrated sub-regional systems, share information across jurisdictional boundaries, and partner to resolve common problems.

The Coalition is trying to refocus the objectives of transportation planning on communities’ needs and values and away from target levels of service. In addition to developing a Livable Communities Information System (LCIS) to allow the communities to share and coordinate information and planning, the Coalition is using new transportation planning methods that have several unique characteristics.

- The methods are outcome-based as opposed to needs-based. This means that the focus is on looking at who, what, where, and when people are actually travelling. In addition, Coalition goals are used to develop transportation network performance measures.
- Assessments are made at the sub-regional scale as opposed to the conventional regional or local scale.
- Efforts are made to leverage state and local funds.
- Quality of life criteria are emphasized in planning as opposed to level-of-service demands.
- Land use and socioeconomic data are integrated for forecasting purposes.

(DCUAL, 1998a).

Transportation and community problems do not stop at jurisdictional boundaries. Realizing this, the Coalition is working to make coordinated land use and transportation investment decisions so that improvement can be realized by the entire sub-region.

Planning has become more regional in nature, holistic, and involves community members more. Governing arrangements that promote coordinated land use and transportation planning and authority are beneficial to community livability and successful transportation systems. In order to achieve such arrangements, organizations may need to be realigned, new partnerships created, or new entities established. Governing arrangements may be informal or structured through a memorandum of understanding or a joint powers
agreement, and private organizations can play important roles in shaping projects and their outcomes.

Hennepin County has a lot of experience with taking a regional and holistic perspective on transportation infrastructure planning. Its involvement with the Metropolitan Council, multi-jurisdictional projects such as the Hiawatha LRT, North Star Corridor, Midtown Greenway, and Humboldt Greenway are testimony to this perspective. These projects also demonstrate Hennepin County’s history of active community involvement in planning infrastructure projects. Furthermore, Hennepin County has experience at working with private partners in planning, financing, and managing transportation projects. The county would be well served by continuing these approaches and expanding the innovative perspective throughout the administration. By encouraging other departments to approach projects holistically, opportunities for synergistic investment may be identified.

**Innovative Financing and Funding**

As mentioned in the introduction to this section, in addition to innovation in planning and governance, additional financing tools and funding approaches exist now to support infrastructure development. There are many different financing mechanisms communities use to fund transportation and related infrastructure. Some are public-based, others are mechanisms used with the private sector. The three main purposes of these mechanisms are to reduce debt servicing, to accelerate project completion, and to encourage private sector development. Some mechanisms, such as tax increment financing, are already widely used. Others, such as state infrastructure banks (SIBs), are more recently developed mechanisms. With devolution, states and local jurisdictions are facing increased fiscal responsibility for transportation projects. This fact has created the need for jurisdictions to look at new financing mechanisms, funding sources, and relationships with the private sector.

**Financing Mechanisms**

Bonds, tax increment financing, local subventions and special tax districts and/or tax abatement are commonly used mechanisms for infrastructure investments. More recent financing mechanisms are state infrastructure banks, the Transportation Infrastructure Finance and Innovation Act, and grant anticipation revenue vehicles.

**State Infrastructure Banks**

One of the most promising recent financing mechanisms is the state infrastructure bank (SIB). SIBs are funds for states to offer loans and credit enhancements to a wide variety of transportation projects and are meant to complement the traditional federal-aid highway and transit programs. SIBs provide loans to local agencies seeking to close gaps in available project funding and to larger entities (e.g., turnpike authorities), to address barriers to obtaining external debt financing. SIBs allow for lower-cost financing, flexible repayment terms, and credit enhancements (to improve access to external debt financing).

SIBs serve as an alternative to pay-as-you-go financing and attract additional investment by enabling projects to occur that would not otherwise be financed. They reduce project costs.

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through lower interest rates. In addition, they help projects get completed earlier, which saves in debt servicing and benefits the community.

In 1997, the Minnesota Legislature passed legislation establishing a SIB for the state known as the Transportation Revolving Loan Fund (TRLF). Both the road and transit accounts were initially capitalized. However, under TEA-21, the SIB program was continued in only four states and since Minnesota was not one of them, only federal monies released from 1996 and 1997 projects can be added to the TRLF.21 (The Legislature can also appropriate state funds to it.) Eligible projects include pre-design studies, right-of-way acquisition, road and bridge maintenance, enhancement items, and transit capital projects.

Counties are eligible borrowers from the TRLF and the process for selecting projects generally follows the structure based on the current Area Transportation Partnership (ATP) system (the TAB in the metropolitan area). Following review by the Department of Trade and Economic Development, projects are reviewed by MnDOT which indicates whether they are a worthy transportation project. The final step involves a review by the Public Facilities Agency (PFA) to confirm that it is a sound project. Partnerships exist between all of these agencies to ensure management and financial expertise in evaluating all projects.

In 1998, MnDOT allocated $4.1 million in federal funding for two projects through the TRLF. The two projects were certified outside of the ATP, process which demonstrates the flexibility of project review. The first project issued bonds for the Metropolitan Council to cover half of their capital improvement program. The project saved the Metropolitan Council approximately $4.1 million because of the discounted financing rate. The second project provided $500,000 to the City of Mezeppea for needed approach work for bridge reconstruction. The monies will be paid back by the city through property taxes, demonstrating a non-traditional method of repayment. The Mezeppea project also demonstrates the TRLF niche — the city had federal funding to replace the bridge but not for approach work. It was able to use the TRLF for the approach work and in doing so saved $185,000. The TRLF program encourages repayment of debt through assessments, property taxes, and other creative methods in lieu of the traditional source of transportation monies.

In 1999, MnDOT certified five projects out of eleven applications to the Public Facilities Authority for loans. An interesting (and unexpected) benefit of the TRLF has been improved communication between applicants and MnDOT resulting in great successes. As a result of the application process, repackaging of some projects occurred and more appropriate funding sources for other projects were found so that actually ten of the 11 projects will be completed. Four of the projects were pooled together to use $7.5 million in the fund to leverage a $17 million bond issue and thus raise enough money to cover all four projects. In addition, one project was modified so that two other projects could be funded. Hennepin and Ramsey counties are among the certified projects, and it is expected that interest in the TRLF will continue to grow as it is better publicized.

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21 Legislation in Congress is attempting to resurrect SIBs for the rest of the states and mirror the original program so that states could use up to 10 percent of annual federal aid for SIBs. It is not clear what the outcome of this legislation will be.
Transportation Infrastructure Finance and Innovation Act (TIFIA)

A federal level infrastructure bank has been established through the Transportation Infrastructure Finance and Innovation Act (TIFIA). The legislation, authorized with TEA-21, allows the Department of Transportation to make loans and loan guarantees for up to one-third of the transportation project cost. (Inter-city and heavy rail projects are possible for consideration, however the legislation specifically excludes airport and harbor projects.) The program has a high minimum project cost ($100 million) and a much lower minimum of $30 million for ITS projects. A total of $10.6 billion in financing is authorized through 2003. TIFIA includes the option of having an SIB act as the loan processor, in which the SIB collects service fees. All of the capabilities in the SIB are included in the TIFIA. In Minnesota, TIFIA has not been used mainly because there have not been large enough projects.

Grant Anticipation Revenue Vehicles (GARVEE) Bonds

A third innovative financing mechanism is Grant Anticipation Revenue Vehicles (GARVEEs). GARVEEs are a debt-financing instrument that permits its issuer to pledge future federal highway funds to repay principal and/or interest to investors. Prior to 1995, states could use federal highway grants to repay only the principal component of debt service on most projects. This posed a problem with the cash requirements of bond issues because the predominant component of debt service in the early years of debt retirement is interest expense.

Once a project is selected for GARVEE financing and its costs are estimated, it must be approved as an advance construction (AC) project by FHWA. The security backing the GARVEE is the state’s obligation of future Federal-aid apportionments. FHWA anticipates that the state would designate an AC amount up-front and then obligate funds in each succeeding year in order to partially cover the designated AC amount. Each year, the issuer (state, SIB, or other agency) would pay periodic debt service by receiving payments from FHWA for the federal share of the expenditure.

The positive features of GARVEE bonds are that they add flexibility to states’ financing options, lower financing costs by improving ratings, and accelerate construction. They are receiving a warm welcome in the financial markets.

Other Financing Mechanisms

Other innovative financing methods that have been approved by the Federal Transit Administration (FTA) include the following:

- Repaying Bonds & Certificates of Participation: This is a leasing arrangement in which bonds are issued to finance the purchase of transit assets. Typically, the public transit agency enters into a lease with a non-profit entity or trustee for the assets it wishes to acquire. The trustee then transfers its rights to receive the lease payments made by the transit agency to the bond holders. The cash paid by the bond holders is used to purchase the assets that will be leased by the transit agency. This mechanism may allow

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23 MNDOT has used advance construction for years; however, the ability to use GARVEE bonds is currently being determined.

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transit agencies to use future reserves of local and federal revenues to accelerate
equipment purchases or to acquire facilities.

- **Lease Payments:** Equipment may be leased instead of purchased. The primary benefit
  of this is that it allows the grantee to arrange its cash flow needs on a more level basis. It
  also allows for the local share to be banked and earn interest pending its use for making
  lease payments.

- **Joint Development:** FTA funds can be used for planning of projects that include
  commercial revenue-producing facilities. Property and air rights can be sold and used
  for other transit purposes.

- **Cross-Border Lease:** This allows foreign investors to own transit assets and lease them
  back to an American entity. The foreign investors receive tax benefits from tax laws in
  their own countries.

- **Innovative Procurement Approaches:** Several different approaches are available
  including multi-year rolling stock procurements, forming consortia to facilitate
  efficiencies of scale in rolling stock procurements, or using design/build or
  design/build/operate/transfer. In a build/operate/transfer process, project engineers or
  (a project management consortium) build the infrastructure, operate it for period of
  time, and then transfer it to the contracting authority. This can help to reduce
  construction delays, start-up difficulties, and other disagreements resulting in lower
  project costs and reduced litigation. It is also possible for the project engineers to
  arrange financing. This may help to minimize borrowing costs to the public agency and
  may allow a new transit project to proceed in a timely manner.

- **Deferred Local Match:** By delaying the local match, federal dollars are expended first.
  This allows the local funds to be "banked", or pledged as additional security for
  construction period financing. It may help assure smooth progress of a major
  infrastructure project without any increase in federal funds.

- **Toll Revenue Credit:** Toll revenues from roads and bridges can count as the local match
  for capital investments.

In addition to these financing mechanisms, there are a variety of funding sources for
transportation and related infrastructure. These funding sources run the gamut from
conventional federal grants to innovative demand-increasing strategies.

**Funding Sources**

**TEA-21**

ISTE A was a revolution in thinking about infrastructure development and its successor
TEA-21, which authorizes $217 billion in funding over 6 years, is even more so. Among its
programs are the Transportation Enhancement Program and the Transportation System
Community Preservation Program (TCSP) both of which encourage projects that are
integrated in nature.

The popular Transportation Enhancement program was expanded under TEA-21.
Innovative projects financed by enhancement monies include the Midtown Greenway which
is expected to contribute to the economic revitalization on Lake Street and convert a
community liability into a community asset. Transportation Enhancement projects fall
under a broad set of guidelines. They can include projects that encourage multimodal
options, enhance landscaping, restore historical transportation land marks, mitigate pollution from water runoff, and provide educational information for bikers and walkers. Ten percent of TEA-21 funds is available for transportation enhancements. New federal funding guidelines allow funding matches to come from other federal projects so that Transportation Enhancement projects can now be completely financed through federal monies.

The Transportation and Community and System Preservation Pilot program is designed to encourage communities to think about livable communities through transportation projects. Eligible applicants include MPOs, local, or state governments. The grants will be given to projects that "improve the efficiency of the transportation system; reduce environmental impacts of transportation; reduce the need for costly future public infrastructure investments; ensure efficient access to jobs, services, and centers of trade; and examine private sector development patterns and investments that support these goals." Between 1999 and 2003 the program has been authorized for $120 million. Over 500 grant applications were received for the first round. In May 1999, Secretary Slater announced that $13.1 million would be used to fund 35 proposals.

Two successful proposals include the Jefferson Area Eastern Planning Initiative in the Charlottesville, Virginia area and the Land Use Support for the Mission Street Transit Corridor in San Francisco, California. The Jefferson Area Eastern Planning Initiative is to be administered by the Thomas Jefferson Planning District Commission and the Charlottesville-Albemarle Metropolitan Planning Commission. They will develop a model for land use and transportation planning for the region based on the community's 50-year vision. Based on multimodal transit options and transportation corridors, the model will be presented as a handbook, CD-ROM and a web page for local communities to use. The Land Use Support for the Mission Street Transit Corridor project seeks to develop a model of transit-oriented urban development. Through a community based planning process, this project will try to develop a transit plan that encourages transit use in this lower to middle class neighborhood. The current transit area, Balboa Park, is on a major transportation corridor but current land use of the area is inefficient and does not encourage multimodal use. The intent is to encourage a mix of housing and services in the area and to provide access to transit so that journey-to-work trips are facilitated through public transportation use.

Clinton-Gore Livability Agenda
Another potential source of federal funds for transportation and related infrastructure comes from the Clinton-Gore Livability Agenda. This agenda, of course, requires congressional approval for funding. The Livability Agenda is comprised of five elements that together encourage livable community development and envisions the following:

- Better American Bonds would provide financing for preserving open space, building and maintaining parks, developing brownfields, and protecting water quality. Over five years, the government would provide $700 million in tax credits which state, local and tribal governments can leverage into $9.5 billion in bonds. The interest free financing would be backed by 15-year bonds that would provide investors with a tax credit. Communities could use the bonds to purchase land title or easements, to develop or restore parks, or to set aside green space. The monies could be used to protect water
quality by alleviating or reducing pollution runoff. The measure would strengthen the EPA's Brownfields Initiative by allowing monies to be used to clean up brownfields for open space or limited development. Like the Brownfields Initiative, the process for becoming a bonding authority will be competitive. Because the bonds require a change in the tax code, they were not funded in the fiscal year 2000 legislative year. Both the Senate and the House have versions of the proposal and it is anticipated that it will be included in the fiscal year 2001 budget.

- Community Transportation Choices would promote livability by providing funds to ease traffic congestion. The Livability Agenda would allocate $6.1 billion for public transit programs and the Congestion Mitigation and Air Quality (CMAQ) Improvement Program would receive $1.6 billion. Projects include high occupancy lanes (HOV) lanes, carpooling, and development of bike and pedestrian paths. The Transportation Enhancements Program would receive $570 million, and the Transportation and Community System Preservation pilot would receive $50 million in additional funding.

- The Regional Connections Initiative would encourage local smart growth strategies. The $50 million proposed would allow HUD to pursue interagency initiatives and plans as well as encourage regional growth strategies. The Regional Connections Initiative would encourage regional smart growth strategies including high-density development in new areas, leveraging resources in existing developed areas, and economic development polices to promote regional competitiveness.

- The last three initiatives would help strengthen communities. Schools as Centers of Communities would receive $10 million in funding to encourage community involvement in the design of new schools. The Community/Federal Information partnership is a $39.5 million proposal to make information readily available at the local level. This would encourage local areas to develop Geographical Information System (GIS) technology capabilities. Other monies would be used to make existing federal government data more accessible. Lastly, Promoting Collaboration to help Communities Fight Crime would provide $50 million for communities to exchange criminal data and upgrade communications systems.

Other Funding Sources
Across the country, communities have been very creative in piecing together additional funding sources to realize transportation and supporting infrastructure projects. Increasingly, care is being taken to develop project components in such a way as to maximize opportunities for alternative funding sources. One of the project staff members involved with the Fruitvale transit village in Oakland, California, remarked that they had funds from almost every major department in the federal government except for defense. Not satisfied, they were working on a proposal they thought might even be eligible for defense dollars. The Fruitvale team has been creative in identifying funding sources and making the project match the funder's criteria.

Foundations and philanthropic organizations are typically not interested in funding transportation infrastructure per se; however, they are often interested in contributing to human services that are related to the infrastructure such as education and health facilities.
Communities even look to grassroots participation to help fund projects. Portland, Oregon sold bricks and water fountains to the public to raise funds for Pioneer Courthouse Square and other communities have done similarly. Naming rights of stations or trains and the sale and lease of underused land, air space, and sub-surface right-of-way are other funding sources.

Funds from community-based infrastructure programs, such as Minneapolis' Neighborhood Revitalization Program (NRP), have also been used for transportation projects. Among the types of projects receiving funds are the Midtown Greenway, traffic calming measures, pedestrian crosswalks, and pedestrian and bike trail improvements.

Increasing Demand
Another approach to financing transportation projects comes from increasing the demand for them. Increased demand for transit infrastructure reduces the capital costs and/or operating subsidies required. For instance, until recently, the Twin Cities had a transit zone tax incentive. New construction (or improvements) within the zone were given a property tax break equal to 15 percent. The idea was to reward businesses that located in areas that were transit-accessible. Other strategies for increasing demand are location efficient mortgages and transit-oriented development.

Location Efficient Mortgages (LEM)
The Location Efficient Mortgages (LEM) is an innovative new mortgage product that enables homeowners within transit accessible neighborhoods to shift a portion of their transportation savings to housing. An LEM assumes that the homeowner will use public transportation or walk. The transportation related savings are used to qualify a buyer for a home that he or she may not have been able to afford under conventional mortgage financing rules. The program, partnered by the Center for Neighborhood Technology (CNT), the Natural Resources Defense Council (NRDC), and the Surface Transportation Policy Project (STPP), is underway in Chicago and Seattle; San Francisco and Los Angeles will be added soon. This initiative is in keeping with recent attempts to expand home ownership opportunities for low- and moderate-income households and for low- and moderate-income neighborhoods by Fannie Mae and the recent Community Reinvestment Act (CRA) and the Home Mortgage Disclosure Act (HMDA).

Extensive research has shown that a significant portion of the market value of a home in a location efficient urban neighborhood is the value that buyers of real estate apparently place on accessibility, including access to public transit. A study of the Chicago area found that auto-dependent households spend $6,662 annually on transportation. That is in contrast to the $380 per month spent by households who relied on public transportation. The Location Efficient Mortgage compensates for this "supply side premium" with what one might call a "demand side benefit." When it is offered by commercial lenders, the LEM creates a financial mechanism that recognizes the added value of location efficiency and "levels the playing field" for the home buyer interested in urban living.

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25 The program was limited in 1999 due to pressure from downtown property management firms whose properties were built prior to the creation of the incentive and were not eligible for it. No additional properties will be granted the tax break, and current recipients will be phased out.

26 See www.locationefficiency.com.
Transit-Oriented Development

Transit-oriented development (TOD) is a local planning/policy tool that can help communities foster regional smart growth solutions by incorporating livable community goals with accessibility and transit goals. Transit-oriented neighborhoods are those that emphasize multimodal transit options. This includes walkable distances, multiple transit options and sometimes a mix of uses and densities.

In discussing transit-oriented development, Peter Calthorpe notes, "a regional system of open space and transit complemented with pedestrian-friendly development patterns can help revitalize an urban center at the same time it helps to order suburban growth." By balancing growth and infill, a new urban form can emerge that is livable. Robert Cervero’s work on transit villages examines the role transit-oriented development can play in building a sense of place as well reducing congestion. Transit villages have a number of elements—walkability, multimodal options, and mixed use—that make them successful places to live and work (Cervero, 1994b). (See Appendix B for a summary of transit financing used by California sources to finance transit-oriented development.)

Thus, by reducing demand for auto trips, and by living in convenient access to alternative forms of transportation, demand for other transportation infrastructure can increase and help to reduce the amount of public support needed.

The Federal Transit Administration (FTA) found that transit-oriented neighborhoods have experienced an 18 percent reduction in auto trips (Federal Highway Administration, 1996). One study found that houses closer to BART transit access were worth an average $15.78 more for every foot closer to the station (HLB, 1996). ²⁷

In Minnesota, the Livable Communities Act has an annual fund of $4.1 million for projects in the metropolitan Twin Cities that offer compact, higher-density development with a range of housing types. This fund is intended to help reduce the spatial mismatch problem and provide a mix of residential and commercial development. It will also help increase demand for transit services.

Private Sector Financing

In addition to using innovative financing mechanisms, identifying new funding sources, and implementing policies to increase demand, communities are rethinking the roles of the public and private sectors in the provision of infrastructure. Communities are determining whether or not the private sector can provide infrastructure and services more efficiently than the public sector. When it is found that the private sector can, communities increasingly decide to contract out or even privatize the service.

²⁷ In a 1996 Federal Transit Administration (FTA) study, researchers examined the value that public transit imparts to real estate in a variety of urban settings including San Francisco Bay area communities in proximity to the BART System and neighborhoods in Portland, Oregon in proximity to the MAX System. Hickling Lewis Brod, Inc. (HLB), the consultants who authored the report, found that “BART access is worth $15.78 more for every foot closer to the station on average. This means that an average home in our study area would be worth over $15,000 more if it were 1,000 feet closer to BART than its original location.” (p. 8).
The private provision of urban infrastructure services yields three important benefits to local governments: 1) it significantly enhances the efficiency and quality of service provision; 2) it conserves scarce public sector resources; and 3) it provides additional sources of capital for financing infrastructure investments. Increased efficiency is due to a number of factors including: 1) clarity of objectives of the private operator; 2) management autonomy of operator; 3) accountability of operator to his investors; 4) provision of managerial incentives to operator; and 5) competition from other firms or potential operators (Dowall, 1995).

An example of private provision of infrastructure services is solid waste collection and management. Many American cities have shifted this responsibility to private sector firms. Responsibilities for some highway construction and transportation projects have been shifted to private companies through concessions and build/operate/transfer (BOT) systems. This shifting to private sector firms helps governments conserve scarce resources.

Private financing of infrastructure can be accomplished in a number of ways including the following:

- land privatization;
- development exactions;
- developer-initiated special/benefit assessment districts;
- certificates of participation;
- private contracting for services (performance agreements, management contracts, and contracting out);
- leases and concessions;
- Build/Operate/Transfer (BOT);
- shadow tolls;
- privatization of infrastructure services; and
- private bonds.

The Atlantic Steel redevelopment project in Atlanta, Georgia, is an example of the scale of private sector involvement possible. The projects consists of cleaning up polluted land and then developing up to 5,000 housing units with a mix of office space, hotels, restaurants, retail, and green space. The new neighborhood is designed with New Urbanist and transit-oriented principles in mind. The project requires a bridge to be built to connect the development to the MARTA rail stop, and although its construction will be publicly funded, the rest of the development, including contamination cleanup, is going to be privately financed.

Fortunately, there are a number of alternatives to pay-as-you-go financing of transportation infrastructure projects. When approaching financing, it is important to be creative. There are innovative ways to use conventional financing and funding sources through partnerships and new interagency collaborations. Financing of integrated projects is not easy because so many different sources of financing and funding need to be pieced together for projects to be realized. However, as the case studies in the next section demonstrate, it is possible.
Examples of the outcomes of innovative planning, governance, and financing of transportation infrastructure come from across the country. In Minneapolis, a weed-choked railway is becoming a vibrant greenway. Through a creative partnership, Portland is constructing a light rail station without any federal funds. A condemned bridge in Chattanooga has been transformed into a vital pedestrian bridge linking the city's river banks to a greenway. Austin is guiding development away from the watershed to protect it. In St. Louis, a vacant industrial park has become a community hub offering employee training, business development services, and child care with multimodal transportation choice. These examples show what can be accomplished when the provision of transportation infrastructure is approached from a community building perspective. In addition to building transit stations and greenways, communities have been strengthened and enhanced demonstrating that transportation projects can be used to accomplish multiple policy goals.

Infrastructure development is increasingly being used as the vehicle through which a variety of policy targets can be realized. Doing more with less has become a mantra for policy makers and new financing techniques and funds have allowed communities to leverage federal funds to promote more than economic development through transportation dollars. Using smart growth and multimodal transportation strategies to promote livable communities illustrates the synergies at work.

Cities such as Minneapolis, Portland, Chattanooga, Austin, and St. Louis have completed projects that illustrate what can be accomplished by integrating community and transportation policies through innovative planning and financing (see Table 1 for a summary of financing tools). Such an approach targets multiple economic, social, and environmental community goals. Examples from these cities highlight the following:

- Innovative funding techniques;
- A regional outlook;
- Community building through transportation;
- Bottom up community support, top down leadership;
- Incentives to encourage transit-oriented development; and
- Public-private partnerships.

These cities show how an integrated approach to planning and financing can work. By using infrastructure development to support integrated communities goals, livable communities begin to emerge. Integrated policy recognizes that policy impacts are interconnected. Innovative financing is a key component as cities are doing more with less. By realizing the connected impacts of transportation planning, policy makers can use transportation policy as a "smart" tool to meet a variety of policy objectives.
Table 1: Summary of Financing Tools and Funding Mechanisms used in Case Studies

<table>
<thead>
<tr>
<th>Financing Tool/ Funding Mechanism</th>
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<th>Chattanooga</th>
<th>Austin</th>
<th>St. Louis</th>
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<td>Deferred local match</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Special benefit assessment districts, tax credits</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design/build strategies</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Portland**

The Portland case highlights multiple points: strong state and regional planning goals have legislated smart growth; transit-oriented development is supported by financial incentives; and a unique public-private partnership in developing a light rail station shows that cities can move projects forward without federal dollars.

Portland, Oregon has enacted one of the most successful growth management programs in the nation. In the early 1970s, Portland decided to remove a six-lane expressway and replace it with a waterfront park. In 1975, plans to build Mount Hood Freeway were scuttled, and the funding was eventually used for light rail development. A “parking lid” established in 1975 has led to only a 1 percent increase in parking spaces in the downtown. In 1977, a transit mall based on the Minneapolis model was opened. There is also a free shuttle in the downtown area. The Association for Portland Progress estimates that 40 percent of downtown workers use transit to get to work (Abbott, 1998). The connection between transportation planning and land use has been strong in the Portland area.

The Oregon legislature has passed many laws that support managed growth and land use and transportation policy that is integrated. First adopted in 1969 and expanded in 1973, the Oregon State Land Use Law mandated statewide land use planning. The impact of growth management plans is strengthened by state transportation policy that supports managed
growth objectives and transportation policy that encourages multimodal options. (See Appendix C for table of Financing Transportation in Oregon.) Passed in 1991, the Transportation Planning Rule requires among other things areas to reduce vehicular miles traveled by 10 percent in twenty years, reduce the number of parking spaces per capita by 10 percent, and offer multimodal options. One state planner said the Transportation Planning Rule looks like a plan for compact growth. By increasing transportation choices, the Transportation Planning Rule will reduce auto dependence and congestion. The state has passed laws that support higher densities (12 units per acre) and intensity of development around LRT. The laws also support rezoning for TOD around all LRT stations.

The Metropolitan Service District (Metro) was created encompassing three counties (Portland, Clackamas, Washington) \(^{28}\) and 24 cities and serves as the regional governing body for Portland. Responsible for air, water, transportation, and land use policy, its mission is to preserve open space and make efficient use of urban form and public resources. In 1979, Portland adopted an urban growth boundary that encompassed 362 square miles or 233,000 acres. Until December 1998, the boundary had been increased by less than 3,000 acres or 1.2 percent; in December Metro decided to expand the UGB by 5,000 acres. The current boundary is now 240,000 acres or 375 square miles. This may be the first of many expansions if the population forecast of over half million people moving to Portland is accurate. State law requires Metro to review the boundary every 5 years to make sure it is in accordance with 20-year plans. The boundary is often criticized for having caused the dramatic escalation in property values in the Portland area. Urban growth boundary supporters respond to the critics by noting that although values have increased over the past 20 years, the median value is lower in Portland than in many comparable western cities.

In December of 1995 Metro adopted the 2040 Growth Concept and from that the Urban Growth Management Functional Plan (November 1996) and the Regional Framework Plan (December 1997) emerged. The Urban Growth Management Functional Plan is zoned-oriented planning with specific guidelines for land use and development. The Framework is a 40-year management plan that encourages growth in existing areas to increase densities by developing infill areas and transit areas.

Intensive land use is also supported by light rail. Transit-oriented development is the hallmark of Portland's transportation planning. Two projects highlight the importance of transportation planning. The TOD Tax Exemption Program and the Airmax project.

One of the strongest examples of a policy program is Portland TOD's Tax Exemption Program enacted in 1995. TOD Implementation Program forms public private partnerships, development that is multimodal, discourages traffic/cars, leverage public monies. TOD is defined as combination of land use, connection to transit, and design that encourages pedestrian access. The state amended the tax code to encourage high-density development. Projects are offered a ten-year abatement of property taxes assessed against the improvements, but the land value is still taxed. After ten years both land and improvement

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\(^{28}\) Washington County, one of three Portland area counties, recently enacted a growth impacted fee. In an agreement reached with Intel, Intel will make capital improvements to their plant and receive a $200 million dollar tax break. In order to continue to provide a similar level of public service, the county negotiated a $1,000 fine per worker if Intel's new manufacturing jobs exceed 5,000.

Making the Exception the Norm
are assessed. In order to qualify, projects must have public benefits such as childcare, three or more bedrooms, commercial ground floor, or community rooms. As of July 1998, four projects had qualified.

The following table is based on estimates of how successful TOD development can be (Guichard, 1998, p.8). With no action, the market is left to itself, and sprawl-like development occurs. When planning occurs some TOD objectives are obtained, but not at levels to support a mixed-use, high-density area. When planning is transit-oriented development light rail stations operate efficiently because the densities needed for efficient passenger service are obtained.

Table 2: TOD Assessment in Portland

<table>
<thead>
<tr>
<th>Measures</th>
<th>Joint Development Program</th>
<th>No Action</th>
<th>Planning Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-family residential by du/a (dwelling per acre)</td>
<td>35 to 80</td>
<td>17 to 24</td>
<td>17 to 30</td>
</tr>
<tr>
<td>Commercial by FAR (floor area ration, 1KSF=1000 square feet)</td>
<td>.5 to 1.5</td>
<td>.28 to .40</td>
<td>.4 to .6</td>
</tr>
<tr>
<td>Parking Ratios</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential by spaces/du</td>
<td>1.3 to 1.6</td>
<td>2 to 3</td>
<td>1.8 to 2</td>
</tr>
<tr>
<td>Commercial by spaces/1KSF</td>
<td>2 to 3.5</td>
<td>4 to 5.4</td>
<td>3 to 3.4</td>
</tr>
<tr>
<td>Modal Splits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-auto</td>
<td>9-20 percent</td>
<td>8 percent</td>
<td>9 to 11 percent</td>
</tr>
<tr>
<td>Transit</td>
<td>7 to 15 percent</td>
<td>3 percent</td>
<td>4 to 7 percent</td>
</tr>
<tr>
<td>Transit trip generator (ability to attract transit riders)</td>
<td>High</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Connection to transit</td>
<td>High</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Vertical and level integration (mix of uses)</td>
<td>High</td>
<td>None</td>
<td>Low</td>
</tr>
</tbody>
</table>

Portland has a multitude of successful light rail projects. It is estimated that $2.4 billion has occurred in development around East/West Max stations (Tri-Met, 1998). Orenco Station, near Intel, is a greenfield development but is based on transit-oriented design. Build out of the 225 acre residential area and 60 acre multimodal shopping area will occur in advance of schedule. Eventually 4000 residents will live in this pedestrian-oriented place with a mix of shopping, work, and living options. Overall density will be 9.2 units/acre and the parking ratio will be 1.8 spaces/unit. There are a variety of housing options from condominiums to large houses. Within the area there are many different employment opportunities. Numerous parks dot the landscape, and streets and roads are designed to encourage walking and biking options.

The most interesting and innovative Portland light rail development is the Airport Max extension. Portland has been a forerunner in transit-oriented development. Although this

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29 This table was developed to show how successful TOD could be in Portland. It is based on actual densities from developments that have already been built.
30 The North-South extension was voted down by a close margin in November 1998. The Interstate Max running north along the 5 interstate would replace this. It is a 5.6 extension from Rose Quarter Transit Center to Expo Center. It is less expensive because of redesign, which made the design cheaper and removed controversial right-of-way issues.
development has been oriented as residential and mixed use, it has not dealt with the issue of commercial development. The Airport Max extension is a strong example of applying transit-oriented principles to an urban commercial area and is a unique public-private partnership, which will jump start this project without federal funds.

The 5.5-mile light rail extension will begin at the Gateway Transit Center and end with a stop at the Portland International Airport. There will be 2 stops in the 120-acre Cascades Station development, a commercial area located near the Portland International Center. The hotels, entertainment complexes, and class A office space will lack permanent residents, but design of the area is based on transit-oriented design with pedestrian walkways. Full build out will occur over 15 years but the light rail station should be operational by fall 2001.

The public-private partnership emerged between Bechtel Enterprises and Trammell Crow (who formed the Cascade Station Development Company), Port of Portland, Tri-Met and City of Portland. There will be no federal funds used in the project. Bechtel will provide $28 million of $125 million for design and construction, in exchange 120 acres of land and an 85-year lease. Bechtel will manage the properties. Port of Portland’s $32.8 million share will be met by using the FAA Passengers Facility Charge. Tri-Met, which is funded through employer taxes based on the number of employees, will pay $30.5 million backed by bonds and $15 million from surplus of other light rail construction. Portland Development Commission will also finance their share, $23 million through bonds.

Innovative financing has the potential to tap private capital markets, which are sensitive to payback schedules. This project needed a stop or go decision because Bechtel needed to commit resources elsewhere if the project did not become approved. Area leaders were able to meet this timeline, leading to a successful project implementation.

**Chattanooga**

The Chattanooga example highlights how a unified community vision can be pursued through a variety of projects and the need for bottom up support and top down leadership of the community goals.

Chattanooga, a leader in sustainable development, has taken a lead in leveraging infrastructure monies for the development of the region. From using monies that were earmarked to widen a road into the area mall for inner city road repair to triumpthing a high speed rail link between Chattanooga and Atlanta to relieve road congestion and air pollution, Chattanooga is an example of a city that has leveraged scarce transportation funds for regional development. A unified policy commitment that reinforces the goal of a livable community marks Chattanooga’s major development initiatives. The policy carried out through strong local leadership is the result of community visioning meetings in the 1980s.

In the early 1980s a task force of local leaders and citizens, Chattanooga Venture, was formed. This task force set out to identify community goals for Chattanooga. In 1984 Vision 2000 announced 40 community goals and 233 projects which emerged from the ideas of 1700 participants. In 1991, ReVision 2000 set out to assess and reassess Chattanooga’s commitment. The 1992 assessment concluded that about 85 percent of the projects were underway or completed and that $793 million in investment had been generated. In 1995
another community assessment was undertaken based on Tony Nelessen's Visuals Preference Surveys. Known as Futurescape, over 2,500 persons participated. Preserving natural spaces, pedestrian oriented environments, and high agreement among participants that land use standards were important emerged. In 1998-1999 the community was involved with the smart growth plan for 2020, which was mandated by the state. In all of these public oriented meetings, the goal has been clear— make Chattanooga livable through sustainable actions.

Chattanooga’s vision has been clear since it started to clean up the air. In 1969 Chattanooga was designated the most polluted city in America. Soaring unemployment, a declining manufacturing base, and a blighted urban environment in the 1970s and early 1980s forced Chattanooga leaders to rethink economic development. The city had to start doing something about its economic base and about restoring the urban area. Chattanooga leaders knew that cleaning up was important to attracting economic development.

A clear community voice has been supported by leadership that has enacted policy, which supports the goal of a more livable city. Chattanooga Champions include David Crockett who is now head of the City Council. He has long been a supporter of sustainable growth and has worked to encourage and convince others. Past city mayors and the present mayor of Chattanooga have also been committed; county leaders have also had similar goals. Elected officials have also involved other local stakeholders, especially the business community, to support the Chattanooga vision. Much of Chattanooga funding has come from strong community support. Foundations, such as the Lyndhurst Foundation, have been instrumental in providing financial support for the community vision. This private support translates to four private dollars spent for every one public dollar. Not only has the downtown area been environmentally restored but economic restoration has been successful: $356 million in public and private development along the riverfront, assessed property values in riverfront have increased 127.5 percent, tax revenues for city and county increased over 99 percent.

From the Vision 2000 plan there emerged a consensus that the riverfront was worth saving. The riverfront area consisted of empty warehouses, and the riverbank and river were inaccessible blocked off to the public by a fence. In 1985 the city was presented the Tennessee Riverpark Master Plan. By 1989 the Riverwalk opened with 22 miles of riverfront property dedicated to a greenway. Eventually this Riverwalk with connect with other greenways in the area for a 75-mile green belt. It is the Riverwalk though that is the connection to all other development projects. With ISTE A monies the longest pedestrian bridge was rehabilitated and opened. This bridge connects the north and south sides of the river, which are both flourishing with projects guided by the city, the local economic development agency, RiverValley, and the Riverfront Downtown Planning and Design Center, a public-private partnership which enhances the public realm through strong civic design. The centerpiece of the economic development strategy has been the Tennessee Aquarium, a 45 million-dollar investment, which has anchored and spurred further development along the riverfront.

The development at the riverfront needed to include the whole downtown area. Chattanooga is laid out in a long rectangular pattern with the southern end anchored by the Chattanooga Choo-Choo, a multi-use complex. The Convention Center and the majority of
early hotels were also at the southern end of town about 1.5 miles from the riverfront. In order to encourage synergy between the two areas while at the same time reduce traffic congestion in the area, the city initiated the electric shuttle to circulate tourists and workers throughout the downtown area.\footnote{Community based planning wanted less traffic hassles but leaders were worried about how to make the “aesthetics of system infrastructure” consistent with community goals. To this end, a trolley idea was axed and the electric shuttle bus put in place.}

The electric shuttle buses, free to the public, began transporting people around the downtown area in 1992. Between 1992 and 1994 over 1.5 million passenger trips were logged. The total cost for policy implementation of the garages and electric vehicle program was $22 million (80 percent from FTA, 10 percent from TDOT, 10 percent from City). The shuttle bus system is financed by the city with parking revenues from two garages. These garages built adjacent to the Aquarium and the Choo-Choo were built to encourage tourists and downtown workers alike to park and leave the driving to someone else. The garages are designed with principles of mixed use in mind. The Choo-Choo garage houses 5,000 square feet of retail space and a display area devoted to electric shuttle development. The other garage near the Tennessee Aquarium houses a first run movie complex. One unexpected spin-off of this has been the creation of 35 jobs and manufacturing company Advance Vehicles System for making the electric shuttles. Chattanooga works on the principle of being a “Living Laboratory” where electric vehicles are tested and used.

Chattanooga’s story is an example of a holistic vision; it is the story of many projects in diverse areas, which enhance the livable community goal. Chattanooga Neighborhood Enterprises (CNE) is a private non-profit founded in 1986 as one of the Vision 2000 goals of providing livable option for all Chattanoogans. The CNE has built or renovated over 3,460 units, but what highlights this project is that it reinforces the vision underway. One building with a mix of retail and living space occurred across the street from the Chattanooga Choo-Choo garage. CNE has also been successful in leveraging monies. For every one dollar it receives from the city it receives four from other public/private sources such as HUD or the Lyndhurst Foundation.

Chattanooga’s plans are not occurring just at the core. A first ring suburb, Brainerd once housed the area’s most vibrant mall, Eastgate. A new mall located in the suburbs with direct highway access caused the economic downfall of the Eastgate Mall. This mall was abandoned for years but has slowly begun to make a comeback. Area leadership felt that the first ring suburb should not be abandoned. The post office has located a facility in an old furniture store in the mall area and area planners began a charrette process to assess the needs of the community. A public charrette was held and over 150 community residents and business owners attended. The ideas that emerged from this plan were incorporated into designs presented to the community by Dover, Kohl, & Partners at the end of the week. Interestingly the mall developers at the time were wary of the design process. With AT&T as a tenant, the mall was hoping just to break even. Community support for the renamed Brainerd Town Square grew and the developer agreed to become a part of the rebuilding process.

\footnotetext{Community based planning wanted less traffic hassles but leaders were worried about how to make the “aesthetics of system infrastructure” consistent with community goals. To this end, a trolley idea was axed and the electric shuttle bus put in place.}
This mall is in the process of being redesigned from the parking lot up. Part of the parking lot will be removed and turned into a town square of grass. One goal that emerged from the charrette and was embraced by Chattanooga leaders was making the area more pedestrian friendly. Trees are being planted, road access is being redesigned and the mall seeks to incorporate a variety of business ventures, including a non profit children’s health organization, a training center for an insurance company, and a Gap Outlet. A proposed new road will bisect the mall linking offices on one end with residential area on the other. A transit station and new housing are planned for areas that once provide parking for mall shoppers. Future plans call for a greenway to connect this area. One old department store has been converted into the AT&T telemarketing center. Small stores are intermingled between these service-oriented businesses.

Chattanooga represents a city that has leveraged federal monies to fund a variety of different projects. These projects represent a consistent community vision, supported by strong leadership. The OME provides housing that supports transportation and walkability, the electric shuttle bus promotes economic development by circulating passenger at the same time reducing pollution, the greenway provides a ribbon of open space and restored species habitat along the river. The Chattanooga story illustrates policy in an integrated framework.

Austin

Austin illustrates a strong tradition of community based planning backed by a regional smart growth plan. The Smart Growth Plan contains incentives to encourage development in transportation corridors. It is a strong example of land use planning that uses transportation as a policy and development tool.

Austin has emerged as the high tech capitol of Texas. Paralleling the extraordinary growth of the computer industry, the area has added over 200,000 people in the last decade. The Sierra Club found Austin, like Minneapolis, to be plagued by sprawl issues. Austin has the dubious distinction of being rated the second most sprawl-threatened medium city.32 STPP found that based on Texas Transportation Institute’s study the cost to hold congestion constant in Austin would average $3,000 per year for a family of four (STTP, 1998).

In the past ten years a strong commitment to protect open space has emerged. Over $130 million in bonds has been raised in the last decade to preserve open space. In 1998, Austin voters sent a strong signal of support for smart growth plans by approving two bond measures. One measure is a $76 million general obligation bond for parks and greenway development; the other is a $19.8 million revenue bond, financed by utility fees, for land acquisition in the west.

Austin is supporting voters and open space measures by writing a Smart Growth initiative. The Smart Growth plan arose from the Citizen’s Planning Committee started in 1994. There are three goals: manage growth, improve quality of life and enhance the tax base. These goals are supported by the following major principles:

“Restoring community and vitality to the Urban Core by investing in the city; the character of existing neighborhoods through Neighborhood Planning;

protecting environmental quality by preserving sensitive environmental features and encouraging efficient development patterns; making efficient use of public investments in facilities such as streets and sidewalks, water and sewer lines, fire and emergency services, parks, open space, and schools; creating development that is pedestrian and transit friendly by permitting a mix of land uses and increased density where appropriate; decreasing automobile congestion by providing alternative modes of transportation such as bus, light rail, bicycle and improved pedestrian facilities; rewarding developers with reduced fees and flexible processing for development project that meet Smart Growth goals.”

The Smart Growth Initiative is divided into various products that the Austin City Council is in the process of approving. The Austin City Council has approved three products of the Smart Growth Initiative: Neighborhood Planning; Plain English Version of the Land Development Code; and the Smart Growth Matrix. Still to be approved include the Smart Growth Zone Specific Incentives, Decentralized Wastewater Product, Transit Corridor and Nodes, and the Smart Growth Zones and Map. A description of each product of the Smart Growth Initiative follows.

One product of the Smart Growth Initiative is the Neighborhood Plan. The objective of this plan is to involve community stakeholders in the planning process. The goals are to: “enhance the community’s livability; provide amenities for its residents; protect the character of its neighborhood; plan for neighborhood traffic management; provide limited opportunities for compact, mixed-use development along corridors and at nodes; provide for infill where appropriate.” Currently three local areas have developed neighborhood plans under this process.

The Land Development Code has also been rewritten under this Smart Growth Initiative. The goal was to produce a planning code written in “plain English.” The code is now available interactively on the web.

The Smart Growth Matrix is an interactive flow chart process that weights community goals in the permit process and rewards livable community development by reducing development fees to projects that qualify. The matrix is an incentive based policy to encourage smart growth. Developers submit projects for which a panel is convened to award points. Projects that receive from 25 to 45 percent of the available points receive up to a 50 percent fee waiver on infrastructure cost. Based on the scale of the projects, those receiving between 46 and 57 percent of the points will receive an incentive package not to exceed the five-year value of property tax that the city would receive. Projects receiving more than 58 percent of the points are eligible for an incentive package not to exceed the amount the city would receive in 10 years.

Projects are awarded points based on how closely they fit two smart growth goals. The matrix is broken up into projects that support growth management and quality of life goals.

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33 See www.ci.austin.tx.us/smartgrowth/smart_q&a.htm.
34 See www.ci.austin.tx.us/smartgrowth/smart_products1.htm.

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These goals are further broken down into categories. The other smart growth goal of economic development is not directly incorporated into this matrix.

Fifty one percent of the points are awarded to projects that support the smart growth goal of growth management. This area is then broken down into categories. The majority of points are in the Land Use category. Points are awarded for projects in smart growth zone areas downtown or within the urban core that are regional in purpose or have more than housing involved or those that meet traditional neighborhood design guidelines. In this category points are also awarded for land use compatibility and mixed use. Location is another category under the first smart growth goal. Points are awarded based on how close the project is to the smart growth zones. Another category, critical mass, is density based and points are given to projects that support transit. Other categories include points for neighborhood support and points for agency support. The second smart growth goal is improve quality of life; this goal allocates 49 percent of the points. The majority of points in this are awarded to the category of multimodal support. Projects that support transit and are pedestrian oriented and bike friendly receive points. Other categories include urban design, parking, environmental, housing, local economy, and construction.

Another smart growth product the Council will develop is the Smart Growth Zone Specific Incentives. Development in the Desired Development Zone would qualify for a reduction in water and wastewater fees. Development in the Drinking Water Protection Zone would face stiffer fees for development.

In November 1999, the City of Austin approved the Transit Corridors and Nodes product. In transit corridors the city will provide incentive packages for those projects that redevelop strip malls into mixed use, design buildings and streets to interface, minimize curb cuts, site parking in the rear or side, and provide pedestrian friendly connects to the street and project. Transit nodes will provide underground or structural parking, pedestrian and/or public space, encourage mixed use, and provide reasonable housing.

The last product to be completed in November of 1999 is the Smart Growth Zones and Map. There are two zones, the Drinking Water Protection Zone and the Desired Development Zone. The Drinking Water Protection zone is designed to protect the Austin watershed. The Desired Development Zone is divided into several categories. It includes the central business district (mixed use area), Urban Core (infill and redevelopment), Smart Growth Corridors (mixed use along transit areas), and Transit Nodes (high density transit-oriented development with ¼ mile of light rail).

The Austin case study also illustrates how neighborhoods can influence the development outcome. Especially notable is the Triangle area where residents preferred a more “smart growth” version of development. One of the most contentious issues to emerge from Austin was the redevelopment of the Triangle area; the planning process occurred over two long years beginning in 1997. Strong community resentment stopped redevelopment in its tracks and had a lasting impact on politics in Austin. The Triangle redevelopment illustrates how important community support is in the planning process and how planning must match not only community goals of economic vitality but environmental and social goals as well. Various groups were involved in the debate of the area. Some wanted it to remain a green space. Others who supported smart growth argued for the need to make this an infill

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development, others wanted a very new Urbanist approach, and still others pointed to another development, Central Market, which had a positive impact on the area.

The redevelopment of this area highlights the many faceted issues that emerge with infill redevelopment: traffic, environmental, and social. As Mayor Kirk Watson suggested in an interview, it is important that planning and development not pay lip service to new Urbanist ideals but use conventional redevelopment methods. The development must fit into the neighborhood.35

The Triangle is a 22 acre undeveloped urban green space shaped by road patterns into a triangle parcel. One of the largest undeveloped areas in Austin, it is owned by the state and in one corner sits the Texas Department of Mental Health and Mental Retardation. The state leased the land for development. The original plan called for mall type development with a large multiplex cinema, retail store, and grocery store. When plans for the new suburban mall type development were announced, area residents were unaware that redevelopment was scheduled for the Triangle. Concerned neighbors worried about the impact of traffic and use generated and the impact of increased impervious surface in an area that currently acts as a storm-water detention surface.

For over a year the project was tied up with various neighborhood associations opposing the plan and Cencor, the developer, trying to work a compromise. A charrette was held in the fall of 1997, but neighborhood and developer consensus did not emerge. The plan that emerged from the charrette represented higher residential use and less retail but overall a mixed density area based on neighborhood street patterns. Cencor filed development plans with the city which did not include the more urban residential option but went ahead with its retail oriented development, which did contain live-work loft apartments. The state, which had the last decision on the property development, sent the plans back, bowing to citizen pressure.

In the fall of 1998 a new charrette was convened, led by Calthorpe Associates. From this charrette a new plan emerged, less suburban shopping centered-oriented and more urban residential. The large multiplex was replaced by more residential uses and parking was moved underground. The final plan calls for a Barnes & Noble, Randall’s grocery store, and approximately 650 living units. This plan integrates both environmental and social concerns along with economic development. The plan has a transit area and possible light rail station. Bike paths are also included. There are two green space areas, one to use and the other to serve as a stormwater detention pond. Many housing types are represented, including apartments, live-work flex space, and townhouses. By designing a more integrated area, estimated traffic counts were reduced from 26,000 to 20,000.

The Triangle Area illustrates how concerned neighbors can have a voice in area development. By pushing for a more urban rather than suburban development, the neighborhood associations were able to influence the planning process. Austin has learned that neighborhood planning is important to the process. The next and much larger project scheduled for redevelopment along smart growth lines is the closed Mueller airport.


Making the Exception the Norm
The case study of Austin highlights a city committed to smart growth from the neighborhood to the regional level. Incentives encourage development in areas away from the watershed and neighborhood planning is an important point in making communities livable.

**St. Louis**
The St. Louis case highlights partnerships, interagency collaboration, creative financing, private sector involvement in both development and advocacy, and planning in the context of a regional visioning initiative.

In 1993, the MetroLink light rail line connecting downtown St. Louis to Lambert International Airport opened. The line has been a tremendous success and exceeded all ridership projections. There is tremendous civic pride in MetroLink and local citizens have generally been willing to tax themselves to support rail. They passed sales tax initiatives to finance improvements and extensions in 1993 and 1994, although in 1996 and 1997 extensions were rejected by voters.

Along the initial line, there was not much new development around the MetroLink stops. However, the extension into St. Clair County is garnering considerable private sector development interest. In fact, housing is being constructed by the Emerson Park station even before the LRT line is complete. The Wellston station, along the first line, also demonstrates the kind of innovative planning and financing that are key to successful infrastructure investments.

**Context**
Several factors seem to have led to the success of light rail in St. Louis in general and the Wellston and Emerson Park stations specifically. First and foremost, the line has a great alignment and runs from downtown to the airport and passes major sports facilities and anchoring institutions (e.g., Washington University).

Another important aspect to the line’s success has been the involvement of an active advocacy group, Citizens for Modern Transit (CMT). Years before the first track was laid, CMT was working to build grassroots support for LRT (and transit in general) and to educate the community. One official from Bi-State Development Agency (BSDA), the transit provider, describes the group’s involvement as “critical.” CMT is able to say things that would be self-serving coming from BSDA or the East-West Gateway Coordinating Council (EWGCC), the MPO. Furthermore, CMT held 6.5 miles of right-of-way for the upcoming Cross County rail extension. BSDA hopes to count the right-of-way towards the federal match, but even if they do not, the land reduces the cost of the project.

**Interagency Coordination**
BSDA and EWGCC have a unique way of coordinating planning for Major Investment Study (MIS) work. Although no longer strictly required, they are continuing with the rules established in ISTEA to do planning work on major transportation projects. They have an official agreement to participate in a Transportation Corridor Improvement Group (TCIG). The TCIG is a group of six people who work together (in the same physical location) to staff all planning work on major studies, both highway and transit "emphasis" projects. Two
are from EWGCC, two from BSDA, and two from the Missouri Department of Transportation. The studies are jointly funded with the largest share coming from the operating entity with the largest stake in the project. After planning, the operating entities (BSDA and Mo/DOT) have responsibility for implementing. On the St. Clair rail extension, BSDA has a cooperative agreement with the St. Clair County Transit District (the transit tax collecting body) for a management committee to oversee implementation. Both arrangements have been very successful due in large part to the fact that the key agencies are all involved in the planning and decision-making.

**Financing and Funding**
Throughout the LRT system, a wide variety of financing mechanisms and funding sources have been used. In addition to ISTE A and sales tax, BSDA has sold air rights and has retailed “continuing control.” An example is a hospital that bought property adjacent to the Central West End station and is planning to build a hotel over the station. Another technique they are using is delaying the local match on the St. Clair extension and spending down federal dollars first. They have also bonded to provide gap financing for St. Clair. Grants from various federal and state agencies (e.g., FTA Livable Communities, EDA) and tax increment financing have been used to make improvements and developments near stations. The City of St. Louis is using the Missouri State Infrastructure Bank to help finance the Gateway Transportation Center, a multimodal project located at one of the LRT stations. The project includes highway, transit, and local funds in addition to monies from AMTRAK and Greyhound.

Development along the first line was slow to start, but now transit is seen as an asset and the private sector is very interested in developing along it. Additional tools that help with increasing demand around stations is a Missouri tax credit tool called "Distressed Communities" where investors in mass transit can get tax credits.

An example of a public-private partnership is with the University of Missouri-St. Louis at the North Hanley station. BSDA has some federal CMAQ money to help build a parking garage, and the university has an adjacent planned development. They have decided to cooperate, and on the BSDA land a hotel and garage will be built from which BSDA will get a revenue stream.

These examples show how with creativity, St. Louis has been able to use a wide variety of financing mechanisms and funding sources to construct a vibrant and successful light rail system. The redevelopment around the Wellston station also reflects this.

**Wellston**
The Wellston station area project is a great example of partnering among BSDA, EWGCC, the Economic Council of St. Louis County, and community residents. The project has a multidisciplinary focus involving job creation, vocational training, mobility, multimodality, adaptive reuse, and economic revitalization of a depressed area. Its goal was to create a job training center, small business enterprise center (business incubator) to help home based businesses develop, and a child care center. In addition, there are also improvements to the station and its surroundings including sidewalks, lighting, landscaping, public art, and road resurfacing.
Wellston is an urban, mixed-use industrial, commercial, and residential community. In 1983, Wagner Electric donated its former industrial complex, consisting of five industrial buildings with over 500,000 square feet on 24 acres next to the Wellston MetroLink station, to St. Louis County. The county later transferred it to the St. Louis County Economic Council, a non-profit, public purpose corporation that provides business attraction, retention, expansion and creation services to St. Louis County and the St. Louis region.

The Wellston area by the station has experienced a drain of jobs over the past decade, and the unemployment rate is 2.5 times higher than the regional average. To improve the employment prospects of people, the county developed plans for a job-training program for the Wagner Electric complex.

Ridership at the station is very high—two bus routes service the LRT station as well as a park-and-ride—and it made sense to connect the job-training center and community to the LRT station. The Executive Director of the Economic Council conceived of the project and developed the financing to make it happen. The Economic Council worked with Arts in Transit (part of BSDA) and received a FTA Livable Communities grant to address these issues.

Financing for the projects at the Wellston station has come from a number of sources. Wagner Electric donated the site in 1983. In August 1994, the Economic Council of St. Louis County secured a $4.5 million renovation grant from the U.S. Department of Commerce for the first phase of the facilities construction. The National Center for Manufacturing Sciences contributed an additional $1.5 million in training equipment. Design improvements to the station area are being funded by the FTA, BSDA, and the county.

A $1 million STP grant coupled with Livable Communities monies allowed for improvements to pedestrian access to the station to occur. BSDA also secured a grant from the county Department of Health to construct a sidewalk and fence. The child care center is funded through county block grants, joint applications to local foundations, and Livable Communities. The City of Wellston contributed to the refurbishing of a playground near the station and community residents volunteered time and money on some of the station improvement projects.

There was considerable community participation in the planning process for the station area improvements. Through focus groups, surveys, and listening sessions, the need for the child care center was identified. The community identified other priorities such as lighting, landscaping, and safety.

With this project, BSDA pushed the edge for community involvement. They used visioning, surveying, focus groups, and one-on-one interviews with key business people and community members. As an outcome of the initial project, BSDA has gone on with higher level of community involvement in other station planning. The child care center is also groundbreaking in terms of the relationship with the county and the funding partnership. The project has allowed BSDA, the transit agency, to be viewed as a community community-building organization.
Regional Vision and Planning

It is important to note that the success of the LRT line and Wellston station has occurred within the context of regional visioning and planning.

In 1996, the Danforth Foundation announced that it would concentrate its resources and efforts on projects and organizations that could strengthen the long-term future of the St. Louis region. Since then, it has been working collaboratively with community groups, government, business and citizens on activities that seek to have significant impact on the region and its citizens through an initiative called St. Louis 2004.

St. Louis 2004 is a movement to make St. Louis a leading region in the 21st century, using the year 2004 as a deadline. The visioning process was in part inspired by Chattanooga 2000 and the dramatic revival it resulted in. The St. Louis 2004 mission is to make the St. Louis region a great place, a place in which people want to live and a place to which people want to move.

Twelve hundred volunteers worked together to develop the St. Louis 2004 Action Plan which includes more than 100 ideas about the St. Louis of the future. Through 75 community forums and dozens of round table meetings, 11 proposals have been produced. Initiatives include improvements to aviation, sanitary sewer and stormwater systems, and the surface transportation system (e.g., roads, bridges, transit). The intent is to focus more on maintenance of existing corridors and less on the construction of new corridors.

The initiative also has social and economic goals of facing racism and discrimination, combating youth gang violence, revitalizing downtown, increasing access to health care, having cleaner air, having zero tolerance for hate crimes, developing 21st century technologies and high-paying jobs, building sustainable neighborhoods, and expanding the regional park and trail system.

In the St. Louis 2004 work, Wellston and Emerson Park were both identified as areas for reinvestment. Due in part to this regional planning and prioritizing, both areas were included in the St. Louis Empowerment Zone announced in the spring of 1999. The Empowerment Zone designation will make more funds available to further improve the communities around the two stations and thereby increase use of the transit system.
Conclusions

While this report focuses on facilitating infrastructure solutions that mitigate sprawl and encourage smart growth, these objectives do not apply in every situation. Policy objectives must be set out and understood before these new planning and funding strategies are pursued. Each of the case studies pursued smart growth objectives because political and/or community leaders spent considerable energy mobilizing support for these solutions. However, Fairfax County chose a growth pattern that emphasized reduced density and de-emphasized rail transit, and still maintained a high median income and the quality of life they desired. Consequently, to achieve the smart growth objectives set out in this report, a number of elements must be in place.

The successes in Portland, Chattanooga, Austin, and St. Louis, and other examples mentioned in this report share a number of characteristics. First, they all had an approach to transportation infrastructure development as community building. As part of this approach, transportation and land use were looked at together. As a result of this perspective, the benefits to the communities are much greater than enhanced mobility and accessibility. Environmental habitats have been improved, social wellness enhanced, and public monies were used more wisely than a conventional, segmented approach would have yielded. The integrated community approach to transportation projects is demonstrated by a Twin Cities official who, in describing a suburban redevelopment project, remarked that he couldn’t remembered if the project started as a transportation project or a community development project. They quickly became one in the same.

Second, the case examples all involved meaningful participation by community members in the planning process. While community involvement leads to better project results, it can also present challenges to agencies. To be successful, government agencies need to be flexible and willing to work with communities. Moreover, projects need to have broad-based community support.

The cases also reveal the importance of leadership. The Director of the St. Louis County Economic Development Council made the developments at the Wellston station happen. Through Commissioner McLaughlin’s leadership, the LRT project in Minneapolis is moving forward. The same can be said of Commissioner Opat and the Humboldt Greenway. A leader can be an elected/appointed official or come from a community group. Regardless, he or she must hold the respect of the community and the government agencies.

Fourth, the projects all took a creative approach to financing. Multi-faceted projects give access to a wider range of federal, state, local, and private funds. The communities have used combinations of public and private grants, demand-increasing strategies, state infrastructure banks, GARVEE bonds, and other innovative financing techniques. Interviews revealed a consistent message from across the country: the key to successful financing and creativity.

Partnerships were also critical to making a project successful. Regardless of whether a project is initiated from community activism or is the brainchild of a government official, the

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success of the project will in large part be determined by the degree to which the various entities involved can work together. This may mean a new governance structure comprised of new working relationships and even a redistribution of authority and responsibility. A collaborative structure also enhances a project's ability to attract funding from a wider variety of sources, and the synergy created often leads to enhancements in projects beyond what had previously been imagined.

Finally, the communities cited had all gone through some form of a regional planning process that engaged a broad cross-section of the community. Such a process helps citizens, as well as policy makers and government officials, to realize the extent to which transportation and other problems cross jurisdictional boundaries. Realization of the interconnectedness helps set the context for regional solutions, such as smart growth policies, to occur.

**Implications for Hennepin County**

An evaluation of Hennepin County against these six factors reveals that the county is very successful in several of them and that it also has opportunities for improvement.

*Approach to transportation as community building:* As noted earlier and in Appendix A, although Hennepin Community Works is an exemplary model of this approach, the Transportation Department is not. Its continued exclusive focus on the motorized vehicle presents challenges to municipalities that are working to implement smart growth and livable communities strategies.

*Meaningful participation by community members in the planning process:* Hennepin County has a reasonably good record with involving community members in the planning process. It should ensure that participation is meaningful so that community members are actively involved in decision-making.

*Leadership:* County commissioners and staff have demonstrated strong leadership that has led to successful multi-faceted transportation and community development projects. Furthermore, as demonstrated by the Midtown Greenway, the county has welcomed working with leaders from outside of the county organization.

*Partnerships:* The county has also demonstrated an understanding of the importance to form partnerships to realize projects. These partnerships involve public and private institutions.

*Regional planning process:* Although the county is involved with regional planning through the Metropolitan Council, there has not been a process of the same nature as in Portland, Chattanooga, and St. Louis. This is an obstacle to the county in advancing multi-jurisdictional and/or regional solutions to problems.

*Creative financing:* The county has made use of creative financing but is limited in what it can due by the State Constitution. This presents an opportunity for the county to initiate change.
The Need for New Strategies

The current transportation financing and planning framework creates a number of problems for Hennepin County. The financial resources available for these projects also restrict the selection process. Most state funds are limited to highway projects and the geographic distribution is also set. No dedicated transit funding exists, and environmental and utility regulations are generally more permissive outside of the urban core. These funding restrictions encourage jurisdictions to submit narrowly tailored proposals that primarily serve automobiles in suburbs rather than core cities. Projects that lie outside of these particular guidelines are left to compete for property tax funding. If Hennepin County is to encourage alternative modes and spur creative infrastructure developments, these funding and planning restrictions must be relaxed.36

Hennepin County’s limited role also prevents it from having the flexibility neither to respond to changing objectives nor to take advantage of innovative planning and financing strategies. The system of the Transportation Advisory Board soliciting competitive project-based proposals in a relatively short period of time is not conducive to jurisdictions working with each other to develop regional or sub-regional plans, or incorporate these plans into proposals that would attract funding from many of the sources discussed above.

Instead, a “top-down” prioritization scheme exists in which transportation projects are considered in a vacuum that ignores cross-jurisdictional impacts and opportunities for community involvement. Jurisdictions have a short period of time to submit disparate projects that compete against each other for funding, and which favors continued road development on the urban fringe. This scheme forces each jurisdiction to draw upon those projects it knows best: corridors within its boundaries that have the greatest congestion or need of maintenance, or, where a developer may be looking to build a new project. As the jurisdictions develop their proposals, they do not have the time to look for synergies with projects from other jurisdictions or to engage citizen involvement. The resulting transportation improvement plan largely focuses on improving roads that already exist, or serve new developments that may not have the support of the community.

Model Framework

Given its situation as the most populous county in Minnesota and home to the only funded light rail line in Minnesota, Hennepin County would greatly benefit from changes in transportation and infrastructure planning and financing that allow for greater creativity. Where the political will exists, proactive smart-growth transportation policies and projects can address transportation problems in ways that do not promote either automobile use or urban sprawl. Hennepin Community Works has shown such initiative in projects such as the Midtown Greenway. The framework below provides an opportunity for Hennepin County to pursue additional projects that will make the exception the norm.

36 At the beginning of the 2000 Legislative Session, Governor Ventura proposed changes to the transportation funding structure that addresses a number of these issues. It would create a “multimodal transportation fund,” increase the flexibility of funds that were previously dedicated to highway expenditures, and advance smart growth principles. However, these recommendations are still relevant, as, at the time of printing, this bill had not been passed by the Minnesota Legislature.
These steps are not mutually exclusive and a number of them could be pursued at the same time, or they could follow a sequential plan.

**Step One: Link Transportation Investments with Economic and Community Development Opportunities.**

**Integrate Transportation and Land Use Planning.** As suggested above, the Metropolitan Council ought to bolster the regional planning process in such a way that transportation and other infrastructure planning is integrated with land use planning. Rather than planning roads according to engineering guidelines that provide additional capacity after new developments are approved, this process would recognize the impact of economic development on transportation. With this knowledge, proposed land uses and proposed transportation projects would be evaluated at the same time, based on the anticipated impacts of both the development and the new infrastructure.

**Approach Transportation as Community Building.** Smart growth approaches to transportation not only help citizens navigate roads but also can connect them to their built and social environment. Consequently, incorporating citizen input at all stages of the planning process could further enhance the process described above. Hennepin Community Works exemplifies a community building approach and could serve as a model for Transportation Departments at all levels.

**Develop Partnerships.** While community input is critical to the success of smart growth projects, partnerships with other levels of government (such as the Metropolitan Council or the Federal Transit Administration) and/or the private sector can determine whether a project becomes reality, or simply remains a plan. These partnerships can provide access to markets and funding sources that the County may not be able to tap, and can provide the need impetus to move a project forward.

**Incorporate Smart Growth Concepts into Comprehensive Plans.** Local governments could develop short, medium and long-term smart growth plans, or “ecoplans,” that would identify and plan sustainable developments. The short-term plans would identify infill opportunities, medium term plans would be for larger sites and corridors, and the long-term plan would be for the entire area. These “ecoplans” could be incorporated into existing comprehensive plans, with individual cities identifying smaller projects, and larger, multi-jurisdictional opportunities becoming apparent at the higher levels.

The development of these ecoplans would require new planning tools and performance measures as well as a new modeling framework that addresses the combined impacts of land use and transportation. Further, these ecoplans will only become reality if pooled financing strategies are available to fund the identified projects, or if other discretionary sources (e.g. TCSP or variants) become standard options.

**Develop Inter-Jurisdictional Performance Measures Relating to Community and Regional Goals, as Well as Transportation.** One reason that the conventional financing and planning schemes have lasted for the past 30 years is that processes have been set up to collect data from past projects, and
this data is used to evaluate similar proposed projects. Consequently, transportation planners can be confident that projects selected for financing will perform as expected. To counteract this unequal distribution of data, local transportation engineers should partner with the Federal Transit Administration and other local jurisdictions to develop similar performance measures that would apply to innovative projects that cross jurisdictional lines, use different modes, or otherwise respond to local needs. Initial data could be collected from projects that use non-traditional funding set aside in TEA-21 (enhancement projects, revolving fund projects, etc.) and this data would provide the basis for developing the measures. At that point, additional non-traditional projects could be evaluated along side traditional projects by using these measures.

Step Two: Create Financial Incentives for Smart Growth

Convene a transportation and infrastructure financing task force. A task force with planners from the state, urban and rural counties, and urban, suburban, and rural communities, could push for changes in the current state funding structure. This task force could demonstrate the shortcomings of the current restrictions on the use of the state gas tax, motor vehicle tab fees and property taxes. Once these are pointed out, the task force could develop more flexible and inter-jurisdictional means that create opportunities for on-going financing of a variety of intra- and inter-jurisdictional projects.

The task force could build upon the work of the North Metro I-35W Corridor Coalition as an example of multiple jurisdictions looking to meet common goals through regional and sub-regional activities. The task force could select or develop a small number of projects, and examine a number of financing mechanisms that would allow for coordinated funding outside of standard procedures. These projects should cross jurisdictional lines, include a number of modes, and otherwise be ineligible for current funding because of the existing restrictions.

Develop transportation and community preservation funds. Rather than the current process where individual proposals within a region must compete against each other, local jurisdictions should devise a system where funds are pooled across jurisdictions. These “preservation funds” could incorporate the best of both loosened funding restrictions and revised planning processes.

An example of this could be a state-level version of the Transportation Systems Community Preservation pilot in TEA-21. In this case, the Metropolitan Council TAB would not select individual projects, but instead designate corridors or geographic areas as “transportation and community preservation zones.” These zones would be developed by a number of jurisdictions that are interested in improving the infrastructure within a corridor or other sub-regional area. The improvements could be defined either by a number of specific projects that all would be undertaken within this area, or by a set of outcomes that could be achieved by a number of means. A Joint Powers Agreement or other form that allows for community input could provide the administrative structure. The TAB would then merely select zones to receive a block grant that the jurisdictions within the zone could use to accomplish the defined projects or outcomes.
Create incentives for comprehensive smart growth projects. Once the smart growth plans ("ecoplans") discussed in Step One are developed, and pooled financing mechanisms are in place to fund them, they still will not work if developers find better investment returns in greenfield development and if jurisdictions still find it easier to identify and fund individual road projects. Counties and MPO's will need to develop a system of developer credits and similar incentives that encourage development of cross-jurisdictional projects. Increased public participation would be helpful in shaping these projects, and county offices such as Hennepin Community Works could provide outreach opportunities in many different communities. This public input could then be used to shape developer and transportation planner ideas for appropriate projects in a given area.

Step 3: Integrate Regional and Community Planning

Revise current Metropolitan Council TEA-21 financing guidelines. In concert with other local jurisdictions, the Metropolitan Council could work to expand the current method of project selection by the Transportation Advisory Board. While the TAB does have broad representation, it has a short solicitation period for proposals, and its work is largely done out of the public view. The Metropolitan Council could draw upon the experience of Hennepin Community Works for examples of how to structure the processes of the TAB so that it could attract more creative and politically popular projects.

Encourage participation of community members in the planning process. This new process should engage communities early in the process. Transportation plans developed outside of the public view often suffer from lack of public support, while a planning process that develops support from the "bottom-up" leads to projects that a community can "own."

Develop long term infrastructure financing plans. Another way to improve the current Metropolitan Council financing structure would be to create a long-term plan that synthesizes community and regional goals for planning and financing. This plan could be developed according to the guidelines that ISTE A had set out for MIS projects. Similar to the MIS, this plan would be a mechanism where interregional and multimodal projects can be evaluated on a level equal to conventional automobile-based projects. Rather than simply responding to the automobile needs of standardized new developments, the plan would help identify and respond to projects that have popular support, that reduce door to door travel times in congested areas, and which also are cost-effective in relation to social and environmental issues.

Conclusion
The infrastructure planning and funding environment is changing in Hennepin County and the Twin Cities Metropolitan area. New federal funding mechanisms and new state transportation projects, such as the 29th Street Corridor and the Hiawatha Light Rail Transit line are signs of a need to shift away from the traditional road-based transportation planning and funding system that currently exists. New infrastructure planning and financing mechanisms that allow for projects that cross jurisdictional lines and use different modes are needed. Smart growth and similar anti-sprawl projects in Chattanooga, Portland, St. Louis and Austin all have shown that when the political will exists, non-traditional infrastructure projects can be successfully planned and implemented. Even if the political will is not calling
for a change toward smart-growth developments, a new financing and planning framework that allows for greater public participation, more flexible funding and encourages multi-jurisdictional and multimodal planning will better allow Hennepin County and other metropolitan areas to plan for future infrastructure needs.
References


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Literature Review

Abbott, C., Pagenstecher, G., & Parrott, B. (1998). *From downtown plan to central city summit: Trends in Portland’s central city. Portland.* This report evaluates the progress of the City of Portland over twenty-five years from the original Downtown Plan of 1973. The report evaluates the success of the population strategy which stressed transportation, neighborhoods, and downtown renewal. Of the seventeen projects recommended in the original plan nine were implemented, four were not implemented and four are in the process of being implemented.

Abelson, P. (1997). *House and land prices in Sydney from 1931 to 1989. Urban Studies, 34*(9), 1381-1400. This paper describes and explains house and land prices in Sydney from 1931 to 1989. Throughout this period, house and land prices fell, generally exponentially, with distance to the CBD. However, the price gradients were not constant. Between 1931 and 1968 the gradients flattened. On the other hand, between the mid-1970s and 1989 they became steeper again. The changes in the gradients were caused mainly by changes in travel times and costs by road and rail. Real travel costs fell in the early period and rose later on. Other factors that affected the price gradients were changes in car ownership, the supply of urban services in the early period, gentrification of inner-city areas, and the greater increase in housing supply on the urban fringe in the later period. The paper also shows how house size and environmental factors influenced house prices in the 1970s and 1980s.

Between 1977 and 1989, increases in house prices were strongly related to access to the CBD with the access premium more than doubling. There was also some evidence that changes in relative house prices reflected increased environmental premiums. Local improvements were not found to influence house prices. The findings suggest that higher access costs are due to increased congestion. Increased travel time values accounted for slightly over half the increase in the access gradient.

Alexander, L. T. (1994) *The effect of greenways on property values and public safety. The conservation fund and Colorado state parks, state trails program.* In the Denver-Metropolitan Area, greenways are gaining in popularity and expanding at a rapid rate, yet there are questions as to their suitability for certain neighborhoods. The questions cover the effects of greenways on property values and on public safety for homes adjacent to the trail. The analysis was conducted using data from seven separate surveys of three different greenways. These were surveys of residents adjacent and near to the trail, real estate agents, police officers, and newspaper real estate advertisements.

The findings suggest that urban trails are regarded by real estate agents as an amenity that helps to attract buyers and to sell property. Of the real estate agents interviewed, 73 percent believed that a home adjacent to a trail would be easier to sell, and 55 percent agreed the home would sell for more than a comparable home from a different neighborhood. Sixty-four percent of the real estate agents believed homes located a block away from the trail would be easier to sell, but the likelihood of the trail having an effect on the price of the home was less than 10 percent. In older communities, 45 percent of the real estate agents
thought trails had the propensity to increase the market value of the home, and the other 55 percent believed that the homes would maintain normal market value. The study also suggests that community involvement is essential for trails to become a useful aspect of a neighborhood, as almost half of the people interviewed either did not use the trail discussed or were not aware of its existence.

(Available from www.planning.org/plinfo/GROWSMAR/gsindex.html.)
The interim report is a well researched document that provides information about land use in the states. This report provides extensive information regarding state laws, financing plans, and model legislation. It has chapters and state, regional, and local land use issues. Information on environmental planning and infrastructure planning is included.

The central focus of this paper is on the question of whether or not higher public capital accumulation crowds out private investment. Higher public capital accumulation raises the national investment rate above the level chosen by rational agents and induces an *ex ante* crowding out of private investment. However, an increase in the public capital stock also raises the return to private capital which crowds in private capital accumulation. Empirical evidence on the net effect of these opposing forces is presented. The empirical analysis focuses on the effect of public expenditure on private investment and the rate of return to private capital.

At a superficial level, an increase in public investment may be expected to reduce private investment nearly one-to-one as the private sector utilized the public capital for its required purposes rather than expand private capacity. At a somewhat deeper level, however, a distinctive feature of public infrastructure capital is that it complements private capital in the production and distribution of private goods and services. Thus, public investment might be thought to raise private investment as the former raises the profitability of private capital stocks. The empirical results show that while both channels appear to be operating, the latter comes to dominate, so the net effect of a rise in public investment expenditure is likely to raise private investment.

This paper considers the relationship between aggregate productivity and stock and flow government-spending variables. The empirical results indicate that 1) the nonmilitary public capital stock is dramatically more important in determining productivity than is either the flow of nonmilitary or military spending, 2) military capital bears little relation to productivity, and 3) a core infrastructure of streets, highways, airports, mass transit, sewers, water systems, etc. has most explanatory power for productivity. The basic conclusion to be drawn from this paper is that fluctuations in the level of net public investment could have marked effects on the private sector.

While there are many potential mechanisms to raise productivity growth, the results of recent empirical research offer the possibility of a direct channel by which fiscal policy can affect national investment and national productivity growth. It has been recognized that the public infrastructure should be considered as a factor of production, along with labor and private capital, in the private sector production process. It has also been recognized that public infrastructure spending, as a share of total output, reached a peak in the latter half of the 1960s. The results of some of the empirical studies indicate that this reduction in the pace of public capital accumulation explains a very substantial portion of the productivity slowdown. Other studies suggest that cross-country differences in productivity growth might also be explained partly by differences in levels of infrastructure spending.

Evidence suggests a strong causal relationship between public capital investment and both productivity and output. Further, there are grounds for believing that the rate of return on public capital may be as high or higher in other industries than it has been found to be in manufacturing. In conclusion, Aschauer states that it appears that the aggregate rate of return to infrastructure capital—once one adjusts for the inclusiveness of the public capital stock, for geographic spillover effects, and for industry coverage—is probably at least as high as that of private capital.


This report compiles data on real estate trends in 21 metropolitan regions across the United States (including Atlanta, Baltimore, Portland, Seattle, and St. Louis), then summarizes experiences with the planning and development of parcels and larger sub-areas around transit stations. Most of the discussion focuses on development around rail transit, but development around park-and-ride served by buses and carpools also is discussed in several instances. The data on real estate trends are taken from published sources, primarily those of the Urban Land Institute. The information and examples on land use planning and development around transit are taken from the literature as well as from discussions with key personnel in transit agencies, metropolitan planning organizations, city planning departments, redevelopment agencies, and the development industry.


Article examines the revitalization of the Eastgate Mall in Chattanooga.


An analysis by means of using the estimation results of a modal choice model and the hedonic price regressions model is conducted in order to identify the effects of a subway line in Toronto on the values of housing units. The modal choice model is used for the estimation of the direct benefits from the improvement in transportation and the hedonic
This book provides empirical evidence that state and local economic development policies can achieve their goal of significantly helping local workers and the local unemployed. State and local policies can have large effects on local growth, and local growth has important long-run effects on individual's job prospects. Further, Bartik argues that the competition for economic development among state and local governments probably enhances the efficiency of the United States economy. Because the most aggressive policies will be pursued by depressed areas that need growth the most, the economic development competition geographically redistributes economic activity towards depressed areas, which is economically efficient. In fact, many state and local economic development policies have the potential for enhancing the productivity and innovativeness of private business.

Bartik articulates his finding that what happens to the economy of a metropolitan area has significant effects on individuals' economic futures. The fate of a particular place matters because it affects the fate of people. Places, therefore, should play a role in national policy. An ideal national policy would also consider how to best revive the economy of particular places suffering from persistent poverty and unemployment. Most individuals are attached by both financial and psychological moving costs to their home areas. In contrast with the popular argument that place-orientated policies will constrain geographic mobility, which in turn will constrain upward social and economic mobility, Bartik argues that because of the ties of people to places, policies to improve local economies can have long-lasting effects upon individual well being.

This book examines the issue of sprawl. It argues that smart growth can help alleviate some of the problems with sprawl such as traffic and air pollution, and declining quality of place. The argue for strong central cities and infill, transit oriented development, protection of open space, controlling big box retailers, and improving suburban work areas.

Transit Villages examines the role transit development can play in building a sense of place as well as reducing congestion when an area is structured around transit. Transit villages have a number of elements: walkability, multimodal options, and mixed use that make them successful places to live and work. In order for transit villages to be successful the authors argue that the following tools are needed (although all are not applicable to every situation): market-based plan, land assembly, infrastructure investment, shared parking, expedited permits and reviews, write-down of land costs, direct financial participation.

Federal government policies have a large impact on land use. Innovative approaches may encourage better land use choices.
This paper takes a different approach to transit based development; it examines the perspective of municipal governments and their expectations for station development. The paper argues that municipal governments prefer stations that stimulate economic development. These are stations that would encourage riders to stop "destination stations" rather than send riders out "origin stations" as a residential stop would. The writers argue that research tend to overlook this economic predisposition of cities when arguing for TOD development. Their data illustrate that municipalities prefer commercial enterprises near stations based on zoning codes. They argue that this highlights a gulf between regional and local transit goals that policy must address. Several policy options are presented, including tax based pooling like Minneapolis-St. Paul, or identify sights where mixed used can be economically beneficial such as the Los Angeles General Plan.

Past research on urban economic development has targeted three major lines of inquiry on determinants of policy outcomes. One focuses on the power of political actors engaged in agency processes. Another looks at institutional structure and the third emphasizes physical and social preconditions of urban structure. Although heavily researched, none of these approaches has produced conclusive empirical results. In part, this may be due to the research thesis that variance in economic development outcomes is determined in part by agencies perceiving anonymous public where no direct interaction is involved. It examines this with reference to an upper-middle-class lifestyle. Using infrastructure investment of 42 transit agencies across the US, regression results show a UMC factor to be more significant in explaining differences in policy outcomes than those of traditional rival theses. The paper concludes with an inferential analysis of why and how such indirect influence might occur.

The author suggests that the concentration of light rail development and most of the collateral investments by transit agencies is in cities with higher proportions of upper middle class. While this type of investment has had mixed results in promoting urban economic growth, it may well provide *prima facie* physical evidence of technical complexity indicative of a world-class city.

Article covering Minnesota's Root River trail, economic impacts. Lodging receipts in Fillmore County increased eight fold from 1986 and 1992. The number of lodging businesses increased from eight to 30.

Contingent valuation (CV) is used to estimate a neighborhood's willingness to pay (WTP) to preserve a 5.5 acre parcel of undeveloped land in Boulder, Colorado, that provides views, open space and wildlife habitat. Households were surveyed to determine bounds on their WTP for preservation. An interval model is developed to estimate sample WTP as a function of distance, income and other characteristics. The model accommodates individuals who might be made better off by development and addresses the accumulation

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of WTP responses at zero. Weighted sample WTP estimates are aggregated to obtain the neighborhood's WTP. This application demonstrates that contingent valuation is a flexible policy tool for land managers and community groups wanting to estimate WTP to preserve undeveloped urban land.

This essay examines the link between infrastructure investment and U.S. economic development. The work of economic historians has focused on two systems—transportation and sanitation. A review of the disaggregate historical research provides a useful perspective for the aggregate contemporary research. Infrastructure investment produces both direct and indirect effects. Cliometricians' estimates of the direct effects suggest the initial public expenditures were warranted; there is a link between public infrastructure investment and private economic growth. In addition, the historical literature discusses such pivotal indirect effects as industrialization, urbanization, and regulation—effects that are generally neglected in the contemporary literature.

The American metropolis refers to "the sum total of the city, its suburbs, and their natural environment." Calthorpe argues that these three are inseparable. Further, he states that failure to treat them as a whole is endemic to many problems facing communities today. Calthorpe identifies guidelines for the development of core commercial, residential, and secondary areas, for parks, plazas, and civic buildings, for street circulation, pedestrian bicycle, and transit systems, as well as parking requirements and configurations. According to Calthorpe, a transit-oriented development (TOD) is a mixed-use community within an average 2,000-foot walking distance of a transit stop and core commercial areas. TODs mix residential, retail, office, open space, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car. Calthorpe states that regional form should be the product of transit accessibility and environmental constraints. Major natural resources, such as rivers, bays, ridgeland, agriculture, and sensitive habitat should be preserved and enhanced. An Urban Growth Boundary should be established that provides adequate area for growth while honoring these criteria.

Calthorpe argues for a regional design approach which incorporates boundaries, public spaces, public transit, and population diversity. Calthorpe writes "a regional system of open space and transit complemented with pedestrian-friendly development patterns can help revitalize an urban center at the same time it helps to order suburban growth." By balancing growth and infill, a new urban form can emerge that is livable.

(Available from http://members.aol.com/odumonarch.)
This report found the cost of growth as measured by infrastructure development for single family unit is $23,013. Almost 60 percent of that is funded through the developer and ultimately the buyer. The writer argues that by charging an annexation fee some of that cost can be shifted from the buyer and some of the profits that are pocketed by the developer.
could be directed to the local government. Short term recommendations include having the state take a more responsible role in funding education, reinstate use of the real estate transfer tax, and developing a state infrastructure bank.

A mixed bag of both public and private initiatives is today being pursued in the battle to head off suburban gridlock. At the forefront has been the emergence of employer associations, typically groups of developers, businesses executives, and other private interests who have banned together to deal with common transportation concerns. Sometimes referred to as Transportation Management Associations (TMAs), these private sector forums have become particularly active around suburban mixed-use centers, sponsoring employee ridesharing and shuttle services, lobbying for state highway funding assistance, and promoting other associated programs aimed at reducing peak trips, such as flexible work schedules.

This report examines recent experiences in the U.S. with transit-supportive developments—projects which, by design, give attention to the particular needs of transit users and pedestrians. The study focuses mainly on experiences in the suburbs and exurbs of large US metropolises, which in most cases are served only by bus transit. Assessments are carried out at three levels—individual sites, neighborhoods, and communities. The study gives particular emphasis to implementation issues (i.e., how recent market and regulatory factors have influenced the transit-supportive design movement).

At the site level, there is little evidence that transit-friendly design features, like front-door bus staging areas and internal pathways, have much, if any, measurable impact on transit demand. More macro-factors, like densities and cost differentials of transit versus automobile commuting, are far more powerful determinants of how people travel. The presence of micro-design features, in and of themselves, are too weak to shape the more fundamental decision of how to arrive at work. (They may have some effect, however, on secondary travel choices.) Overall, transit-supportive designs are helpful and well-intentioned, though fairly meaningless without good quality transit and rideshare services and proactive measures that reduce auto-dependency.

This study reviews major residential projects built on and near rail transit systems and identifies common trends. One such theme is the increasingly active financing role played by transit agencies to realize such projects, both in terms of playing major planning roles in developing station-area plans, or transit villages, and by developing multi-family development on transit land in an effort to spur additional development of adjacent housing and retail/commercial. Such developments are seen by transit agencies as methods for increasing ridership. The study focuses on a comparison of monthly rents for transit-based residential projects in Northern California. Three East Bay Area housing sub-markets are
analyzed to identify whether there is a rental premium for residential projects which are close to BART. The study shows that many of the projects near BART cater to residents seeking good regional accessibility and high amenity environments. The range of rents in all three sub-markets were generally higher than rents for projects outside of a quarter mile distance from the nearest station. A hedonic price model for the Concord/Pleasant Hill/Walnut Creek sub-market identifies a $34/month rental premium for those projects within a ¼ mile distance of the Pleasant Hill BART station. It is clear that developers are recognizing the accessibility benefit for their tenants and they are able to value-capture this through rental premiums.


This report investigates the market opportunities and barriers to transit-based development in California. Particular attention is placed on the opportunities for focusing housing developments near rail stations as well as the barriers that stand in the way. Housing construction around rail stations has been fairly sluggish in recent years and in many settings non-existent; barriers and deterrents appear to be far greater than opportunities. Much attention is given to factors that have retarded housing development to date and how they might be overcome. Based on the case experiences outlined in this report, the authors believe that the following elements are essential ingredients in making transit-based development happen. While not all of these elements are necessary for each development, at least some of them must be in places if transit-oriented growth is to occur. They include: 1) local officials must formally endorse the principle of transit-based development, 2) a specific plan for transit-based development is essential, 3) one or more local elected officials must become champions of transit-based development, 4) win the support or acquiescence of neighborhood groups for transit-based development plans, 5) where possible, form a redevelopment authority to assist with land assemblage and financing, and 6) lobby for federal and state assistance in creating pilot programs for transit-based development.


Cervero and Bosselman conducted a survey of housing preferences based on simulated areas of varying density. They examined preferences for higher densities, those that would support transit, and more amenities. Many surveys show that people express a preference for low density but this research was designed to control for the inherent bias people hold against higher densities. Transit villages were with densities of 12, 24, 36 and 48 dwelling units per acre were simulated. Fifty eight percent of the respondents preferred the lower density pictures but the second most preferred were the 36 dua pictures. People preferred the 36 dua with smaller lot sizes and more open space for public parks. This researcher shows that consumers are willing to accept higher density transit oriented neighborhoods if public amenities are incorporated.

Clark, G. L., & Evans, J. (1998). The private provision of urban infrastructure: financial intermediation through long-term contracts. Urban Studies, 35(2), 301-319. This paper deals with pension fund investment in urban infrastructure projects. It is suggested that the potential returns (and risks) with such projects are significantly greater.
than comparable fixed-income products though they have long gestation periods like gilt-edged securities. The authors’ argument begins with unique evidence collected from an industry-sponsored research study of Australian infrastructure investment performance. Also analyzed in a formal manner are the steps taken in evaluating urban infrastructure projects, ranging from roads and bridges through hospitals and urban development. It is shown that, notwithstanding the uncertainty endemic to these kinds of projects, a commonly desired form of financial intermediation is a formal contract binding the parties to one another over the long term (as much as 20 years or more). While no doubt valuable for many reasons, matching in effect the formal structure of some types of bonds, it is suggested that these institutional structures can be more problematic than often appreciated once the world of short-term discrete contracts is left behind. At issue is the management of contractual performance given that investment performance is a function of both the level of management resources (relative to capital investment) and the expertise of those who operate such facilities over the long term.


This research tests the spatial mismatch hypothesis by comparing the employment probabilities of central city versus suburban African American males in nine metropolitan areas. Treatment effects models are used to control for the effects of both individual characteristics and residential self-selection on the probability of employment. A positive effect of suburban residential location on employment is found for the residents of Dallas, Los Angeles, New York, and Washington, while no effect is found for the residents of Cleveland, Houston, Jackson, Memphis, and Newark. The general conclusion to be drawn is that the spatial mismatch effect is contingent on the particular characteristics of each metropolitan area. Preliminary analysis shows that metropolitan areas with a spatial mismatch effect are large in terms of total population and total land area, and have less efficient transportation systems.

In one of three Denver neighborhoods, the authors find a statistically significant and negative relationship between house distance from trail and value. In a second, they find a positive and significant relationship, but other uncontrolled neighborhood characteristics exist. A third neighborhood shows negative but not statistically significant coefficient value.

Modern telecommunications networks possess at least some of the attributes of what is commonly called ‘infrastructure.’ They are essential to modern commerce and, indeed, to modern living. The choice of any network architecture, however, is fraught with risk and could require the investment of $1,000 or more per subscriber that could easily be obsolete as soon as it is completed. Rather than providing grants of monopoly and relying on the
ensuing regulation of network architecture, governments should open their telecommunications sectors to competition, allowing private firms to shoulder the risk of building these expensive new networks. The evidence of the effect of new telecommunications infrastructure on economic growth is too weak to justify a conclusion that this infrastructure has already created large externalities. Thus, the case for government support and direction of telecommunications infrastructure investment remains very weak.

Studies the productivity of public investment within the context of a neoclassical growth model. Concludes that public infrastructure has at most a modest effect on factor markets, and an even smaller impact on growth in per-capita income. Public infrastructure plays an important role in regional economies, but marginal impact is no more than other investment types.

Authors found a positive association between house prices and proximity to new or projected stations.

Decreasing federal monies have led to an increase in community partnerships. A variety of new stakeholders with local government are forming partnerships to address crosscutting issues. Dodge identifies two trends that are influencing the development of these partnerships to deal with issues that are inter jurisdictional: emergence of country governments and decreased federal spending and involvement.

This paper outlines a variety of promising alternative techniques for mobilizing private sector capital.

This article defines ten traits of sprawl and then proposes alternative growth scenarios.

These architects believe that the key building block of any community is the neighborhood. They propose some basic principles which good neighborhood design is built upon. A neighborhood should have defined boundaries. Another principle is that the best size for a neighborhood is a 5 mile walk from the center to the edge. Each neighborhood should sustain a variety of uses to promote population diversity. Traffic should be connected by an
interlocking grid of blocks for smooth flow and multiple routes. Lastly a neighborhood should have well designed public spaces and civic buildings that placed in locations that connect to the community.


The primary purpose of this paper is to estimate the effect of public capital stock on regional income. The paper estimates the effect of public investment, both current outlays and public capital stock, on personal income for metropolitan areas. Public investment influences personal income through its effect on the marginal product of labor. Personal income in part determines the level of public investment, as described by the median voter model.

Results derived from annual data for 28 metropolitan areas from 1980 through 1984 reveal that public capital stock has positive and statistically significant effects on per capita personal income. The effects come through two channels. The first is through the actual construction of the public capital stock. The second effect comes through public capital stock as an unpaid factor in the production process and a consumption good of households. This second effect is twice as large as the first effect using OLS, but the relative magnitudes of the two effects are roughly reversed using 2SLS. The results of this study suggest that decaying public capital appears to be one factor that can retard regional economic development as measured by per capita personal income. The positive effect of public capital on a region's economy comes from more than simply a surge in construction activity. Public capital stock is shown to be an important input into the regional production process, which has long-run consequences for enhancing a region's productivity, and thus its competitive advantage. Therefore, well-maintained public infrastructure should be an important component of any policy package designed to promote regional economic development.


This is a very in-depth report on how areas develop smart growth plans as mandated by the state legislature. It provides information on different strategy models and vision processing models. There is also a review of data resources and computer tools which planners and policymakers can use.


Statistical analysis illustrating the historical influence of highways, water, and sewer facilities in shaping land use patterns in the Denver area and providing basic methods for forecasting impact of future investments.
(Available from www.eli.org/)
The report argues capital gains on home sales (IRS Code 1034) had an effect on creating sprawl. Homeowners were discouraged from moving to urban areas where house prices are generally lower because they would be penalized. Also homeowners moving across the country from high price areas to lower price areas had to buy bigger more expensive homes to avoid the tax penalty. Essentially the tax code encouraged “trading up” and trading out. It argues that the new law, Taxpayer relief Act of 1997, will have the following effects on urban sustainability. Homeowners can stay within an urban area if they sell; it may even increase by 140,000 moves within urban areas. Inter urban area moves may increase by 100,000 to the central city. These new changes make it possible for cities to attract middle and upper income households in mixed used developments. The tax code revision may increase rehabilitation of housing stock because sellers recognizes the gain in rehabilitation. Overall the new law is seen as stabilizing declining urban areas and providing opportunities for sustainable urban development.

This publication highlights the importance of STIP (Statewide Transportation Improvement Program) and prudent planning and financial decisions in light of ISTEA legislation and decreasing transportation funding.

In this textbook, Forkenbrock notes that critical to the determination of economic impact is the definition of the universe of study. He notes that transfers don’t equal growth. He poses a societal gain test (i.e., would project beneficiaries be willing to pay the full cost of project?) to determine whether or not to build a project. If the project fails the test, then it shouldn’t be built. He writes that, “economic development is best thought of as a process, not an outcome.”

This paper examines the relationship between the availability of commuter rail services and the pattern of house prices in an urban area to assess whether modernization of facilities can modify prices. The study focuses on the transformation of the Greater Manchester’s rail network into a new light rapid transit line (LRT) called Metrolink. The quantified benefit to justify the investment was time savings to travelers who would avoid or reduce the extra journey from station to final destination, giving LRT an equal advantage to the direct access provided by existing bus services. A two-stage study tested whether the perception of Metrolink in operation is sufficiently favorable to be reflected in the market value of properties with good access to the service. The study found unusually low property prices in 1990 in rail corridor areas. The findings of the before and after analysis show no improvement in the relative position of houses near railway lines. Although Metrolink offered improved access to the city core, the public’s perception of it shows no sign of being

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sufficiently favorable to be reflected in relative house prices.

(Available from www.mclw.org/pages/per_sprawl_report.html)
Sponsored by a major bank in California, this report examines the implication of growth in California based on future demographic projects and the current land consumption. It argues for four planning goals. Goal number one is certainty in where future growth will occur. Goal two is efficient use of development land that focuses on job and housing creation. Goal three states a legal framework is necessary for guiding this development. Goal four argues that the support must come from all stakeholders.

Fulton argues that New Urbanism can help maintain and improve communities. Livable communities are those marked by compact, walkable development.

This report analyzes the growth patterns of first ring suburbs in the Minneapolis-St. Paul area.

This report finds that there is little quantitative data to support the argument that federal policies lead to sprawl, but there is anecdotal data that supports this assumption. Urban sprawl was defined as being one of four definitions: low-density, auto-oriented development; random development marked by poor accessibility and land use decisions; central city decline linked to growth at the edge; first ring suburbs decline linked to growth in more distant suburbs. The report identified the following positive effects of urban sprawl: increased homeownership and lower locational costs for businesses. Negative impacts examined include: higher infrastructure costs, increased traffic, and decreased green space. A variety of federal programs was examined such as CMAQ, tax provisions, water and sewage funding, and Farmland Protection Program, but no federal program or policy empirically could be linked to sprawl.

A report that provides resources and article ideas on smart growth.

Employment trends are analyzed for the period 1969-94 across metropolitan and non-metropolitan areas (disaggregated spatially) by region and by sector. The decentralization story is persistent but complex. The 1980s turns out to be an aberration (and even in that period, suburban growth was stronger than central-city growth), because since 1988 the
vigorouss non-metropolitan growth of the 1970s has resumed, and now has a clear rural emphasis.

The location decisions of households are influenced less by workplace accessibility than the availability of amenities, recreational opportunities and public safety. With respect to policy, the authors report that traffic doomsday scenarios have been contradicted by the fact that the suburbanization of jobs has been a traffic congestion mitigator by holding trip-times in check in a period of rapid growth in vehicle miles traveled. If widespread suburban and exurban growth is the current mode of urbanization, these findings suggest that modern methods of communication are being substituted for some degree of travel. Traffic growth is diminished as well as dissipated.

This article profiles examples of cities who are trying to manage growth. The article highlights the struggle that first ring suburbs endure as growth occurs at the edges. Examples are given from St. Louis, Cleveland, and Chattanooga. This article also argues for a regional approach to growth management.

This paper examines some current issues surrounding the provision of infrastructure in central cities. It also presents evidence that infrastructure investments in central cities provide benefits that extend beyond their borders to the balance of their metropolitan areas. The results of the study suggest that larger public capital stocks in the central city of a metropolitan area have a positive effect on suburban land values, with a slightly lower effect in areas with commuter taxes. The results suggest that a 10 percent increase in infrastructure stocks in the central city would add 0.61 percent to suburban house values in metropolitan areas with no commuter taxes. The cost of such a plan would be approximately $1 billion, while the increase in housing value it would induce would be approximately $3 billion. These findings support the contentions that cities and suburbs are complementary components of integrated metropolitan economies and may both benefit from cooperation rather than competition.

This article argues that those who rely on alternative modes of transportation spend less on transportation costs. This extra savings could be used to purchase homes. The report argues that suburban dwellers spend more of their resources on transportation related expenses. Urban dwellers who rely on public transportation spend much less. The savings realized by urban dwellers who rely on public transportation and walking can be applied to a monthly mortgage payment. A pilot program is underway in Chicago, San Francisco, and Los Angeles. The LEM Partnership (CNT, NRDC, and STPP) are providing research. Funding comes from a variety of sources including the Department of Energy, EPA, and FTA. This would have a variety of ramifications for communities including stabilizing housing and increasing homeownership, encourage population density, encourage in-fill development and reduce energy consumption and improve air quality.

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The spatial mismatch hypothesis, which argues that job decentralization has had a major impact on the economic fortunes of inner-city minorities, has been a popular argument in academic and policy circles. It is possible, however, that employment decentralization was a temporary shock to inner-city labor markets and that labor supply has successfully adjusted by residential relocation and alterations in job search patterns. This paper examines this issue with an empirical analysis of the 1980 and 1990 employment probabilities of black and white male teenagers living in the largest metropolitan areas of the United States. Findings indicate that the impact of job accessibility on employment probabilities declined between 1980 and 1990 especially for black male teenagers not enrolled in school. Accessibility had a declining effect for this group because of losing the advantage of accessibility rather than overcoming the disadvantage of inaccessibility. By 1990, black male teens living in job-accessible areas no longer enjoyed as much of an employment advantage relative to teens living in job-inaccessible areas as they did in 1980. Holloway thus argues that we should be cautious about ascribing too much theoretical or policy importance to job accessibility factors.


Capitalization theory assumes that a public transportation investment will be reflected in the property values of nearby land. In this study, the author reviews literature which has analyzed the impacts of ground transportation on property values. While there seems to be a strong consensus that highway interchanges and public transit stations can have positive effects on land values, the estimates of that effect vary widely from study to study. Since the studies use a broad range of methodologies and models, it is difficult to compare their results. To date, there has been no effort to develop a systematic explanation for the variation in observed rent gradients around transportation infrastructure in different cities.


Huang summarizes empirical research analyzing how public transit investments have affected regional economic performance. Due to a lack of research in this discrete but important field, the author includes highway studies as well. The analysis is at the regional scale. Huang divides his study into five sections. First he summarizes alternative theories on how public transit affects regional economies. The second and third sections analyze two different methodologies. Part II looks at aggregate models, while Part III focuses on project evaluation studies (such as the early 1979 BART project and the SEPTA study). Part IV reviews selected works on transit's role in the business location decision process. The fifth section mentions several input-output regional economic studies. The author also includes a bibliography. From his review of available literature, the author finds no consensus on the direct impact of a transit investment on the regional economy. The disagreement stems from the different analytical techniques combined with the difficult task of isolating the effects of one public investment on a complex regional economy.

Due to scarcity of small-area jobs data, much of the spatial mismatch literature has not directly addressed the impact of nearby jobs on neighborhood employment rates. Such analysis is particularly needed when considering the probable effects of neighborhood-targeted economic development. Moreover, the occupational mix of jobs and their match with resident skills have not been dealt with adequately. A consistent measure of job proximity is found to have a significant but modest effect on neighborhood employment and unemployment rates, with a standard deviation increase resulting in an increase in the employment rate of approximately six-tenths of a percentage point and a reduction in unemployment of approximately three-tenths of a percentage point. When considering occupational match and the average occupational level of nearby jobs, the effect of nearby jobs is larger. Race and educational attainment are found to have the largest effect on employment rates.


Urban development patterns in both industrial and developing countries with market-oriented economies show strong regularities consistent with basic urban location theory. Large metropolitan areas are converging to similarly decentralized structures with multiple sub-centers, decentralized manufacturing and more centralized service employment. Decentralization is increasing the reliance on road-based urban transport for both passengers and freight. Land markets are strong determinants of decentralization, and the development pattern of cities without land markets differ greatly from cities with even poorly functioning land markets. Demand patterns in urban housing are similar across cities, but supply-side impediments vary widely, resulting in a wide range of the ratio of housing prices to income. The efficiency of public infrastructure provision also varies widely across cities and across sectors within cities. Large metropolitan areas in low-income countries will continue to grow as these countries urbanize.


An in-depth analysis of suburbanization patterns in the United States.


Johnson responds to Orfield by arguing that the Met Council has been very successful in accommodating the area's growth and that elected positions would subject the council to factionalism. He argues among other things that sewer rates are below the national average, the Livable Communities dollars cleaned up 506 acres of soil, created jobs, and led to transit oriented development.


Discusses the importance of integrated infrastructure investments and the need for public/private partnerships. One such successful project is the North Carolina Global
TransPark in which more than $285 million in public and private sources has been committed in a joint investment by federal and state governments, private companies, tenant firms, and thirteen county governments in the eastern region of the state. Over the life of the project, it is expected that private companies will cumulatively invest billions of dollars in tenant-owned facilities and will operate most of the common-use systems and facilities. The framework addresses investment in infrastructure support systems, multi-modal transportation systems, integrated telecommunications networks as well as commercial and service support and knowledge centers.

Katz and fellow architects argue for the planning movement known as New Urbanism. Strategies explored in the book include a more pedestrian friendly, transit oriented development. New Urbanism hopes to replicate the small town or community of yesteryears by planning with scale, mixed used, and public spaces key components.

This article explores the effects of public expenditure on growth among 73 countries over the 1970-89 period. While much of the literature attributes weak growth to public investment and social expenditures which inhibit growth through crowding-out and rent-seeking, the article highlights the contributions that public investment and social expenditures may make to growth. The article's econometric analysis suggests that crowding-out and rent-seeking concerns may have been overstated in the literature. Despite the sensitivity of some of the results, the study reconfirms earlier evidence concerning private investment's central contribution to growth. However, it also shows that various public investment and social expenditures exert different impacts on growth both in terms of sign and statistical significance. Public investment, particularly housing expenditure, registers a uniformly positive and frequently significant relationship to growth. Although not robust, this finding conflicts with the crowding out thesis which dominates the theoretical literature. Social security expenditures are also found to be positively related to growth. Health expenditures are negatively and sometimes significantly related to growth while those for education vary in sign and significance. Kelly hypothesizes that these findings indicate a possible misallocation of health resources to costly and less effective curative services rather than to preventative services and a misallocation of educational resources to the tertiary level.

Cost-benefit analysis of light rail option, City of Edmonton. Discussion of non-matching and close-ending matching transportation grants.

Financing issues received major attention in the discussion of human settlement development policy through the preparatory process for Habitat II and at the Conference itself. This paper presents an overview of the existing knowledge and policy experience in housing finance and urban infrastructure finance taking note of changes in economic
environment such as globalization, financial liberalization and decentralization as well as progress made over the past two decades using cases of good practice. Despite the positive development such as micro-finance and private-public partnerships, the financing challenge of today is not smaller than before. It includes how to tap the enormous wealth generated through continued urbanization to improve the conditions in housing and basic services of all income groups and how to translate the willingness to pay of citizens into efficient, accountable and responsive services delivery. The solution requires not only financial innovation but also good governance and political commitment.

Kotkin writes on the changes undergoing San Fernando Valley. Once a suburb, its problems are increasingly urban.

Kraich lists a litany of railroad/public trail projects. The report indicates that trail maintenance is usually handled by the trail manager, however a few managing agencies formed maintenance arrangements with the adjacent railroad. The report mentions that the manager of the Southwest Corridor Park benefits from railroad maintenance practices because of an agreement requiring the transit agency, Massachusetts Bay Transit Authority (MBTA), to help remove litter along the trail easement, saving the trail manager approximately $50,000 annually. The report provides a detailed listing of 39 trails studied and who is responsible for trail maintenance. A variety of mechanisms have been employed, ranging from the direct responsibility of city and various municipal departments, to the Road Commission, Metropolitan Transit Authority, other private entities or partnerships with local volunteer groups/committees (those existing or established specifically for the purposes of the project).

Other partnerships have evolved in an effort to cover the liability risks associated with the operation of a trail system adjacent to railroads. With the exception of the Green Bay Trail in Illinois and the Huffman Prairie Overlook Trail in Ohio, all of the rails-with-trails are covered by existing city, county, or state self-insurance policies. In the case of the Duwamish trail in Seattle, the City of Seattle (who owned the right-of-way) provided liability insurance through an umbrella policy. The liability for the development of the Traverse Area Recreation Trail (TART) in Michigan was covered by the road commission, saving the railroad the costs. Authority over the adjacent ROW and development of TART was authorized by the Michigan DOT.

Gore’s livability agenda is a calculated campaign strategy to get the attention of the soccer mom vote. Article mentions that Gore’s plan pulls together several policy trends. Growth issues were popular in the November 1998 election.

Kunstler examines suburban life and finds that the car culture has had a detrimental impact on the American society.

This is Kunstler's second book in which he examines America's urban landscape. Kunstler argues in this book that the suburbs and car culture have negative effect on how we live. Urban forms will make a comeback because they promote a sense of place and community that people long for. Kunstler believes a sense of place can be created by changing zoning codes that currently promote separation of activity and taxing the land not the building. Many of Kunstler's ideas embody the spirit of new urbanist planning and design.


(Available from http://cgi.pathfinder.com/time/magazine/articles/0,3266,21490,00.html.) This article examines the political issue of sprawl. It cites a recent *Time/CNN* poll that found that although citizens like open space they do not like government planning. The article focuses on the clash between the individual right including that to make a profit and the right of the community. The article compares the growth of Kansas City, population increase of 5 percent, and land growth of 70 percent while Portland, whose population growth was similar, grew 13 percent in the same period from 1990 to 1996. In Portland over a 20 year period the average lot size has decreased from 13,000 square feet to 6,700 square feet, and in ten years home prices have more than doubled.


This report showcases various communities that have smart growth policies that preserve open space. It argues that livable communities are a long term investment. By preserving open space communities can save on infrastructure cost associated with development. Open space can also attract business by improving the quality of life. Open space policies can also revitalize urban areas and boost tourism. Other ways that smart growth land use policies can be proactive in saving farmland lands, providing flood control alternatives, and protecting watersheds.


Discusses greenway history, development, value. Small section on economic impact but emphasizes importance of valuing land & greenway development for reasons other than short term observable job growth.


Employment location is more sensitive to local government activities than is household location. Taxes are statistically significant, but expenditures on public works/public safety measure are not.

Determining the direct economic benefit of recreational and commuter bicycle and pedestrian trails is difficult for two reasons. First, it is difficult to separate the effects of such impacts from larger and more important economic factors. Second is the difficulty in obtaining data consistent with the limited geographic scope of the project being measured. Neighborhood-level case studies that examine the impact of trails on property values include Boulder, Colorado and Seattle, Washington. An analysis of the housing values located close to recreational trails in the Minnesota suburbs of Hopkins, Maple Grove, and Plymouth illustrate a positive effect of proximity to such an amenity. The results, however, do not provide a precise estimate of the magnitude of the effect.

Job retention and creation are measurable objectives in terms of economic development as well as travel patterns to get at the improvement of the transportation infrastructure. The significant amount of economic activity (jobs) along the 29th Street Corridor indicate a substantial opportunity for further development targeting commuters, such as restaurants and retail trade. Commuting patterns are also analyzed to examine the potential for critical mass in using the greenway and to the extent that the project eases commuting costs and thus, the cost of doing business due to the increase in non-motorized transportation. The study found a critical mass of commuters that could potentially be served by the greenway.


Article notes that there is little consensus among policymakers when it comes to sprawl issues such as cost and benefits. Sprawl to some is considered pejorative leading to use of the term "suburbanization." This article provides the following definitions for sprawl: low density, leapfrog development, zoned activities, unsustainable use of land, use of autos, and government that is balkanized. Robert W. Burchell, Rutgers University urban planning professor, argues for compact development and Reid Ewing, an urban planner, argues that "social costs...are increasing faster than population growth." Critics, such as economists argue for full cost accounting, find the sprawl arguments as unsubstantiated. The article argues that much of the research to date on sprawl is methodologically weak and points to the fact that the research is value driven.


A multiplicative model is proposed as a framework for examining the current knowledge in forecasting the demand for telecommuting and the resulting transport impacts. A running illustrative example (containing a base and a future case) is developed, using plausible values for each factor in the model. The base case suggests that 6.1 percent of the workforce may be currently telecommuting, with 1.5 percent doing so on any given day, eliminating at most 1 percent of total household vehicle-miles traveled. Future reductions could be smaller as commute distances of telecommuters become more average and as the stimulation effect of telecommuting grows. In any event, it is likely that—due to counteracting forces—the aggregate travel impacts will remain relatively flat into the future, even if the amount of telecommuting increases considerably.
The North I-35W Corridor study began as a conventional transportation study with its primary objective being to increase the capacity and efficiency of the main artery. Within the last few months, it has evolved into an interdisciplinary, phases study that seeks to establish "livable community" principles for the sub-region and then use those principles to develop a multi-modal transportation plan that addresses all levels of the transportation network.

(Available from www.brook.edu/es/urban/Metroproducts.htm.)
This report examines the impact of open space/smart growth initiatives on the 1998 ballot. Major findings include: a 50 percent increase in the number of ballot measures from 1996; 72 percent of the measures were approved with over $7.5 billion in spending; the northeast had the most measures and highest approval and the south had the lowest number of measures; and voters financed these through pay as you go bond issues rather than tax measures. Myers argues that implications from the election include: local communities are willing to finance open space; there are an increasing number of regulatory type initiatives such as urban growth boundaries; and these measures will not be enough to curb sprawl.

Examines the benefits to real estate, environment, health, and tourism. Studies attempt to quantify the impact of parks and/or open spaces on property values and increases in property tax revenues.

Welfare recipients face a number of obstacles to making the transition from welfare to work. One is their geographical separation from employment opportunities: many welfare recipients live in "job-poor" neighborhoods far from employment for which they are qualified. Combining administrative data on welfare recipients and employment in Los Angeles with data from the 1990 decennial census, the authors show that greater access to local jobs in low-wage firms increases the likelihood that welfare recipients find employment in neighborhood jobs. More over, welfare recipients who have long commutes earn less than those who find work closer to home, contrary to the pattern for most workers. These findings demonstrate that proximity to low-wage jobs benefits welfare recipients through reduced commuting expenses and increased earnings.

Using micro data from the US Census, this paper tests the importance of the spatial isolation of minority and poverty households for youth employment in 47 of the largest US metropolitan areas. The authors first estimate a logit model relating youth employment probabilities to individual and family characteristics, race, and metropolitan location. They then investigate the determinants of the systematic differences in employment probabilities by race and metropolitan area. The authors find that a substantial fraction of differences in
youth employment can be attributed to the isolation of minorities and poor households. Minority youth residing in cities in which minorities are more segregated or in which minorities have less contact with non-poor households have lower employment probabilities than otherwise identical youth living in similar but less segregated metropolitan areas. Simulations suggest that the magnitude of these spatial effects is not small and may explain a substantial fraction of the existing differences in youth employment rates for white, black, and Hispanic youth.

Oregon Department of Transportation. (1995). *Oregon bicycle and pedestrian plan: An element of the Oregon transportation plan.* Discusses the complementary roles of recreation and transportation. Highlights Oregon benchmarks requiring specific percentages of new development and existing development located within one-half mile of transit, parks and open space, as well as, the percentage of Oregonians who commute to and from work during peak hours by means other than single-occupancy vehicles. The plan also states the goals of ISTEA legislation and strategies of the Statewide Transportation Improvement Program (STIP) in promoting non-vehicular transit.


Orfield, M. (1999, January 17). Commentary: The trouble with sprawl. *Star Tribune.* Orfield argues for curbing growth in the Minneapolis region. He asserts that schools, the indicators of a community's health, show that poverty has become more concentrated in inner suburban areas. Orfield discusses the impact of suburban growth on communities and infrastructure as the suburbs attract jobs, high end homes, and infrastructure. Orfield feels that regionalism (smart growth, tax based sharing, regional governance model) is the answer to area's problems. He argues that the Met Council should be elected and the urban growth boundary become fixed. As the area with the third highest number of freeways per capita, Minneapolis must act or else the unchecked growth will hurt the region.


Peng, Zhong-Ren. (1997). The jobs-housing balance and urban commuting. *Urban Studies, 34*(8), 1215-1235. This paper applies geographical information system (GIS) techniques and a piece-wise, non-linear model—spline functions—to analyze empirically the relationship between the jobs-housing ratio and urban commuting patterns in terms of vehicle miles traveled (VMT) and trip length. This study found a non-linear relationship between the jobs-housing ratio and VMT and trip length in the Portland, Oregon, metropolitan area. The findings illustrate that hardly any land use policy changes could affect the jobs-housing ratio enough to produce a significant change in VMT per capita, and jobs-housing policy will have limited impact on VMT at the regional level.

Porter argues for an economic strategy to revitalize the inner city. The competitive advantage of the inner city is to encourage clusters which can take advantage of the local workforce and existing infrastructure. He finds that social programs must support a strategy of redevelopment, not be the focus.


The Council recommends five strategies to strengthen metropolitan and rural communities. The five areas of sustainable community development are green infrastructure, land use and development, community revitalization and reinvestment, rural enterprise and community development, and material reuse and resource efficiency. Green infrastructure strategies seek to protect and provide open space areas for a variety of uses. Land use and development strategies focus on smart growth initiatives, encouraging communities to study sprawl growth patterns which can be inefficient. The report also calls for communities to focus on inner ring suburbs and central cities through community revitalization and reinvestment. It points out the advantages of infrastructure and diversity already available in distressed communities. The Council also suggests strategies for preserving farm land and rural communities. Lastly the Council advocates material reuse and resource efficiency through recycling and reuse of materials. Deconstruction and eco-industrial parks are two policies that support material reuse and recycling. Lastly the report cites three actions that would support the five strategies. Information and technical assistance is important. Economic and financial assistance should be employed to encourage these strategies. Local capacity and public-private partnerships are a key component to successful metropolitan and rural development strategies.


Policy solutions and spatial mismatch vary from area to area but the problem is one in which transit policy can help.


Former Mayor of Albuquerque, David Rusk examines the difference between elastic cities, those that can expand their boundaries through annexation, and inelastic cities. Elastic cities have more advantages and can use their regional power to control government. Rusk argues that growth management will be an important issue in the next century. He identifies new groups participating in the political process who are concerned with unchecked growth policies.

US cities capture public benefits from private developers under several bargaining frameworks: exactions, incentive zoning and public-private developments. These frameworks exist along a continuum of policy-intervention strategies, from passive regulation to active development, from a *quid pro quo* to incentive to investment policy posture. Each strategy defines a public position, structure and process for negotiation and parameters for the bargaining process. Though the means differ, the common element is that each strategy calls upon private development to support the costs of the public-benefit package. During the 1980s, American cities succeeded in tapping this wellspring of private development in an unparalleled way through active public development. To secure these benefits, the policy strategy demanded that cities take on significantly greater risk to achieve their planning objectives. With a strong real estate market in their favor, both San Francisco and Los Angeles negotiated aggressive business deals to fund their public-amenities agendas. A key difference in the approaches can be explained by their respective attitudes toward risk-taking and control, attitudes which reflected differences in political culture. Whether to build the public amenities directly (San Francisco) or require their provision by developers (Los Angeles) remains a matter of judgement; its relative desirability conditional on the priorities, politics and risk tolerance of individual cities and their development agencies. Experience varies and expertise matters.


This paper outlines a framework for assessing the environmental performance of cities in regard to the meeting of sustainable development goals. It also considers how the environmental goals fit with the social, economic and political goals of sustainable development and the kinds of national framework and international context needed to encourage city-based consumers, enterprises and governments to progress towards their achievement. In a final section, it considers the extent to which the recommendations of the Habitat II Conference helped to encourage national governments and city and municipal authorities in this direction.


Shuman sees the mobility of capital and, consequently, of living wage jobs as both the hallmark of the emerging global economy and a sign of great peril for community stability. The author suggests localities need not succumb to domination—and all too often, abandonment—by corporations with little commitment to place but deep loyalty to bottom line demands of shareholders. The author suggests three principles: nurture businesses that reduce imports for basic needs; maintain local business ownership; and channel savings and investment capital into building a local economy.

Shuman describes a litany of smaller-scale arrangements that locally produce and distribute goods and services, provide credit and channel investment—all enhancing local economies. Entities and programs considered include food co-ops, community gardens, farmers' markets, energy service corporations, municipal utility districts, housing co-ops and community development financial institutions.

(Available from www.transact.org/congestion/analysis.htm.)

Based on research provided by the Texas Transportation Institute, STPP analyzed the impact of congestion on metro areas. It found that areas that added road capacity did not relieve congestion any better than areas that did not. It also estimated the cost per family of holding road congestion constant.


Takahashi studies an optimal level and an optimal allocation scheme across regions of infrastructure provision, constructing a model of a two-region economy characterized by inter-regional trade and migration. Special attention is paid to both a balanced allocation scheme and a polarized allocation scheme. It is shown that the optimal policy is less likely to involve the former scheme when substitutability in consumption is greater, the degree of increasing returns to scale in private-sector production with respect to the infrastructure input is higher, and/or the regional difference in terms of a comparative advantage is smaller. The author argues that wealthy rural or suburban households generally have higher levels of resource use and waste generation than their counterparts living in cities—they own more automobiles, use them more often and have higher levels of energy use within their homes. What this paper has sought to stress is the areas where improved environmental performance is needed in cities and how this should also be integrated with the social, economic and political goals of sustainable development.


Tatom argues that the increasingly popular hypothesis, published in studies by Aschauer, Munnell and others, that public capital formation boosts private sector productivity has lost sight of the principal factors influencing public spending decisions: the direct benefits of public capital, which largely accrue as final goods to consumer-taxpayers, instead of as intermediate goods used as resources by businesses. The view that public capital directly affects private output, and indirectly, by boosting the rate of return to private capital, is strongly at odds with what is known about public capital and public activities. Tatom names parks among many others in listing public capital formation types.

Thompson, B. (1999, January 13). *We'd be wise to question "smart growth"*. *Star Telegram*.

The writer argues that smart growth means no growth by taking land out of development. The writer also feels that smart growth will mean more government intervention.


This report categorizes and describes transit benefits and disbenefits, presents the dimensions of transit’s economic impact, addresses the linkages between increased transit investment and use, and changes in long-term, region-wide economic conditions that can be measured with current analytic methods, and provides examples of transit benefits and
disbenefits based on recent analysis. The research found that as increasing detail is incorporated into analyses (relative to the scale of the investment or related decision to be made), the scope and character of transit's economic benefits expand. The study found that transit benefits are traditionally understated when the merits of investment alternatives are weighed and that this shortcoming is magnified because of the added uncertainties in measuring transit benefits over the long-term. As a result, incomplete and imprecise estimates of long-term benefits are typically evaluated against short-term costs, further distorting cost-benefit and cost-effectiveness analyses applied to transit.

This report combines guidelines and case studies (best practices models) to provide a comprehensive approach for improving community livability and transit ridership in the United States. The report describes the place-making approach to livability and explores the relationships between transportation and livability that are keys to understanding the case studies. Livability topics include transit's role in creating places for community life; acting as a catalyst for the renewal and revitalization of neighborhoods and entire downtowns, creating opportunities for entrepreneurship and local economic development; making communities safer and more comfortable; making connections between neighborhoods, downtowns, and community destinations more accessible and convenient; and shaping community growth. Examples are presented of case studies which achieve community livability goals, identify the role played by communities, transit agencies, municipal agencies and authorities, and the federal government. Most of the projects presented conform to an overall placemaking framework, in that they entail a high level of community involvement in design, planning, and implementation through some kind of community partnership. Innovative implementation as well as management strategies (both design-orientated and service-orientated) are highlighted, including community-based and private-public partnerships.

Examination of the impact of transit on livable communities.

From a variety of perspectives, ULI report examines smart growth issues.

Case study research was conducted on six local freight rail service projects, all of which had public sector investment. Five attributes were identified whose presence was associated with project success, or conversely, whose absence may have reduced the likelihood for project success. These success attributes should be used as an adjunct to sound economic analysis, and incorporated within future policies governing selection of local rail projects to receive public assistance. The authors assert that to the extent that changes in the rail network continue to be incremental, state governments, rather than federal, may be expected to define public policy concerning railroads.
Each of the case studies presented shared the objective of economic development through the provision of freight facilities or services that would otherwise not be available to local shippers. Five attributes that appeared to have positive impacts on their degree of success, include: 1) the presence of a core freight shipper, 2) an entrepreneurial attitude of management or community leaders, 3) cost control in obtaining and operating facilities, 4) identifying an appropriate market niche, and 5) integrating the particular service with other aspects of the transportation system. Although these attributes do not necessarily guarantee success (due to possible negative economic conditions and competitive actions), they provide insight for planners and investors in defining which projects have a greater likelihood for success and should therefore be more arduously pursued.


One positive outcome of the relentless contraction of the nation’s rail system has been the conversion of abandoned railroad rights-of-way into multipurpose recreational trails. In railroad abandonments, a rail-trail can be a significant stimulus to a local economy. Since trail users spend money on food, beverages, camping, hotels, bed-and-breakfasts, bicycle rentals, crafts souvenirs and gasoline, development of these rail-trails can help municipalities recoup some of the income lost when the railroads pulled out. All across the country, rail-trails are proving to be more than recreational resources. Decision-makers are realizing that the high demand for “close to home recreation” reported by the President’s Commission on Americans Outdoors can be translated into dollars by rural rail—trails which attract the regional tourist. Specific dollars spent by visitors are included within the report.

Along with the multiplying effect of this income through local businesses, the rail-trails also have been shown to have a positive effect on property values. In many instances, people living adjacent to rail-trails become the most frequent users and supporters of these facilities. The advantages of living near a safe, traffic-free recreational trail become major selling points of property located in the vicinity of rail-trails.


A study of highway, port, and rail services for economic development strategies. The first set of strategies addresses the issue of formulating transportation programs to expand and improve the working of the labor market in Wisconsin. The second set of strategies addresses the issue of how to most effectively provide transportation improvements to businesses to induce them to locate, remain, or expand in Wisconsin.

The objective of WisDOT’s special economic development initiative, the Transportation Economic Assistance (TEA) program, is the creation of new jobs or retention of existing jobs within Wisconsin by building transportation improvements at specific sites. This program was enacted in 1987 to fund localized transportation improvements needed to create new jobs or retain existing ones.

Most retail jobs do not qualify for TEA funding because of the requirement that such assistance not result in transfers of existing jobs among regions or firms within the state. Transportation projects to benefit specific retail firms are not approved because individual

*Making the Exception the Norm*
retail firms generally participate in markets so small that gains by one firm imply losses by other existing firms.

Cites a 1992 economic impact study of Lake County (FL), crediting cycling with $1.7 million contribution to the county (trail, festival, 50 percent users from out of state, tourism benefits).

Report to the Oregon House of Representatives detailing the estimated economic impact of the Westside Light Rail Project based on the economic benefits of the former Banfield project. A joint project of Tri-Met and the ODOT, Westside would make highway improvements and explore options for a light rail alignment from Portland to the Westside communities—a direct extension of the existing Banfield light rail line on Portland's eastside.
Appendix A

Summary of Interviews with Staff from Hennepin County Municipalities

In order to learn about both the challenges municipalities face in planning and financing transportation projects and their experience with innovative planning and financing, research staff conducted interviews with staff from five communities in Hennepin County. The research team had originally planned to hold a focus group instead of individual interviews but could not because of several scheduling conflicts. The communities were selected on the recommendation of Hennepin County Community Works. The interviews were conducted between June 25 and July 9, 1999, and focused on the following:

- transportation infrastructure priorities in each community;
- obstacles to planning and financing transportation projects;
- experience with partnerships and innovative planning and financing; and
- transportation planning and financing relationships with MnDOT, Metropolitan Council, and Hennepin County.

Specific questions included, but were not limited to, the following:

1. What are the transportation infrastructure priorities in your community?
2. What are the obstacles you face in trying to plan or finance transportation projects?
3. To what extent have past partnerships on transportation infrastructure been successful and how could they be improved?
4. How do you plan with MnDOT, Metropolitan Council, and Hennepin County? What are those relationships like?
5. What kinds of institutional realignments would help you achieve your goals?
6. What financing mechanisms do you use? To what extent do you use TIF, tax abatement, transit zone tax incentive?
7. What additional financing tools would you like to have?
8. What have been successes in terms of innovative financing, partnerships, innovative planning frameworks?

Interviews were conducted with the following individuals:

- Mark Bernhardson, Bloomington City Manager and Charlie Honchell, Bloomington Director of Public Works;
- Al Madsen, Maple Grove City Administrator, and
- Chuck Ballentine, Minneapolis Planning Department Director;
- Dave Childs, Minnetonka City Manager; and
- Charlie Williams, St. Louis Park City Manager.
Despite the different nature and size of the municipalities, there were many common themes in the interviews as discussed below.

- Traffic safety and congestion are leading concerns in every community although the specific problems and solutions differ in each city.
- The current transportation financing structure is regarded as a failure and in need of reform. Shortcomings with the current system include an over reliance on property tax, the lack of a dedicated transit fund, inflexibility in use of funds, a disproportionate amount of money for rural Minnesota, and the inability of the state to fund the local match of “mega-projects” (e.g., additional lane on Interstate 494).
- The Transportation Advisory Board process is favorably viewed; however, some communities would like a longer window of time for preliminary approval.
- Some collaboration on transportation projects between communities already exists. Examples include Bloomington and Richfield working together on the Interstate 494 ring road and St. Louis Park, Hopkins, and Minnetonka addressing transit routes and services in conjunction with MetroTransit.
- The communities have had collaborative relationships with the private sector in planning and financing of development projects and transportation infrastructure. The level of private sector financial support varies among the communities and specific transportation needs.
- No one interviewed identified innovative financing mechanisms or funding programs they would like to make use of. The cities differed in their use of TIF and tax abatement. Some communities noted that they had used municipal funds for projects and then the county later reimbursed them for its share of the project costs. One city indicated that they did not pursue small amounts of federal funds (e.g., $200,000) because it wasn’t worth their time to try.
- Comments about working relationships with MnDOT were favorable.
- The Metropolitan Council was also favorably regarded but was generally viewed as having no teeth (e.g., failure to meet density goals, shortfalls with coordinated transportation and land use planning). Frustration was also expressed about unfunded mandates from the Council.
- MetroTransit was consistently praised for collaborative planning and improving service delivery.
- Working relationships with Hennepin County were generally viewed as good. Hennepin Community Works was well-regarded, but there was frustration with Hennepin County Transportation Department. Specifically, the transportation department was frequently criticized for focusing exclusively on motorized vehicles and roads. Several communities expressed concern about cost-sharing of certain transportation projects and were concerned that the county had been trying to shift more costs to the municipalities. Two communities indicated that some projects had been delayed because of county bureaucracy.
Through work on projects unrelated to the current study, some research team members had conversations with municipal staff from other Hennepin County communities that revealed similar findings. These findings included the following:

- Concern about traffic safety and congestion appears to be nearly universal.
- There is widespread dissatisfaction with the current transportation financing system.
- Many communities are collaborating on transportation projects.
- MetroTransit is held in high regard.
- The county’s transportation department is often criticized for its focus on motorized vehicles and roads.

In conclusion, the interviews clearly suggested a demand on the part of municipalities for reform in the state’s transportation system to allow for greater flexibility in use of funds and to have a dedicated transit fund. The interviews identified traffic safety and congestion as primary concerns and revealed an increasingly common conflict between strategies to address them. On one side, there are planners and citizens who want to calm traffic and improve pedestrian access and safety. On the other side, there are engineers and citizens focused on the automobile and want to improve the flow of traffic. The tension between the planners and engineers is a familiar one. However, the citizens appear not to fully realize their dichotomous positions. One interviewee said that residents want a pedestrian-friendly environment, and they want to be able to get anywhere quickly in their single-occupancy SUV. He noted that most people have not realized how their own behavior conflicts with their views, of if they have, there aren’t transportation alternatives available to them. In addition, the residents have not realized that through political pressure they could help to reform transportation financing in a way that would promote the development of transportation alternatives.
# Appendix B

## TOD Financing in California

<table>
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<tr>
<th>Development</th>
<th>Grand Central Market</th>
<th>Village of Almaden at La Mesa</th>
<th>Atherton Home of Almaden Lake</th>
<th>Atherton Place</th>
<th>Ohlone Court</th>
<th>Strobidge Apartments</th>
<th>Del Norte Place</th>
<th>Grand Central Apartments</th>
<th>La Mesa Village Plaza</th>
<th>Holly Street Village</th>
<th>Mercado Apt.</th>
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<td>Enhance Area through Transits Site Improvement</td>
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37 Cervero, p. 357.

*Making the Exception the Norm*
### Appendix C

#### Mechanism for Financing Transportation in Oregon

<table>
<thead>
<tr>
<th>Source</th>
<th>Primary or Secondary Source</th>
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<tbody>
<tr>
<td>Certificates of participation (COP). This mechanism allows municipalities to lease capital facilities without using a bond issue. It is best suited for revenue producing facilities.</td>
<td>F,S,R secondary</td>
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<tr>
<td>CMAQ funds. These funds are from TEA-21 and can be used to meet air quality attainment goals.</td>
<td>F,S,R primary</td>
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<td>Community Development Block Grants (CDBG) Federal community development projects that benefit low- and moderate income households.</td>
<td>F,S,R secondary</td>
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<tr>
<td>Oregon Department of Transportation (ODOT). Revenue is mainly generated through gas tax.</td>
<td>F,S,R primary</td>
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<tr>
<td>Oregon Economic Development Department (OEDD). Revenue is generated through lottery sales.</td>
<td>F,S,R primary</td>
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<td>Port authority. These Authorities in Oregon have a wide range of powers.</td>
<td>F,S,R primary</td>
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<td>Public-private partnerships.</td>
<td>F,S,R secondary</td>
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<td>State Marine Board.</td>
<td>F,S,R secondary</td>
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<td>Tri-Met/local partnership.</td>
<td>F,S,R primary</td>
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<td>Local gas tax.</td>
<td>L, LT primary</td>
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<td>Street utility fund. Based on the idea that street use is equal to utility use. Fees are assessed on scale based on use. Medford, Oregon has raised 1.3 million dollars a year through this system.</td>
<td>L, LT primary</td>
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<tr>
<td>Enterprise funds (utility rates). An enterprise fund is used to support an activity or service that is intended to be self-supporting. Examples of municipal utilities are water, sewer and storm drainage.</td>
<td>L, T secondary</td>
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<tr>
<td>Franchise fees. Collected from utilities that use public right of ways.</td>
<td>L, T secondary</td>
</tr>
<tr>
<td>General obligation bonds. Voters must approve these government-backed bonds.</td>
<td>L, T primary</td>
</tr>
<tr>
<td>Local improvement districts (LID). Often used to upgrade infrastructure in certain areas, this is an assessment against the property value.</td>
<td>L, T primary</td>
</tr>
<tr>
<td>Property taxes.</td>
<td>L, T primary</td>
</tr>
<tr>
<td>State revenue sharing. These are funds derived from state gas taxes and apportion by population.</td>
<td>L, T primary</td>
</tr>
<tr>
<td>System development charges (SDC). Local governments can charge for development of the following: road, water, sewer, storm water, and parks.</td>
<td>L, T primary</td>
</tr>
<tr>
<td>Real estate transfer tax. This is tax on the transfer of real estate.</td>
<td>L,LT primary</td>
</tr>
<tr>
<td>Real estate investment trust (REIT).</td>
<td>L,LT primary</td>
</tr>
<tr>
<td>Revenue bonds. Bonds are paid back through revenue stream generated by project.</td>
<td>L,T secondary</td>
</tr>
<tr>
<td>Special levies. These taxes are levied for a specific purpose and require voter approval.</td>
<td>L,T secondary</td>
</tr>
<tr>
<td>Urban renewal funds. Tax increment financing</td>
<td>L,T Primary</td>
</tr>
</tbody>
</table>

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L = local sources  
T = traditional  
LT = less traditional  
F,S,R = federal, state or regional sources  
Primary: funding source is appropriate, implementation not a problem  
Secondary: funding source is somewhat appropriate, implementation can present problems

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38 Table derived from Carson, 1998, p. 60-72.

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