

NATIONAL ASSOCIATION OF
INDUSTRIAL & OFFICE
PROPERTIES

RESEARCH
FOUNDATION



FINANCING REGIONAL INFRASTRUCTURE

PREPARED BY:

Quest Technology, Inc.
and
Dr. Robert Schmidt, J.D. Ph.D.

Regionalism is the hot-topic of debate for those interest groups, state and local governments, and citizen groups that are engaged in the growth management debate. New residential, commercial, and industrial developments have spread far beyond the established boundaries of central cities and close proximity suburbs. That extended growth has generated additional traffic flows, air pollution, and demands for new infrastructure services and financing.

The need for infrastructure planning and financing is frequently linked to the question of regionalism because these components cut across local government boundaries. This leads, in turn, to local and regional discussions about whether planning, financing and implementation of such infrastructure systems can and should be handled locally.

In 2000, the NAIOP Research Foundation approached Dr. Robert Schmidt of the University of Nevada, Las Vegas to conduct a study that would contribute to the national dialog on regionalism. The purpose of the project was to examine the planning for and the financing of infrastructure systems on a regional basis, using a specific local example as a template.

The research conducted for this study included a review of the current literature and data sources, interviews with key members of the development community throughout the United States, informal surveys of numerous regional and local government agencies across the nation, and research into how the public itself views the topic. The findings are included in the document before you, which cover the following areas of focus: Analysis of Infrastructure Funding Mechanisms; Financing Case Studies; Funding Regional Infrastructure; Provision of Infrastructure and Regional Governance; and Conclusions and Recommendations.

The NAIOP Research Foundation hopes you will find the following information on infrastructure and regionalism to be enlightening. The purpose of a guidance document is to provide our members with facts and principles that can assist them in understanding the issue of financing regional infrastructure, as well as help them to distinguish the myths from the realities, assess different approaches and techniques to the issue in a local context, and be inspired to engage with members of their own communities on the topic. The end result: Productive dialogue designed to achieve positive outcomes for not just the real estate community, but for local communities as well.

NAIOP Growth Issues Subcommittee

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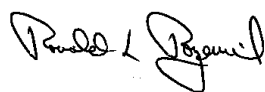
A C K N O W L E D G E M E N T S

A project this ambitious could not have been accomplished without the help of NAIOP members who volunteered to serve on its evolution. Special thanks to the NAIOP Growth Issues Subcommittee for their offer to serve as a “sounding board” for this document. Those members include Co-Chairs Brian Blaesser and Pete Bolton, of Boston, Massachusetts and Phoenix, Arizona, respectively; Fred Beebee of Atlanta, Georgia; David Begelfer of Boston, Massachusetts; James Brubaker of Denver, Colorado; Ronnie Duncan of Tampa, Florida; David T. Finger of Raleigh, North Carolina; Eric S. Kassoff of Washington, DC; Joseph A. Langley of Denver, Colorado; Karen Marcotte of Albuquerque, New Mexico; Robert F. Moody of Denver, Colorado; Charles C. Pfeffer of Maple Grove, Minnesota; Todd Sheaffer of Beaverton, Oregon; and Robert A. “Tim” Snow of Las Vegas, Nevada. Thanks to all of you for your tireless efforts.

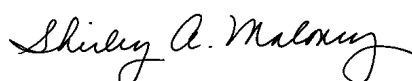
Special recognition clearly goes to Brian Blaesser and Tim Snow for their leadership on this issue. Brian and Tim shepherded this project from conception to publication. They not only worked with Dr. Schmidt to ensure that the major regionalism issues were analyzed and presented in a clear manner, they also contributed to the review of the several drafts of the document that became the final product you see before you. NAIOP is indeed fortunate and grateful to have such able and knowledgeable people lead the charge in this effort.

We would also like to acknowledge the outstanding work and efforts of the staff of NAIOP, who have worked long and hard to produce a document that would truly benefit our members, particularly Assistant Vice President for State and Local Affairs Steve Gallagher, who has been with this project from the beginning.

There is no “quick fix” for the complex issue of regionalism. This study is not meant to provide answers, but to be used as a sounding board from which to launch further discussion. We hope this study serves as a resource for not only NAIOP members, but for interested citizens, businesses, and governmental bodies who want to forge solutions built on objective information and sound development principles.



Ronald L. Rayevich
Chairman
NAIOP Research Foundation



Shirley A. Maloney
Executive Director
NAIOP Research Foundation

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EXECUTIVE SUMMARY

The purpose of this study is to provide office and commercial property developers with the essentials needed to understand former, current, and potential future funding mechanisms that can be used to fund regional infrastructure development. In order to do so, this study examines the three major regional constructs: (1) regional planning only for such infrastructure systems, (2) regional planning for and financing of such infrastructure systems, and (3) regional planning, financing and governance of infrastructure systems. More specifically, the objective of this study is to identify local infrastructure financing mechanisms that have been used, are currently being used, or could be used to finance regional infrastructure systems.

The varied methods of infrastructure financing increase the potential for inequitable treatment of developers, and complicate consideration of local, regional and legal issues. This report surveys methods and examines issues related to infrastructure financing. It describes regional, local, legal and fairness considerations, and best-practice approaches. This report includes a review of the research and provides additional insight and recommendations for future infrastructure provision.

The arguments surrounding the merits of regional governance are well rehearsed in the literature, though there is minimal empirical research to support their position. Arguments for regional forms generally center on either environmental or technocratic arguments of improved government in terms of effectiveness and efficiency.ⁱ Counter-arguments stress the lack of value-added from a regional tier and the need for competition in service provision.ⁱⁱ There remains no consensus even within the literature, partly as the result of insufficient empirical evidence and also due to the ambiguity of the term regional governance.

The diversity of methods employed in regional infrastructure financing and provision in North America is immense. The variations are as much a result of political and economic forces as geophysical and climatic ones. These variations make it virtually impossible to conduct a reliable cross-regional comparison. The lack of consistent methods results in disparate data, which impedes progress towards optimization. Nevertheless, two divergent models are emerging: single-purpose regional structures and integrated or multi-purpose structures.

ⁱ There are many advocates of regionalism and smart growth to include attorneys, operations researchers, environmentalists, urban designers and urban planners. Peter Calthorpe, a well-established architect and New Urbanist is representative of this movement. See Dantzig, George B., and Thomas L. Saaty, *Compact City: A Plan for a Liveable Urban Environment*. San Francisco: W.H. Freeman and Co. 1973; Freilich, Robert H. and Bruce G. Peschoff, "The Social Costs of Sprawl", *The Urban Lawyer* 29.2, 183-198; and Schmidt, Charles, "The Specter of Sprawl," *Environmental Health Perspective* 106, no. 6: A274-79 (June 1998).

ⁱⁱ The critics of regionalism and smart growth include a wide variety of professionals, predominantly economists, developers, public administration scholars, and organizational researchers. Peter Gordon, a prominent economist is representative of this group. Many critics utilize public choice theories to support their positions. See Gordon, Peter and Harry Richardson and Gang Yu, "Metropolitan and Non-Metropolitan Employment Trends in the U.S.: Recent Evidence and Implications" *Urban Studies*, 30: 883-898; Siegel, Fred, "Is Regional Government the Answer?" *The Public Interest*; No. 137, 85-98 (1999).

Regional Governance Structures

Single-purpose regional infrastructure providers are the predominant method of regional planning, financing and provision. They provide a wide array of public services including transportation, water, sanitation, and fire protection. Because there are a number of public services that fall under the heading of single-purpose districts, many critics have periodically called for the integration of these entities in an effort to reduce the amount of government. It would appear that these critics have confused the concept of many governments with that of too much government. Proponents of regional governance structures often mention an array of presumed benefits that would accompany regional structures, including better government and cost-efficiencies achieved through economies of scale. The results of the research for this report question several of these assumptions.

There are three regions in the United States that are most often cited for their integrated or multi-purpose regional governance structures: Portland, Seattle, and Minneapolis-St. Paul. Two of these regions, Portland and Minneapolis-St. Paul are examined in greater detail in the case studies segment of this report. Although portrayed by the supporters of integrated regions as positive examples of the benefits of regional governance, there is little empirical evidence supporting their assertions. Most importantly, there is no convincing data to suggest that integrated regional forms of governance will reduce citizen costs or encourage public sector efficiency in technical infrastructure provision. The evidence strongly suggests that competition among providers remains a much more effective tool for accomplishing these goals.

There is no doubt that the pooling of resources often does create a new, larger organization with greater capacity and more options for service provision. However, these advantages must be weighted against the reduction in citizen access to government and the dilutions of citizen representation that typically accompany mergers of single purpose service providers.

Regional Finance

Most large regions already use some form of regional financing mechanism for regional infrastructure. Most often masked in the form of a regionalized sales tax or user fee(s), the vast majority of growth regions now have some form of regional financing mechanism in place.

Regional advocates argue that regional structures have greater access to capital markets and thereby reduce their costs of borrowing for capital investment. For example, tax-exempt bonds tend to work best in larger jurisdictions that have access to capital markets. However, many jurisdictions are now pooling their requirements thereby reducing their costs of borrowing. It should be noted that this form of financing is arguably not equitable because individuals with higher incomes benefit from tax incentives more than people with lower incomes.

The research has segmented the various forms of public service infrastructure into four types: user fees, benefit capture methods, subsidies and development impact fees. Each method

has distinct advantages and disadvantages in application. Most importantly, this research suggests that (1) most regions are under-utilizing user fees and over-utilizing development impact fees, and (2) most regions are over-charging agricultural, office and industrial properties and under-charging residential development.

The main economic reason for user fees is to promote efficiency. User fees should be a major source of funding infrastructure provision. User fees are generally the most equitable form of infrastructure finance in wet utilities. User fees that are correctly set not only promote conservation, they promote economic efficiency by providing information to public sector suppliers about how much clients are willing to pay and by ensuring that residents value what the public sector supplies.

Benefit capture methods such as well-defined property tax systems can be an integral part of an infrastructure financing system. Most organizations that oppose property taxes too often offer alternatives such as development impact fees that result in greater forms of inequity. Benefit-capture methods such as Tax Increment Financing and special assessment districts have grown exponentially in the last decade in many high-growth regions.

Infrastructure subsidies arise in such divergent forms as sales taxes and federal grants. Any infrastructure program that relies on subsidies should be regarded with a great deal of skepticism. Federal grants should only be supported in the short-term to level the playing field and to support federal mandates. From an economic point of view, large-scale infrastructure subsidies are typically inequitable.

Development impact fees, at their best, can promote efficient land use decisions by eliminating cross-subsidization that arises because of public funding of municipal infrastructure. However, there is little evidence that development impact fees are, in fact, implemented in such a manner. In fact, almost every impact fee system evaluated had at least one major flaw in its design. The majority of the development impact systems evaluated as part of this research over-charged commercial development and failed to address marginal costing requirements.

The use of private sector capital particularly in wet utilities capital infrastructure provision has been seen as a way of freeing up municipal resources and debt capacity for other activities. The keys to attracting private sector debt capital are the underlying contracts and agreements that ensure a secure revenue stream. However, private sector capital is not a universal remedy for funding infrastructure. Federal grants for wet utility infrastructure have declined in the last decade. This decline has resulted in increased pressure on municipalities to use development impact fees for infrastructure.

Regional Planning

Developers as well as government employees conduct regional planning. Throughout the nation developers have proven that they can create large-scale “master-planned communities”. Robert Nelson and others have proposed that land markets (developed and undeveloped land) be free while government planners focusing on only infrastructure

planning.ⁱⁱⁱ In so doing, government planners would establish the preconditions for land markets, thereby providing increased certainty. Under this scenario government planners would focus only on trunk-line infrastructure plans and establish technical service standards. Developers would do the remaining planning, effectively liberalizing land markets through an optimization of labor.

Findings

The study investigated the actual experiences of different regions; with an emphasis on two that have integrated regional operational structures (Portland and Minneapolis-St. Paul) and two that do not (Atlanta and Las Vegas). In the integration cases, total revenues coming into the governments involved have increased since the time of consolidation. Many of their experiences mirrored those described in the literature.

Fred Siegel's research informs us that there are no success stories among the recently formed metro governments.^{iv} For example, Siegel notes: "What's striking about Metro-Dade [Dade County, Florida] is that it has delivered neither efficiency nor equity nor effective planning while squelching local self-determination."^v In summary, this research, like Siegel's could find no empirical evidence that regional integration is a technique for making governments get by with less.

Better Government

Proponents of integrated forms of regional governance argue that they provide for better government. However, in terms of efficiency or effectiveness, the literature does not support this argument whether measured by efficiency or effectiveness. In fact, it appears that the main advantage of single-purpose regional form of government is to aid local citizens in expressing their preferences. Thomas DiLorenzo found that "The ability of citizen-taxpayers to create special districts provides a means of accommodating diverse preferences" ...the application of economic theory leads one to conclude that single-purpose districts are conducive to both production and consumption efficiency in the provision of local public services.^{vi}

Many proponents of integrated regional governance dwell on the inevitable shortcomings of capitalist society, alleging "market failure" explanations for what they have identified as unattractive and constructing arguments for regional solutions to remedy imperfections. The

ⁱⁱⁱ Nelson, Robert H., *Zoning and Property Rights: An Analysis of the American System of Land-Use Regulation*, Cambridge: MIT Press (1980); Holcombe, Randall and Sam Staley, eds., *Market Strategies for Land Use Planning for the 21st Century*, Westport, Conn.: Greenwood Press (2001)

^{iv} Siegel, Fred "Is Regional Government the Answer?" *The Public Interest*, No. 137: 85-98 (1999).

^v Ibid at pages 88-89.

^{vi} DiLorenzo, Thomas J. "The Expenditure Effects of Restricting Competition in Local Public Service Industries: The Case of Special Districts." *Public Choice* 38: 569-78.

history of previous centralized failed attempts at government intervention is seldom considered.

The famous model of local economies developed by Charles Tiebout^{vii} speaks of the importance of providing a variety of options to citizens. Households, Tiebout argued, are then able to choose the jurisdiction that best meets their criteria for the correct bundle of public goods and express their preferences by “voting with their feet.”^{viii} By extension, reducing the number of governments reduces citizen choices and compromises citizen preferences.

Economies of Scale

The most popular argument advanced by regional governance advocates is that of “economies of scale”. Theoretical and empirical research confirms that however that, economies of scale vary according to the service provided. Moreover, the creation of diseconomies of scale frequently offset initial savings in municipal consolidation of public services.

Determining the “appropriate economy of scale” for each infrastructure form is problematic. For example, international research at the CSIRO Urban Water Program suggests that economies of scale exist in sewage treatment plants with gray-water recycling found that treatment plants do exhibit economies of scale, but that diseconomies occur in the sewage transport system after connection of approximately 10,000 people;^{ix} while Walkerton found economies of scale for chlorination plants at 125,000 residents.^x However, many developing communities have already exceeded the demographics that would result in an economy of scale gain through the consolidation of governments or have entered into joint powers agreements or other inter-local agreements to achieve the efficiencies offered by economies of scale.

Capital-intensive infrastructure such as water provisioning, solid waste disposal, and transit operations are the functions that are most often consolidated (or privatized) for efficiency reasons. Regionalism proponents argue that integrating the planning and management of these functions may gain even greater efficiencies. However, there is little theoretical or empirical evidence to support these claims.

One major reason for this lack of evidence is the substantive effect of climate and topography on transportation and wet utilities. There are very few regions that possess integrated region sheds for population, water, drainage, air quality, and transportation (Las Vegas, Nevada is

^{vii} Tiebout, C. “A Pure Theory of Local Public Expenditures”, *Journal of Political Economy* 64: 416-424 (1956).

^{viii} Ibid.

^{ix} CSIRO, “Economies of Scale in Water Systems”; Sydney, Australia: CSIRO (2000)

^x The Walkerton Inquiry Draft Report Ontario, Canada (2000)

one). Proponents of regional governance, however rarely address this geophysical, climate and demographic set of realities.

Organizational Costs

The cost of blending organizations is most often overlooked or understated by proponents of regional governance. Salary levels for comparable work are almost always increased to match those of employees in the higher paid organization. Equipment and facility standards are almost always set at the highest level among the previous organizations. There are additional factors that have been largely ignored in the consolidation debate.

Perhaps the most questionable assumption of advocates of regional forms of governance is that larger, regional organizations will continue to behave just as their smaller, predecessor organizations did. Existing research do not support such assumptions. On the contrary, larger organizations, with combined revenues and responsibilities, will tend to identify options that were not available to their predecessor organizations and ultimately need greater resources to sustain them.

An additional problem is as the monopolistic power of a government increases it becomes more likely that the government will spend money at levels higher than citizens would demand. That is because it is more difficult for citizens to monitor the efficiency of larger governments.

Shift To Development Impact Fees

Our interviews with public officials in the case study areas suggest that the Supreme Court cases of *Nollan*^{xi} and *Dolan*^{xii} have encouraged many jurisdictions to shift away from solely demanding land exactions through development agreements and toward imposing impact fees as well as conditioning development on infrastructure provision. Our analysis confirms the finding that impact fees generate fewer constitutional concerns for jurisdictions since they can easily tailor them to the impacts created by a specific development. The data suggests that when jurisdictions pay greater attention to nexus and rough proportionality requirements and engage in more systematic and integrated long-range planning they often justify higher impact fees than they previously charged.

Conclusions

Regional governance of infrastructure should be undertaken cautiously, on a case-by-case basis. The existing trend toward voluntary cooperation between independent agencies indicates that local governments are already capable of recognizing areas where structural changes are needed and are responding accordingly without the creation of monolithic government structures.

^{xi} *Nollan v. California Coastal Commission*, 483 U.S. 825 (1987)

^{xii} *Dolan v. City of Tigard*, 114 U. S. 2309 (1994)

There is little evidence that regional forms of governance will reduce citizen costs or encourage public sector efficiency. Competition among public service providers is a much more effective tool for accomplishing those goals.

The pooling of resources often does create a new, larger organization with greater capacity and more options for service provision. However, these advantages must be weighed against the reduction in citizen access to government and the dilutions of citizen representation that typically accompany government mergers.

Efficient markets allow consumers to make informed trade-offs between price, quantity and quality, so they can choose the bundle of goods that meet their specific needs. Only if individuals have access to a range of viable choices can society be sure that consumers' decisions represent true preferences. Regionalism seeks to remove that range of choices.

Correcting market distortions rather than implementing a battery of doomed centralized planning mechanisms would better solve many of today's regional issues. For example, economists, transportation professionals, and environmentalists understand the importance of reforming transport pricing and markets, yet proponents of regionalism rarely discuss these items. Moreover, most smart growth prescriptions weaken property rights, constraining the markets ability to work effectively.

NAIOP members should support solutions to "regional" problems that: (1) correct market distortions created by government intervention and (2) strengthen not weaken property rights. In the final analysis, "regionalism" and regional land use controls cannot be justified on either equity or efficiency grounds. The "cure" for many regional problems lies in reducing government created market distortions from the under-pricing, not regional homogeneity and bureaucracy.

1.0 INTRODUCTION

In recent years, local/regional governmental entities have increasingly required developers to finance infrastructure projects with regional impacts.^{xiii} As such, infrastructure financing has become a major component of the daily agenda of numerous office and industrial property developers. Today, developers are faced with the prospect of creating and employing unique funding methods to ensure that infrastructure programs and other related developmental projects are financed.

Traditionally, developers either did not have to finance such projects or only had to provide small levels of funding. However, over the past thirty years, local governmental entities have increasingly required developers to shoulder the burden of financing infrastructure development. This shift has occurred, in large part, due to the fact that the federal and state governments have provided local governmental entities with less funding for infrastructure projects, which has thereby shifted the cost to local governments.

Altschuler and Gomez-Ibanez^{xiv} have also identified six other reasons why local governments have shifted the costs of infrastructure development to the developer, including neighborhood activism; environmental awareness and regulation; taxpayer revolts; infrastructure backlog; an increasing number of governmental mandates; and the development of fiscal impact analysis.^{xv} These activities, coupled with accommodative political and judicial review at the state and local level, have caused local developers to have to fund various infrastructure projects.^{xvi}

With a reduced level of available monies, local governments have increasingly forced developers to fund infrastructure through “exactions” or “impact fees”.^{xvii} Developer-based financing, which has generally been implemented under the guise of either “smart growth or regionalism”, has become the major means of funding infrastructure in many communities.^{xviii} When a local entity imposes such a program, developers are left to figure out how they can best finance local infrastructure needs. Such a task is usually burdensome and can create numerous logistical and financial problems for developers.

^{xiii} Altschuler, Alan and Jose Gomez-Ibanez. *Regulation for Revenue: The Political Economy of Land Use Exactions*: The Brookings Institution; Cambridge, Mass.

^{xiv} Ibid.

^{xv} Ibid.

^{xvi} Bailey, Stephen J., *Local Government Economics: Principles and Practice* (1999)

^{xvii} Downs, A. *New Visions for Metropolitan America*, Washington D.C. The Brookings Institution; Cambridge, Mass (1994)

^{xviii} U.S. Department of Commerce, Economics and Statistics Administration: Statistical Abstract (2000)

1.1 PURPOSE

The purpose of this study is to provide office and commercial property developers with the essentials needed to understand former, current, and potential future funding mechanisms that can be used to fund regional infrastructure development. In order to do so, this study examines the three major regional constructs: (1) regional planning only for such infrastructure systems, (2) regional planning for and financing of such infrastructure systems, and (3) regional planning, financing and governance of infrastructure systems. This study, in large part, discusses the numerous funding options that developers have for infrastructure projects that cross regional jurisdictional lines. The options range from traditional funding mechanisms to modern day funding methods to innovative futuristic funding methodologies. No one method will ensure developers achieve success in paying their fair and equitable share of infrastructure costs. Rather, for developers to achieve success in the Twenty-First Century, they will have to employ a mixture of old, current, and new funding mechanisms.

Likewise, there is no magical combination of old, current, or new funding mechanisms that will automatically provide developers with an answer to the best way to finance infrastructure projects that span regional or jurisdictional boundaries. Rather, developers will have to evaluate the political and social characteristics of their local communities. Such an evaluation would include: surveying local and state economies; analyzing local and state tax bases; examining the legal landscape of each respective state and local community; and determining which funding schemes can best be utilized by developers to fund local infrastructure and related developments.

1.2 OBJECTIVE

The objective of this study is to discuss local infrastructure financing mechanisms that have been used, are currently being used, or could be used to finance regional infrastructure systems. Such an evaluation includes discussing local infrastructure financing structures; local and state government planning and governance methods; local and state taxation systems; and relevant legal issues. This study addresses these issues by answering the following questions:

- What is the rationale for regional infrastructure planning?
- Which infrastructure systems are most appropriately planned for on a regional basis?
- Which infrastructure systems are most appropriately financed on a regional basis?
- Which infrastructure systems are most essential to address in order to achieve growth management objectives?
- Which infrastructure systems are most dependent on either state or federal funding?

- What alternatives are available for financing infrastructure systems that are most appropriately planned and financed on a regional basis?
- Which of these financing mechanisms is the most equitable?
- Does regional planning of infrastructure necessitate regional governance?
- Does the provision of regional infrastructure necessitate regional financing mechanisms?
- Does regional financing for infrastructure necessitate regional governance?

This study addresses the above questions within the context of existing local infrastructure funding practices. Additionally, this study evaluates legal questions within the context of commonly utilized planning, financing, legal and governance methods.

1.3 ORGANIZATION OF RESEARCH

This study first discusses local/regional governance issues and how such issues affect infrastructure development. Indeed, the types of funding programs that local entities may be able to utilize depend on numerous dynamics, including political, economic, and legal considerations. The study then explores the traditional funding sources of technical infrastructure. Local governmental entities have used these methods to finance infrastructure development since the early to middle part of the Twentieth Century. A discussion is presented denoting common political, economic, and legal ramifications that confront the implementation of certain types of infrastructure programs.

Next, this study details the supplemental funding sources of infrastructure. State, regional and local governmental entities have utilized these types of funding mechanisms over the past thirty years. The study also examines alternative financing practices. When state, regional and local governmental entities utilized some of these funding mechanisms, developers did not expend as many monies on infrastructure development.

Finally, this study presents case studies to more fully examine infrastructure development. One case study examines how four cities – Atlanta, Georgia; Las Vegas, Nevada; Portland, Oregon; and Minneapolis-St. Paul, Minnesota – have addressed regional infrastructure development. In total, an examination of these four uniquely diverse cities provides examples of how and why economic, political, geographic, and legal concerns affect the development and implementation of regional infrastructure programs. A separate case study evaluates a “best practice in impact fee systems” as a model that could be more widely used by developers to assess the equity and fairness of infrastructure financing mechanisms.

2.0 REGIONAL GOVERNANCE AND PROVISION OF INFRASTRUCTURE

This section discusses the three major regional constructs for infrastructure development: (1) regional planning only for infrastructure systems, (2) regional planning for and financing of infrastructure systems, and (3) regional planning, financing and governance of infrastructure systems. Additionally, this section examines the traditional mechanisms for funding infrastructure development as well as local and state laws that might affect the extent to which programs can be enacted. First, however, this section defines commonly used terminologies in local government planning and infrastructure development.

2.1 TERMS IN REGIONAL INFRASTRUCTURE DEVELOPMENT

The following key terms are used in regional infrastructure development:

Governance

Although there is no universally accepted definition for governance^{xix}, it is generally agreed that governance is more than simply exercising governmental powers. Equating governance with government limits the context in which problems are conceived and the range of strategies available to resolve them.

Most writers on the subject agree that governance has to do with making decisions about direction.^{xx} The term “governance” refers to “(1) All community interests affected by challenges and necessary to their resolution, not just government institutions, and (2) the collaborative problem-solving mechanisms needed to design timely strategies as well as the government institutions and other service-delivery mechanisms needed to implement them.”^{xxi} Within this meaning, the concept of governance encompasses the rules and institutions that create the framework for conduct of both public and private business, including accountability for economic and financial performance.^{xxii}

^{xix} For a collection of some definitions, see Demers, Maurice, “La gouvernance de la gouvernance: Faut-il freiner l’engouement?” in *Governance: Concepts and Applications*, Corkery, Joan (ed.) with IIAS Working Group, International Institute for Administrative Studies, (Brussels, 1999), pp 368-371.

^{xx} Ibid.

^{xxi} Dodge, William, *Regional Excellence: Governing Together to Compete Globally and Flourish Locally*, Washington D. C.; National League of Cities, 1996), p. 38.

^{xxii} See Lowery, David, *Sorting the fragmented metropolis* (1998); Gaggan J.J. “Local government governing capacity: Challenges for the new century” in *the Handbook of Public Administration*. New York: Marcel Dekker, Inc.

Currently, within the United States, there is a continuum of alternatives to the current “state-county-municipality” regional governance structure such as: single unified governments serving an entire metropolitan region (e.g., New York City); city-county consolidations (e.g., UNIGOV in Indianapolis); regional multi-purpose districts (e.g., Portland Metropolitan Service District and the Twin Cities Metropolitan Council); regional special-purpose districts (e.g., Port Authority Transit in Pittsburgh and the Regional Flood Control District in Las Vegas, Nevada) and regional networks (e.g., Charlotte-Carolinas Partnership).^{xxiii}

Infrastructure

The broad definition of infrastructure is: “the physical capital assets instrumental in the provision of public services.” Public services are defined as the output or flow of services provided by physical infrastructure that promote social and economic development, safeguard health and improve the quality of life. For the purposes of this research, infrastructure services have been further segmented into: (a) Technical systems and (i.e. wet utilities or transportation) or (b) Welfare provision (e.g., public safety, parks, school, and libraries). For most metropolitan areas, this organization reflects the methods of service provision, performance measurement, and forms of federal and state subsidy.

Technical Systems

Technical infrastructure systems rely upon a scientific-perspective for their provision. Unlike many other public services that require individualization for effectiveness, technical systems provide products and services that are homogenous.

Wet Utilities

Wet utilities include potable water systems, wastewater systems, stormwater systems, drainage systems, flood control, combined sewage overflow, and sanitary sewer. Water services are most often provided as three distinct services: (a) potable (drinking) water, (b) sanitary sewer, and (c) flood control and/or stormwater.

Transportation Systems

Transportation systems include highways, roads, streets, and public transportation such as subways and bus service. Metropolitan transportation systems are generally segmented into (a) highways (roads and streets) or the provision of access, and (b) mass transit (the provision of public transportation services).

Welfare Provision

Communities provide a wide array of public services for the general welfare of the community. These include services such as police protection, legal services and public education. The provision of public services, such as public safety and education, differs from

^{xxiii} Sharp E.B. *Urban Politics and Administration: From Service Delivery to Economic Development*, New York: Longman (1990)

that of technical systems in terms of methods of provision and measures of effectiveness and efficiency. Moreover, the nexus between the provision of these services and office and industrial property development is less apparent. **Therefore, the provision of these services is not covered in this report.**

Regionalism

A region is a unit of analysis below the level of the state and above the level of the independent local jurisdiction. A region is generally defined geographically as a space bounded by the effective reach of some system whose parts interact more with each other than with the outside.^{xxiv} The term “region” refers to “a central core city and its contiguous suburbs and future growth area or a rural area that is commonly influenced or impacted by crosscutting economic, physical and social development challenges.”^{xxv} The factors that bind regions can be both cultural and economic.

Proponents of regionalism argue that many of today’s public sector problems require solutions that exceed the current capabilities of local jurisdictions, requiring a focus and delivery mechanism that is regional.^{xxvi} Increasingly, local jurisdictions have developed strategies that reflect this regional focus. Regionalism is the process of transferring local jurisdictional authority to sub-state entities that span two or more local jurisdictions. Geographically, regions may encompass areas ranging in size from slightly more than a municipality to groups of states combined for administrative or statistical purposes by the federal government.

It is important to separate regionalism from regional planning and local comprehensive planning activities. Regionalism differs from other inter-local arrangements in that it seeks to integrate planning, financing and service provision authority. Rothblatt and Sancton (1996)^{xxvii} detailed at least three types of limitations to current institutional frameworks that those championing regionalism seek to redress: (a) jurisdictional limitations that confine local governmental bodies to advisory roles or narrow responsibilities; (b) territories that cover only a portion of the urban region; and, (c) significant coordination difficulties among local jurisdictions. The two major driving forces of regionalism are typically economic and political.

- ***Economic Considerations*** - “Economies of scale” are often the chief justification for implementing regionalism. Economies of scale exist when a public service can be provided more cheaply on a per-capita basis when it is provided to a larger number of

^{xxiv} Rothblatt, Donald and Andrew Sancton, editors, *Metropolitan Governance: American/Canadian Intergovernmental Perspectives*, (Berkeley: Institute of Governmental Studies Press, University of California, 1993).

^{xxv} Ibid

^{xxvi} See Supra note i.

^{xxvii} See Supra note xvi above.

people than when it is provided to a smaller number of people. Technical systems are subject to relatively strong scale economies.^{xxviii}

- **Political Considerations** -The negative externalities (e.g., air and water pollution) of certain economic activities are often experienced by multiple jurisdictions within a region. Regionalism proponents argue that regional problems require regional solutions.^{xxix} These arguments often include the implication that regional bodies must be given sufficient authority to remedy such problems.

Another political rationale for regionalism stems from the desire to integrate land-use planning on a regional basis. Land-use planning is the most important vestige of local political authority in most jurisdictions. Local jurisdictions have retained control over local land use under the principle of police power since the Supreme Court case of Village of Euclid v. Ambler Realty Co. in 1926. Nevertheless, land-use planning is a major constituent of all other planning activities.

Although numerous jurisdictions have engaged in smart growth techniques, many jurisdictions refuse to accept the growth management agenda. The result is that regardless of how fast the “smart growth agenda” spreads, there are always other communities that welcome development.

This fragmentation of local strategies has led to pressure on state governments to enact statewide responses. For example, after Portland adopted its restrictive urban growth boundaries legislation in 1979, development began to switch to bordering Clark County in the State of Washington.

Proponents of regionalism argue that effective control over regional issues such as infrastructure provision and air pollution control cannot be addressed without regionalizing land-use planning. At first blush, this argument appears sound. Without doubt land-use decision-making has a direct and measurable impact on the environment. However, the argument that centralized land-use planning will solve these problems lacks theoretical or empirical evidence.^{xxx} Particularly those that link increased density with improvements in environmental conditions.

As U.S. Transportation Department economist Don Pickrell observed, “Although empirical evidence on the relationship between residential density and various aspects of travel behavior has been widely reported, surprisingly little of it withstands scrutiny.”^{xxxi} The

^{xxviii} See generally Hoover, Edgar M., and Frank Giarratani, *An Introduction to Regional Economics*, New York: McGraw Hill (1985).

^{xxix} See for example, Peter Calthorpe, “The Region”, in *The New Urbanism: Toward an Architecture in Community* New York: McGraw Hill (1994). See also supra note i.

^{xxx} Lave, Charles, ed., *Urban Transit: The Challenge to Public Administration*, San Francisco: Pacific Institute for Public Policy Research (1985)

^{xxxi} Pickrell, Don, Transportation and Land Use, in Gomez-Ibanez, Tye and Winston, p.423

consensus of economists that have studied the issue reports Pickrell, is that the “relationship between land use characteristics such as employment and residential density and mixing of different uses, and travel demand are generally empirically weak and often statistically unreliable.”^{xxxii}

Attempts at controlling the externalities of uneven population growth within a geographical area through non-market methods such as strong regional planning initiatives has most often led to increased problems in the surrounding geographies. For example, regional planning in Portland has led to substantially higher housing prices in Portland and negative externalities in the surrounding jurisdictions.

Most importantly, strong integrated regional planning activities fail because the planning areas are rarely contiguous due to variations in topography and climate. These difficulties can be seen in an examination of the Atlanta region. Atlanta’s regional planning encompasses a seven-county area. Atlanta’s watershed however covers 22 counties and traverses three states. It is estimated that the driving “shed” now includes 64 counties. Which of these geographies best represents the “region” for land-use planning purposes?

Regional Planning

Regional planning is defined as the creation of regional policies for the physical development of a multi-jurisdictional geography. Regional plans generally do not have the same legal effect as a community’s general plan. For example, unlike the general plan, the adoption or amendment of a regional plan does not typically require a legislative act. Regional planning provides the opportunity to analyze conditions and implement policies on a geographically higher level than is possible within local jurisdictions. Regional planning efforts often address narrow issues, and lack strong linkages to local comprehensive plans. Nevertheless, regional plans are often utilized for allocating federal and state funds for specific items such as transportation.^{xxxiii}

2.2 THE ROLE OF REGIONAL GOVERNANCE

Regional governance structures in North America differ vastly in both terms of scale and scope. Additionally, their relative success and/or failure to meet regional objectives vary greatly. Boundary-crossing problems require mechanisms for inter-jurisdictional solutions. Among the arsenal of legal and procedural instruments are formal and informal joint powers agreements, contracts, negotiated boundary adjustments, extraterritorial powers, annexation, and interlocal functional transfers.

^{xxxii} Ibid.

^{xxxiii} Numerous federal transportation funding programs such as TEA-21 require regional plans.

Slack provides a set of criteria to evaluate alternative forms of regional governance.^{xxxiv} These criteria (as modified for infrastructure) are:

- ***Cost and Allocative Efficiencies:*** Cost efficiencies, for a given level of service, can be achieved as a result of either lowering the cost of inputs to production or capturing scale economies. Allocative efficiency occurs when there is no opportunity to make ratepayers or residents better off by redistributing wealth
- ***Control of Spillovers and Spatial Externalities:*** The ability to contain the negative “spill-over” effects of local service provision and policy and development actions on adjacent or nearby jurisdictions.
- ***Responsiveness and Accountability:*** Responsiveness is the extent to which a governance structure is accessible and responsive to localized variations of resident and ratepayer needs and demands. Accountability is the degree to which decision makers can be held politically accountable for their policies and actions.
- ***Equity:*** Fairness in the incidence of taxes and the provision of infrastructure.

The major responses to the need for improved coordination of regional infrastructure provision has been three-fold: (1) regional planning and coordinating structures; (2) special purpose districts and public authorities that incorporate regional planning and financing for infrastructure systems; and (3) regional planning, financing and governance of infrastructure systems inclusive of land-use planning.

2.2.1 Regional Planning Structures for Infrastructure Provision

The most common form of regional structure is the metropolitan planning organization, formed to address the federally imposed requirements for acceptance of federal highway funds. Most often this entity takes the form of a regional transportation commission or authority. Although most commonly focused on regional transportation, many larger communities also include other regional infrastructure planning activities including land use and water services.

Proponents argue that effective integrated regional planning provides substantial benefits. For example, proponents argue that integrated planning allows developers an increased confidence that the planned zoning of a particular parcel is unlikely to change during a reasonable time horizon. Predictability of outcome is an important key to successful and cost-effective development in many regions. Additionally, proponents suggest that regional planning can assist in developing common regional infrastructure standards that lower development costs.^{xxxv}

^{xxxiv} Slack, E. “Finance and Governance: The Case of the Greater Toronto Area”, in p. Hobson and F. St.-Hilare, eds. *Urban Governance and Finance: A Question of Who Does What*. Montreal Institute for Research on Public Policy 1997.

^{xxxv} See Supra note i.

Conversely, critics note that regional planning can be detrimental to regional agendas to the extent that regional planning simply adds another layer of development review and bureaucracy, or otherwise impedes the development process without substantial benefit.

2.2.2 Special Purpose Structures that Incorporate Planning and Financing.

The optimal method of infrastructure service delivery is typically service-specific. Subsequently, the form of governance that has the greatest flexibility in selecting service delivery mechanisms on a service-by-service basis is preferred. Unlike multi-purpose governance structures, single-purpose regional structures for infrastructure can be adapted to fit the specific problem shed. For example, the Las Vegas community has a number of single-purpose regional structures including public safety, flood control, water provision, regional transportation and air quality. Each has a slightly different geographical span that represents the unique regional needs of its function. If required, the borders can be legislatively changed.

Most non-federally mandated regional infrastructure districts are motivated by efficiency concerns. Special districts and public authorities have proven to be pragmatic and popular. The relative ease of creation and pay-as-you-go approach to financing are powerful inducements to local politicians in creating these structures.

2.2.3 Regional Planning, Financing and Governance of Infrastructure Systems

Regional forms that integrate planning, financing, and governance of infrastructure systems are rare within the United States. Minneapolis-St. Paul and Portland have the best-known integrated infrastructure planning, financing, and governance structures. In addition to these two integrated structures, Canada has numerous integrated regional structures that can help inform us on the applicability of regional structures in other regions.^{xxxvi}

Theoretically, a major benefit of integrated regional structures is predictability. Integrated regional structures change slowly to variations in localized need because they require elaborate rule-based systems to operate and such systems do not change easily. Despite regionalism proponents' arguments to the contrary, the true effectiveness of regional structures is unclear. For example, studies of the effectiveness of regional infrastructure provision have failed to provide evidence that municipal efficiency improves when the organization changes from a multi-jurisdictional to a consolidated political structure.^{xxxvii} In most cases the cost-efficiencies sought from political consolidation and regionalism can be obtained by less intrusive measures.

^{xxxvi} Rothblatt, Donald and Andrew Sancton, eds., *Metropolitan Governance: American/Canadian Intergovernmental Perspectives*, (Berkeley: Institute of Governmental Studies Press, University of California (1993).

^{xxxvii} See Boyne, George, "Local Government Structure and Performance: Lessons from America", *Public Administration* Volume 70:3333-357, 1992; Sancton, Andrew, *Governing Canada's City-Regions: Adapting to Function*, Institute for Research on Public Policy, 1994.

A recent analysis of the American political consolidations conducted since 1970 revealed that the benefits (mainly cost-efficiencies) were rarely maintained.^{xxxviii} This failure to achieve the stated results was most often a result of increased labor costs and increased service levels that occurred subsequent to the consolidation. Most jurisdictions failed to recognize the impact on regional wage rates and service requirements.

Regional forms are difficult to create and expose local politicians to competition from other powerful structures. Representation in a regional structure can also have a deleterious effect on minorities, who can become under-represented. The political and legal impediments to these structures, more than any other reasons, should continue to limit their application in the United States.

2.3 REGIONAL PLANNING

“Establishing a political structure for effective regional planning does not mean that effective regional planning will result. It all depends on the balance of political forces within the region. Conceivably, if there is general agreement that regional planning is necessary, it will emerge even without a regional government structure.”^{xxxix} The role of regional planning varies greatly by region. Roles can be either advisory or compulsory. Proponents of regionalism argue that for regional infrastructure planning agencies to be effective, they must be able to “control” land use planning.

Mandated by federal legislation, the most common role is the planning of regional transportation infrastructure. Other regional planning activities include: assembling statistical information on regional population, economic development and regional trends; providing a forum for examining regional issues; carrying out research and educational activities; and, planning regional infrastructure systems.

Most regional planning organizations are advisory in nature. For example, the Atlanta Regional Commission (ARC) serves as the regional planning and intergovernmental coordination agency for a 10-county, 64-city region. ARC is a public non-profit organization that relies on its members to implement regionally adopted plans and programs. Its functions include transportation planning, data gathering and analysis, senior services, community services, economic development, environmental planning, governmental services, job training, land use and public facilities planning. ARC has authority over developments of regional impact and local projects in environmentally sensitive areas. However, ARC’s decisions on such projects are far from law. ARC reviewed 46 projects in the six years from 1989-1995; only 9 were denied ARC approval. Local governments overrode three of those denials.

^{xxxviii} See Schmidt, Robert, “City of Las Vegas Consolidation”, Report for Local Officials, Las Vegas, Nevada, 2001

^{xxxix} Sancton, Andrew, *Governing Canada’s City-Regions: Adapting Form to Function*, Institute For Research on Public Policy, 1994 (page 45).

Appropriate forms of regional planning can: enable local jurisdictions to develop and adopt local comprehensive plans; coordinate and integrate local plans; connect transportation and water service infrastructure, where necessary; and, develop improved land use information and technology. The importance of regional planning on infrastructure provision is highly geographically driven. Nevertheless, the following general observations can be made.

2.3.1 Transportation Systems

Every region with a population over 50,000 has at least some regional planning in the form of a Metropolitan Planning Organization (MPO). The Federal Aid Highway Act of 1962 mandated that metropolitan areas with more than 50,000 persons receiving federal transportation funds must designate a MPO that is responsible for “continuing, comprehensive, and cooperative” transportation planning. The MPO is required to allocate state and federal transportation funding within the region and must adopt annual transportation improvement programs. Unlike other infrastructure systems, transportation systems are all ultimately interconnected and interdependent for access to the federal highway system. This “interconnectedness” provides a strong bias for regional planning and suggests that all regions develop regional transportation plans.

2.3.2 Wet Utilities

Regional planning of wet utilities varies to a greater degree than that of transportation services. This is due to many reasons including: (1) no federal statute tying federal funds to regional water service planning; (2) lack of a nationwide system similar to the federal highway system to interconnect to; (3) a substantial number of private providers of water services; and, (4) substantive differences between arid and non-arid needs.

As in the case with transportation systems, proponents of regionalism assert that regional land use planning is the linchpin to successful regional infrastructure provision. Despite this conventional wisdom, there are many examples to the contrary. For example, the Southern Nevada Water Authority (SNWA) in the Las Vegas Valley has demonstrated that even in an arid climate, single-system infrastructure planning can succeed without a regional planning agency. The SNWA coordinates the planning activities of six separate water districts in the development of a regional water plan. No integrated regional planning agency exists within the SNWA area. Nevertheless, the SNWA has successfully coordinated the region’s water needs.

2.4 TRADITIONAL FINANCING PRACTICES

Historically, different rationales have driven state and local investments in infrastructure, leading to distinct traditions of funding investments at these different levels of government. For example, the traditional role of local jurisdictions in transportation funding has been the construction and maintenance of local streets. The primary function of these streets is the

provision of access to private land. Without this access the land has little value. This is why property taxes are considered a logical method of funding local infrastructure. Conversely, states are interested in the provision of mobility rather than access, this focus has led to the widespread use of gasoline taxes, tolls and user fees as finance mechanisms.

Regional needs do not precisely fit either of these two distinctions. Therefore there is no single revenue source for regional finance. Instead, a combination of methods that are necessary based upon regional characteristics such as legal restrictions, voter preferences, and fiscal considerations typically prevail in financing regional infrastructure.

Appropriate financing alternatives are vital to commercial developers because they may alleviate the financial burden commercial developers face when confronted with infrastructure development by providing a more equitable means of financing infrastructure. Currently, there are numerous methods of financing infrastructure. The three main approaches are (1) debt financing; (2) “pay-as-you-go” funding; and, (3) private-public ventures. The selection of the best approach requires an examination of the various advantages and disadvantages of each approach as well as the legal authority(s) involved.

- ***Debt financing*** is typically executed through the issuance of municipal bonds. The use of debt essentially accelerates the receipt of future revenues to the present. This acceleration comes with a loss of the debt issuance and interest costs. The advantages of debt financing include the raising of large sums of money. This accumulation of monies allows governments to meet rapidly increasing demands. Debt instruments may also reduce costs by allowing projects to be built sooner, thereby avoiding inflation expenses. However, debt financing involves the risks associated with repayment.
- ***Pay-as-you-go financing*** requires no borrowing. Instead, the government provides infrastructure by paying the full cost of the facility at the outset. Proponents favor this method because there are no debt issuance or interest expenses. However, this method severely limits infrastructure investment and may diminish the benefits of financial leveraging. Additionally, major costly high-priority infrastructure projects could displace other projects.
- ***Private-public financing*** involves a combination of private and public funding sources. The public funds can be either pay-as-you-go funding and/or debt. The private funds may also be raised from either debt and/or equity sources. Private-public ventures can include the development of various infrastructure facilities such as toll roads.

Numerous funding mechanisms exist to support these approaches, many of which can be used for multiple approaches. For discussion purposes, traditional funding mechanisms have been organized into four types: Municipal Securities, Taxes, User Charges, and Exactions/Impact Fees. A brief review of these categories follows.

2.4.1 Municipal Securities (Debt Issuance)

Over 60% of the nation's state and local governments have issued some form of municipal debt. Issuers include state governments and agencies of governments, cities, counties, school districts, and public "authorities" such as transportation and housing authorities. Municipal securities include bonds, notes and other certificates of indebtedness that are issued by the borrowing entity. They can be sold or transferred. The wide variety of different types of municipal securities, coupled with the large number of issuers, makes the municipal securities markets highly complex. There are over 1.5 million separately identifiable municipal securities outstanding in the United States as of 2000, and their number will undoubtedly continue to increase. Municipal bonds and notes differ from those issued by the federal government and corporations in that interest received as income by investors in municipal securities is exempt from federal income tax and from most state income taxes. This tax-exempt status gives governmental debt instruments a significant advantage in the marketplace.

State and local governments are limited in the amount of debt they can incur. Debt limitation language is often set out in state constitutions. It may also be established by statute. Debt limits are usually specified as a percentage of the total assessed valuation of property located within the bounds of the issuing government and subject to taxation. Debt limits may be based on other criteria, such as annual revenue collections, but in 2000 over 86% of sub-state jurisdictions still relied on property values. In most cases, debt limits apply only to general obligation bonds, not revenue bonds. Thus, when considering whether to bond for general-purpose infrastructure, public officials must consider the extent to which such a general obligation issue affects the legal debt limit.

Revenues to pay for bonds come from two major sources: taxes and user fees or charges. States vary considerably in their tax philosophy. Additionally, variations in state tax programs reflect the unique economies and histories of each state.

2.4.2 Taxes

A tax is a "revenue-generating" measure," while a fee is a "regulatory" measure. Thus, tax revenues may be deposited into a general fund for general-purpose uses. Each tax has a distinct set of characteristics in terms of revenue generation capacity, equity, and appropriateness as a funding source for infrastructure. Taxes used for infrastructure financing include sales taxes, gasoline taxes, vehicle taxes and other excise taxes. However, the most important tax for the financing of infrastructure is the local property tax. The three major bases for taxation are:

- **Consumption:** Such taxes measure the ability to pay based on what households consume, not what they own, save, produce, or are paid as compensation for work, nor what they are paid for their investments such as interest and dividends. The sales tax is the primary example in the United States, but there are also excise taxes on particular forms of consumption such as alcoholic beverages, tobacco, gasoline, amusement, hotels, and restaurant meals.

- ***Income:*** Such taxes measure the ability to pay on the basis of the current flow of purchasing power to households, including income and wages and all forms of investment income.
- ***Wealth:*** Such taxes measure ability to pay based on current wealth, no matter how or when it was acquired, without consideration of either consumption or income. The primary example is property tax, but estate and inheritance taxes also are part of this base.

Individual state approaches to the use of taxes to fund infrastructure vary considerably. Variations in the use of taxes for infrastructure fall into three categories: (1) differences in tax systems, (2) differences in spending needs, and (3) differences in economic growth rates.

2.4.3 User Charges

Unlike tax revenues that are deposited into the general funds of a jurisdiction, fees are revenues to be used only for the purpose for which the fees are collected. The authority of a tax comes from the taxing power of the state, while the authority of a fee arises from the state's police power to regulate in the interest of the public health and safety. Typical user fees include tolls, transit fares, park entry and use fees, and automobile parking fees at municipal parking structures.

When public services are funded using general tax revenues, citizens generally pay the same regardless of how heavily they use the service. This tends to promote inefficiency by encouraging overuse of the service. In contrast, user fees require end users to pay incremental costs of the services they consume, and thus are the preferred method of paying for most public services. For example, public water rates should be equal to the incremental cost of providing the water, while gasoline taxes should be used to finance the construction of new roads.

2.4.5 Development Impact Fees

A development exaction is the dedication of land and/or infrastructure as a condition of approval to develop. A development impact fee is a type of exaction that is assessed as a condition to the issuance of a building permit, an occupancy permit or plat approval in the form of a predetermined money payment. It is levied to fund large-scale, off-site public facilities and services necessary to serve new developments pursuant to local government powers to regulate new growth and development and to provide for adequate public facilities and services. The amount of the impact fee is proportionate to the need for the public facilities generated by the new development.^{x1}

^{x1} Bryan Blaesser and Christine Kentopp, Impact fees: The Second Generation, 38 Wash. U.J. Urban & Contemporary Law 55, 64 1990.

Twenty-eight (28) states authorize the use of impact fees although they are used in all states in one form or another. Theoretically, impact fees are charges levied against new development in order to generate revenue for funding the capital improvements necessitated by that development. Impact fees can range from several hundred dollars to thousands of dollars per house, dwelling unit, or building. These fees often include monies for wet utilities, drainage, parks, schools, and public safety.

2.5 LEGAL CONSIDERATIONS

There are often legal constraints to regional infrastructure finance. When examining regional infrastructure programs and their funding mechanisms, it is exceptionally important to determine whether these programs are legally enacted.

2.5.1 Exactions, Impact Fees, and Taxes

An exaction is a regulation that requires the developer to dedicate lands for intra-development purposes, including streets, water lines, and sewer lines, and lately for educational and recreational purposes. In lieu exactions are monetary fees extracted on an individualized basis from several developers, pooled into a fund, and then used to finance off-site facilities, such as schools and parks. The monies charged must be used to fund off-site facilities that are necessary to the development. Impact fees are uniform monetary fees set by a legislative body and imposed on developers. The local entity subsequently uses these monies to expand and improve, among other things, existing roadways and sewage treatment facilities. The monies that are charged must be used to fund off-site facilities that are necessary to serve the new development, must be assessed in a manner that is proportionate to the need for public facilities generated by the new development, and must be levied pursuant to local government powers to regulate new growth and development.

Both in lieu exaction fees and impact fees must be reasonably related to the new development. If these fees are being used to pay for improvements that are not related to or caused by the new development, then the regulation is a tax. If the local entity is not authorized to impose such a tax, then the regulation can be invalidated.

Local entities impose taxes and special assessments on developers to fund numerous local projects, including the construction of highways and schools. State statutory provisions usually spell out the types of taxes local entities can impose. In most states, statutory provisions also provide the procedures, method, and calculations needed before a local entity can impose a tax on the developer. If the local entity does not comply with statutory guidelines, then the tax can be invalidated. Table 2-1 provides a summary of the characteristics that highlight the differences between exactions, in lieu exactions, impact fees and taxes.

Table 2-1, Characteristics of Exactions, Impact Fees and Taxation

	Exactions	In Lieu Exactions	Impact Fees	Taxation
Why is the regulation imposed?	Exactions are imposed for intra-development purposes, including dedication of land for streets, water lines, and sewer lines, and for education and recreation.	In lieu fees are monetary fees imposed on developers, pooled into a fund, and then used to finance off-site facilities, such as schools and parks	Impact fees are imposed to fund off-site facilities, such as sewage facilities and highways, which are related to or caused by the new development.	Taxes are imposed to fund numerous local projects not linked to new development. Monies raised are used to pay for, schools, highways.
Who imposes the regulation?	Imposed on an individualized basis by local entity.	Imposed on an individualized basis by local entity.	Uniformly imposed by legislative body, such as city council.	Authority is usually given for imposition by state statute. Local entity can impose if statute is followed.
When is regulation illegal? (Discussed more below)	When the exaction is not roughly proportional to the problem caused by the development. What does roughly proportional mean? The courts have yet to define this. But probably means statistically close.	When the exaction is not roughly proportional to the problem caused by the development. What does roughly proportional mean? The courts have yet to define this. But probably means statistically close.	When the impact fee is not rationally related to or has a nexus with the problem caused by the development. If so, then the regulation functions more like a tax because it is funding projects not related to the new development.	When the tax is not authorized by state statute or state constitution. The tax may also be invalid if the local entity does not follow the statutory procedures for implementing the tax.
From a legal standpoint, what type of regulation is better for a developer?	The developer has a good chance of having an illegal exaction struck down.	The developer has a good chance of having an illegal in lieu exaction fee struck down.	The developer does not have a great chance of having a regulation struck down, unless the developer can prove the regulation is a tax.	The developer has a good chance of winning if the local entity did not have power to impose the tax or did not follow statutory guidelines.

As an alternative to exactions, in lieu exactions, and impact fees, some local entities have negotiated development agreements with developers. A development agreement is a contract entered into voluntarily by a developer and a local government entity, and provides for conditions on how the development will be regulated and on who will provide for public services and infrastructure. In 1994, California was the first state to pass enabling legislation, which gave municipalities the ability to enter into development agreements. Since then, numerous states have enacted similar legislation, including Arizona, Colorado, Florida, Hawaii, Louisiana, Minnesota, Nevada, New Jersey, and Washington. Table 2-2, provides additional detail on the use of Developer Agreements.

Table 2-2, Use of Developer Agreements

<p>Why do a local entity and a developer want to agree to a development?</p>	<p>When a contract is entered into, the local entity has certainty as to what land or monies the developer will provide. The developer is also certain as to what he must provide. In the exaction and impact realm, such certainties do not always lie, and as such, a development agreement provides for certainty.</p>
<p>Is a development agreement better for a developer?</p>	<p>When a developer enters into an agreement, he usually will agree to provide dedications or monies that are needed for the new development. When entering into an agreement, the developer needs to ensure that the monies or land he is dedicating is proportional to the problems his new development is causing. If the developer contracts to proportionality, then the development agreement is better for the developer.</p>
<p>What states have authorized development agreements?</p>	<p>Many state courts have upheld developer agreements as long as the local entity is not contracting away their ability to regulate the land for the public good. Some states, via state statute, have specifically authorized development agreements, including Arizona, Colorado, Florida, Hawaii, Louisiana, Minnesota, Nevada, New Jersey, and Washington.</p>

An exaction, in lieu exaction, or impact fee is legal as long as two criteria are met. First, the local governmental entity must possess the authority to condition the development. Second, if a government entity possesses the authority to impose the condition to development, then the regulation must not violate the federal or respective state constitution. When bringing suit, developers have often challenged local governmental entities’ regulations as violating the United States Constitution’s taking clause, equal protection clause, and substantive due process clause. Developers have been very successful when bringing takings claims, especially when the local governmental entity has imposed an exaction or an in lieu exaction. Additionally, developers have invoked similar clauses found in their respective state’s constitutions. Generally, developers have not had much success invoking state constitutional clauses. Finally, developers have brought claims alleging that the exaction or impact is an unconstitutionally imposed tax. These claims have been very successful.

2.5.2 Local Rule

Each sub-state entity’s authority to regulate development stems from its state’s police powers, including the power to regulate for the safety, morals, and welfare of the community. The power the sub-state entity has depends upon the construction of the state’s constitution and the common law of the state. States are often segmented into three general categories of sub-state autonomy: home rule, hybrid home rule, and Dillon’s rule. In traditional home rule states, enabling provisions contained in local home rule charters give most local entities the authority to adopt exaction programs, and in some instances, impact fees. Developers in

traditional home rule states have a difficult time invalidating local governmental regulations. Table 2-3 summarizes local rule characteristics and the utilization of impact fees on a state-by state basis.

Table 2-3, Local Rule and Use of Impact Fees by State

State	Local rule	Impact fees	State	Local rule	Impact fees
Alabama	Dillon's	No	Montana	Home	No
Alaska	Home	No	Nebraska	Dillon	No
Arizona	Dillon's	Yes	Nevada	Dillon	Yes
Arkansas	Home	No	New Hamp.	Home	Yes
California	Home	Yes	New Jersey	Home	Yes
Colorado	Home	Yes	New Mexico	Dillon	Yes
Connecticut	No Counties	No	New York	Home	No
Delaware	Dillon's	No	North Carol.	Home	No
Florida	Home	Yes	North Dakota	Home	No
Georgia	Home	Yes	Ohio	Home	Yes
Hawaii	Home	Yes	Oklahoma	Dillon	No
Idaho	Home	Yes	Oregon	Home	Yes
Illinois	Home	Yes	Pennsylvania	Home	Yes
Indiana	Home	Yes	Rhode Island	No Counties	Yes
Iowa	Home	No	South Carol.	Home	Yes
Kansas	Home	No	South Dakota	Home	No
Kentucky	Home	No	Tennessee	Home	No
Louisiana	Home	No	Texas	Dillon	Yes
Maine	Home	Yes	Utah	Home	Yes
Maryland	Home	Yes	Vermont	Dillon	Yes
Massachusetts	Home	No	Virginia	Home	Yes
Michigan	Home	Yes	Washington	Home	Yes
Minnesota	Home	No	West Virginia	Dillon	Yes
Mississippi	Home	No	Wisconsin	Home	Yes
Missouri	Home	No	Wyoming	Dillon	No

(Source: Robert Schmidt and Richard Ansson 2002)

Note: States listed as home rule may have granted municipalities varying degrees of power.

Some states are considered hybrid home rule states because local entities' home rule power stems primarily from either a constitutional or a statutory provision that reserves broad authority with the state, while making vague grants of power to local entities. In these states, there is a tendency to subordinate the interest of the city to the will of the state. Developers in hybrid states have a moderately difficult time invalidating local entities' regulations.

In Dillon's rule states, the power to adopt and implement an exaction or an impact fee program must be found in express statutory language, the express language of the state planning enabling legislation, or must be necessarily implied or incident to the powers expressly granted to the local government. In these states, the balance of power weighs

heavily in favor of the states. Developers have a good chance of invalidating local entity regulations, if these regulations are not authorized by state statute.

In general, exactions and in lieu exactions imposed by local entities will usually be validated under home rule, hybrid home rule, or Dillon's rule. Impact fees will likewise usually be validated in states where their usage is unrestricted. However, impact fees that are restricted by state law may be struck down, especially in hybrid home rule or Dillon's rule states, if the local entity is imposing an impact fee not authorized by a state statute.

3.0 FUNDING REGIONAL INFRASTRUCTURE

The previous section introduced the key concepts of regional infrastructure development, the financial alternatives that confront local entities, and the legal constraints placed thereupon. This section expands upon that discussion by providing a more detailed examination of both conventional and innovative infrastructure financing practices throughout North America.

When a local governmental entity seeks to fund a public facility, several fundamental choices must be made in determining the best funding mechanisms. These choices include determining the financing structure and determining whether the facility should be financed through a fee or a tax. Certain facilities may require both methods. Once potential sources of revenues are identified, policymakers must decide the most appropriate ways to utilize these sources. Implementation can then be assessed in terms of the mechanics of the revenue instrument, impacts on affected parties, administrative needs, geographic scope, unfavorable characteristics requiring mitigation, and risk management.

For this discussion of alternative infrastructure funding mechanisms, revenue sources are categorized into three types, based upon how closely the revenue stream is related to use of the infrastructure system. These include: 1) user charges, 2) benefit capture methods, and 3) subsidies.

3.1 USER CHARGES

User charges include utility usage rates (e.g., per gallon potable water rates) and transportation charges. The most effective user fees increase in proportion to the level of system services used (e.g., tolls). However, other user fees include fixed fees that do not vary with use, but are paid on a periodic basis, such as annual vehicle license fees.

3.1.1 Utility Rates

A utility is an organization with the specific charter to develop, build and/or operate necessary public facilities and services. Utilities have traditionally been used for water, wastewater, and stormwater facilities and services. Most states allow municipalities to create utilities in order to build public facilities and provide public services.

Utilities are often incorporated and have independent legal status, although utilities can be part of a jurisdiction's direct operations. The money to build, operate and maintain these facilities is generally obtained by charging rates and fees to facility and service users. A key attribute of utility service is that it can be discontinued for non-payment.

Generally, utility fees are flexible in that they may be used to fund existing deficiencies, maintenance expenses and/or growth needs. Moreover, unlike impact fees, the formulation of

utility fees does not require extensive analysis. In most states, the rates and fees of municipally owned utilities are not regulated to the same degree as those of privately owned utilities. Water provision, sanitary sewer and flood control are particularly well suited for being organized as utilities. This attribute is not common to many other infrastructure systems.

3.1.2 Transportation System Charges

Transportation user charges are fees and taxes paid in exchange for direct use of the transportation system. Included in this category of financing are fuel taxes, vehicle taxes, and tolls and value pricing. New types of transportation user charges that we may see more in the future include pay-as-drive insurance and vehicle miles traveled (VMT) fees.

Fuel Taxes

Gasoline taxes are the prototypical user fees; the user pays a nominal fee for each increment of gasoline and in exchange is entitled to use the public roadways. All 50 states and virtually every nation in the world have a gasoline tax. As a revenue generator, large fuel taxes can be a powerful tool to raise capital for road infrastructure. Fuel taxes vary considerably by state. Fifteen (15) states authorize and ten (10) states have adopted the use of local taxes on motor vehicle fuels to help fund transportation infrastructure. In states where there is widespread use (e.g. Nevada and Florida), the funds support the operating budgets of county road departments. A regional sales tax on gasoline funds a variety of public transit and road investments in suburban northern Virginia. On the other hand, revenues from fuel taxes in Alabama and New Mexico can be used for non-transportation purposes. It is important to note that local gasoline taxes have not generally been adopted at high enough levels to fund major new capital investments.

Despite its insensitivity to inflation and changing fuel efficiency, the fuel tax remains a viable finance instrument and will continue to produce a large, though declining, percentage of revenue raised for transportation. The long-term viability of the fuel tax can be improved by indexing the fuel tax to inflation. However, most states lack the political support for this change.

Vehicle Taxes

Thirty-three (33) states authorize a form of local vehicle taxes. Many of these are specific to road use. However, certain states require these taxes go into the general fund. Some states target the funds for capital improvements, while others use them for operations and maintenance. Vehicle owners in many states pay an annual motor vehicle excise tax based on the value of their vehicles. The tax is generally paid once a year, together with annual registration and license fees. Essentially a form of property tax that serves as a major source of general revenue for local governments, most fees result in a moderately progressive tax instrument.

Tolls & Value Pricing

Road pricing, in which the motorist is charged directly for using a road, is an established method of financing highways and reducing congestion through tolls. Turnpikes and toll bridges were widely used in the earlier days of this nation. Today toll roads are common around Chicago and other major eastern cities. Although long-established toll roads are politically acceptable, a largely built-out transportation system raises numerous equity issues regarding the establishment of new tolls to fund infrastructure. Tolls can vary with the level of congestion, the time of day, or the length of the trip. Electronic toll collection now allows automatic implementation of congestion pricing without travelers' delay due to stopping for toll payment. Tolls can be used to pay for specific facilities. Because tolls are an on-going revenue stream, they can be scrutinized and used to back revenue bonds.

High Occupancy Toll (HOT) lanes have the effect of both congestion management and generation of additional sources of revenue. This method encourages efficient use of the roadways. An example of effective private toll roads is the SR 91 system of express lanes in Orange County, California. This toll road is a ten-mile long, privately funded and managed facility opened in 1995. The toll charge varies between 75 cents and \$3 per trip depending on the time of day. This is a fully automated toll road. Participants must first buy transponder debit cards in increments of \$50. As they drive on the road, sensors deduct the appropriate amount from their account.

Pay-As-Drive Insurance

The pay-as-you-drive auto insurance system charges each driver a per-mile charge, based on the probability that he/she will be in an accident as a result of driving that additional mile. The per-mile fee varies depending on the insured person's driving record, choice of vehicle, geographic location and other characteristics. Economists predict a 10%-20% reduction in vehicle miles traveled if auto insurance is mileage-based. A state would have to raise the gas tax by \$1.10 to achieve an equivalent reduction in vehicles miles traveled.

Vehicle Miles Traveled (VMT) Fees

Another innovation that has abundant support from environmentalists is VMT fees. These fees are based on either annual odometer readings or remote sensing technology and subsequent billing. The simple VMT fee mimics the gas tax. The argument for VMT fees is that mileage charges capture more of the social costs from driving than fuel taxes because most of these costs—infrastructure, congestion, accident risk, and certain forms of air pollution—vary more closely with miles driven than with fuel consumption. Although VMT fees are not currently in use in the United States, proposals in Oregon and California for VMT fees are under consideration. Issues to be resolved using this method of revenue generation include trucking industry opposition, raising funds to implement monitoring systems, and establishing fees proportionate to vehicle type and actual transportation use.

3.2 BENEFIT CAPTURE METHODS

Benefit capture methods identify and target beneficiaries of infrastructure, generally the property owners in the surrounding areas. These methods typically involve assessing taxes or fees on the increased property value resulting from access to infrastructure. Principal methods include property taxes, special districts and development taxes.

3.2.1 Property Taxes

Property taxes have been a mainstay of public finance in America for over a century. Property taxes account for nearly one-third (1/3) of all state and local revenues nationally.^{xli} Prior to 1965, property taxes represented over 50% of all state and local revenues. After 1965 there was a major expansion of state fiscal roles, particularly in education. This expansion was funded largely by state income and sales taxes. Additionally, many states began to allow local governments to use local option sales/income taxes, rather than relying solely on property taxes as their major revenue sources.

3.2.2 Local Improvement Districts

Local improvement districts are a special-purpose funding mechanism created by local governments to fund improvements in specific areas that are smaller than the unit of government. Improvement districts have developed regionally under an assortment of names including Business Improvement Districts (BIDs), Community Improvement Districts (CIDs), Local Improvement Districts (LIDs), Road Improvement Districts (RIDs), and Special Improvement Districts (SIDs). Each of these designations may imply a different tax or governance treatment depending upon the state.

Generally cities, counties, port districts, water districts and other public entities can create improvement districts. Once created, a special district can assess the properties within its boundaries for the cost to develop an improvement such as a water main, sewer line or a street that directly benefits the properties. The assessment is not a tax because it is not uniform on all classes of property within the jurisdiction's boundaries. The amount assessed must be demonstrably equivalent to the "special benefit" that accrues to the property in the form of an increase in value. Formation of such a district may require special property appraisals before and after the improvement is built.

California's Mello-Roos Community Facility Act of 1982 provided authority for special districts, school districts, counties and municipalities to create Community Facility Districts (CFD). CFDs can fund infrastructure using tax-exempt bonds and can levy special property taxes for bond repayment. These bonds subsidize infrastructure, and allow for tax-exempt infrastructure financing which can result in reduced development fees.

^{xli} U.S. Bureau of the Census, Bureau of Economic Analysis, 1999

The income from property assessments is used to back special improvement district bonds, and may be repaid in one lump sum or over time with interest. Voter approval is not required for improvement district formation, but the agreement of a majority of property owners must be obtained. Improvement districts may often be initiated by a petition of property owners or by a developer who is a large property owner in an area. Property owners in many jurisdictions may also challenge improvement district formation. Generally, a district is automatically dissolved when any outstanding debt is retired.

Improvement districts were once much more common than they are today. Some of the reasons for the decline include the relatively high implementation costs compared to the typical size of an improvement, and increasing opposition to the use of property assessments, which makes it more difficult to achieve the necessary property owner support.

3.2.3 Tax Increment Financing

Tax increment financing (TIF) is a method of allocating a portion of property taxes in a certain area or “district” to finance economic development or capital improvements. Typically, in using tax increment financing, a local government or quasi-municipal corporation issues bonds to finance public improvements in a specified area or special district. The public improvements attract outside investment, causing the property values within the district to rise over time, which in turn increases property tax collections. The difference between the existing property tax collections in the district and the higher property tax collections – the increment – is used to pay off the bonds. Many states’ urban renewal programs are based on tax increment financing.

According to the National Conference of State Legislatures, tax increment financing is authorized by statute in 46 states. TIFs have been used for a broad range of infrastructure improvements including streets, intersection signalization, water, sewer connections building construction and land acquisition. Most jurisdictions use property taxes as the basis for TIFs. Ohio and other states allow local jurisdictions to use a portion of local and state sales or income taxes for TIFs, in addition to property taxes. In addition to state and local legal requirements, key provisions of the federal Internal Revenue Code (IRC) directly impact the ability to use TIFs. The main area of inquiry under the IRC is whether the special obligation bonds are deemed to be public purpose bonds as opposed to “private activity” bonds under Section 141 of the IRC. The IRS has issued extensive regulations on this topic.

TIFs are rarely used as a single source of financing a project. TIFs usually have a private-to-public funding ratio of between 8:1 and 12:1. Unlike conventional financing, developers are required to provide on-going disclosures to the issuer and the bondholders concerning the project’s status and the financial health of the developer, both at the time of sale and periodically thereafter.

3.2.4 Development Taxes

Development taxes are taxes placed on real estate development enterprises to raise local funds for the incremental costs that development imposes on a jurisdiction. Most often

development taxes take the form similar to that of an occupational tax. Development taxes are different from development impact fees. First, a development impact fee is a land use regulation designed to finance infrastructure facilities, whereas a development tax is primarily a revenue-raising device. Second, development tax monies do not need to be earmarked and segregated from a jurisdiction's general revenue funds. Also, unlike development impact fees, development taxes can be used to pay for operations and maintenance expenses.

3.2.5 Impact Fees

Local governments have long imposed charges for a variety of on-site capital improvements, including sewer and water hook-ups, stormwater management facilities, and street and sidewalk construction. More recently, though, communities have levied fees, often known as either system development charges (SDCs) or impact fees, on developers for a number of off-site improvements, such as the construction of highway segments, or the expansion of centralized wastewater treatment plants.

The tax revolt of the 1970s caused many communities to recover more of the costs of infrastructure from user charges. The reduction in federal monies derived from intergovernmental aid, and the elimination of categorical grants to state and local governments during the 1990s, continued the trend of shifting the burden of financing public infrastructure to user fees and new development charges. In many areas, however, fee increases have met with sufficient resident resistance that communities have turned to other sources of revenue, especially charges against new development in the form of development impact fees. In imposing development impact fees, a rational nexus or reasonable relationship must be established between the fees imposed and the impact of a development on existing infrastructure.

3.3 SUBSIDIES

Subsidies are those revenues used for financing infrastructure but not generated through the use of the particular infrastructure system. The principal subsidies come from federal grants, general funds, local sales taxes, and a variety of other taxes. Other subsidies come in the form of revenue from federal land sales, public-private partnerships, and privatization of utility services.

3.3.1 Conventional Grants

Most state and federal financing programs are intended to fill gaps left by traditional municipal financing options. Conventional grant funding, as used here, refers to project financing from existing state and federal grant programs. For example, Federal Highway Administration (FHWA) funding matched by state and local sources. Eligible funding programs include National Highway System (NHS), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), (not available for construction of new

highway lanes except High Occupancy Vehicle lanes), and various equity provisions of ISTEA such as Donor State Bonus and Minimum Allocation.

3.3.2 63-20 Financing

The 63-20 financing mechanism is authorized by the federal Internal Revenue Service code. It is a public financing mechanism predicated on the creation of a non-profit entity somewhat like a public development authority, and a long-term revenue stream that can be used to back revenue bonds or industrial revenue bonds. The 63-20 mechanism is often used for facilities built as part of a public-private redevelopment, where private development techniques and public, tax-exempt financing can be leveraged to meet the interests of both sectors.

Parking structures are an example of appropriate facilities for this kind of financing. Private capital backing the bonds is also feasible and can be appropriate for a roadway or interchange in support of a private development that creates jobs or other significant public benefits. Washington State utilized \$21 million in 63-20 funding for the multi-modal King Street Station development. Without this financing vehicle, insufficient funding would have been available to complete the project, which has an estimated cost of \$43 million. At the end of the 30 years, the building is estimated to be worth \$63 million with no outstanding debt and should generate \$2.3 million in annual lease income.

3.3.3 Sales Taxes

A result of the devolution of fiscal responsibility and the tax revolts of the 1970s has been a shift in local taxes from property taxes to sales taxes.^{xlii} Sales taxes have become an important local tax for funding infrastructure investment. For many states, the sales tax is the most politically feasible option for this purpose. There are thirty-three (33) states that have authorized local option sales taxes for infrastructure projects. The major uses tend to be light rail transit systems, road projects and school construction. However, local option sales taxes are frequently used for water and wastewater funding. Although sales taxes are perceived to be fair, they are also highly regressive.

3.3.4 Other Taxes

Four states employ severance taxes (natural resource extraction) to fund rural road construction and maintenance. Five states use real estate transfer taxes and/or mortgage recording taxes for infrastructure investments. Certain states allow localities to tax tourists more steeply for infrastructure they may use more heavily. There are sixteen (16) states that authorize local taxes on personal income, employer payroll or number of employees (head taxes). Five states (Indiana, Kentucky, Ohio, Oregon and Washington) use various forms of payroll taxes to help fund transportation projects.

^{xlii} Krmeneč, Advisory Commission on Intergovernmental Relations, 1989.

3.3.5 Revenue from Federal Land Sales

Many western states have large segments of their property controlled by the federal government. For example, the federal government controls 70% of Arizona, 50% of Oregon, and over 87% of Nevada's lands. This means these lands are non-revenue generating. The Bureau of Land Management (BLM) manages a large portion of this land. Under the 1998 Southern Nevada Public Land Management Act partial proceeds from the sale of specified BLM lands are returned to Nevada for water infrastructure needs, schools, and the acquisition of environmentally sensitive lands.

3.3.6 Public-Private Partnerships

Public-Private Partnerships (PPPs) have been used to develop over \$5 billion of new transportation projects over the last five years. Tax-exempt financing, with its lower interest costs, is often the determining factor in the feasibility of infrastructure projects financed by public-private partnerships. There are three major institutional arrangements that have been employed in the United States. The models are: (1) Governmental PPP Model; (2) Turnkey System; and (3) Warranty/Concession Model. Each model has differing impacts on a project relative to the cost of capital (taxable versus nontaxable debt), construction efficiency, operational cost-effectiveness, and political acceptability.

- ***Governmental PPP Model:*** Many recent projects include a minimal amount of private financing. For example, State Highway 190 in Texas (a 28-mile extension to a tolled beltway around Dallas) was financed through a highly innovative mix of sources including a combination of system toll-revenue bonds, a subordinate loan funded by the Texas DOT using federal aid, and right-of-way donations.
- ***Turnkey Systems:*** The Denver E-470 project is an example of a turnkey system financed model. This is a publicly owned and publicly operated project involving the use of a private sector design-build contract to develop the project under a guaranteed maximum price and guaranteed completion date. Although the public sector is responsible for operating and maintaining toll roads, the management of the toll collection systems is out-sourced to private parties. The major source of funding for this project is tax-exempt toll revenue bonds.
- ***Warranty/Concession Model:*** These are projects that are publicly owned, but use private parties both for development and operation/maintenance of the facility. Currently, the IRS limits the extent to which a private concessionaire may be employed on a project seeking to access the tax-exempt market. Nevertheless, projects such as Osceola Parkway in Florida are able to use a short-term (three-year) management contract with a private operator, yet maintain compliance with the IRS under the safe-harbor provisions.

3.3.7 Privatization

Privatization of water services infrastructure is common throughout much of North America

and Europe. Additionally, transportation systems are now becoming privatized in certain jurisdictions.

Privatization of Wet Utilities

Private water systems operate throughout various segments of the nation, particularly in northern and northwestern tier of states. Many states, such as California, have both public and private water companies. Overall, 46% of all water service systems in the United States are now privately owned. Results of several studies suggest that the decision to have public entities provide water should be reconsidered since private organizations can provide this function, at the same cost without subsidies or tax-exemptions. In fact, the real water bill is higher for government-owned water companies than for private entities because publicly owned water companies receive a substantial amount of their income from excess cash balances and investments. Additionally, government can better regulate a privately owned water company than a government owned water provider. The United Kingdom and several other European countries have privatized their water systems over the last two decades. Conversion of water service infrastructure ownership from public to private hands should allow private owners to maintain existing, outstanding tax-exempt debt.

Privatization of Transportation Systems

In the United States, many states have experimented with private toll facilities, but privately issued bonds are taxable and thus private operators cannot compete with public operators who can issue tax-exempt bonds. However, this problem may be remedied by utilizing 63-20 nonprofit tax-exempt financing. Outside the U.S., several countries have offered public shares in transportation authorities to attract private equity capital and to capitalize the revenue streams coming from toll collections. New Zealand is currently evaluating innovative transportation finance strategies including commercialization of the highway system in self-supporting corporations. The highway system would then operate as a utility. In addition to opening the field to private competition, this would give public and private highway operators an incentive to preserve the asset value of their facilities.

4.0 ANALYSIS OF INFRASTRUCTURE FUNDING MECHANISMS

Before local governmental entities adopt infrastructure programs, they must evaluate the economic validity of such programs. Financial evaluation is the initial driver in the selection of an appropriate package of funding sources. While revenue yield is ultimately the most important factor, legal and regulatory issues must be accommodated. In certain circumstances, legal barriers may prove insurmountable and thus eliminate a specific funding source from further consideration. The legal considerations of each mechanism are extremely limited. This is due to the intricacies of the various legal structures throughout each jurisdiction. Administrative barriers must also be addressed, but are rarely a major obstacle. In addition, political acceptability must be addressed prior to funding source selection.

This section provides an analysis of both the conventional and innovative infrastructure financing practices that were identified in Section 3. The analysis includes examples of how these funding mechanisms are utilized by various government entities throughout the country and, in certain cases, best practices for infrastructure funding mechanisms have been identified. As a foundation for the analysis, this section first examines the types of revenue generation evaluation criteria that local entities should draw upon before enacting regional infrastructure programs.

4.1 REVENUE GENERATION CRITERIA

There are numerous criteria to evaluate the performance of any system or instrument of revenue generation. The following outlines a two-tiered approach. The first tier is the “General Evaluation Criteria” tier. This tier applies to all systems and instruments of revenue generation and is commonly used in evaluating alternative tax systems. Although this tier is important in evaluating alternative methods of revenue generation, it does not adequately address either impact fees or user charges. The second tier is comprised of two segments: (1) “User Charges Pricing Criteria” and (2) “Impact Fee System Criteria”. These two segments represent the actual application of the general evaluation criteria.

4.1.1 General Revenue Criteria

It is important for any government agency, in making public finance decisions involving taxes and user charges, to have an established set of criteria by which to make those decisions. There is no perfect universal financing mechanism for building or maintaining infrastructure. It is important to recognize that in evaluating one practice or system against the alternatives, it is inevitable that tradeoffs are made among criteria. In addition, a funding mechanism must not only produce a reliable means for financing infrastructure, but also permit governments a degree of freedom from higher levels of government. The task of the policy maker is often to find the least undesirable alternatives for financing the public sector’s needs. Generally accepted criteria are as follows:

Financing Efficiency

In its simplest terms, economic efficiency involves the “production and distribution of goods and services that people want without wasting resources.” In economic terms, private choices lead to efficient outcomes whenever individuals face the true marginal costs of their decisions. That is, when enterprises must bear the incremental costs of producing any goods or services that they consume, they will only do so when they consider it to be economically efficient. When governments impose taxes or fees or provide public services, however, they distort the prices consumers pay and the true marginal costs of production. As a result, entities may consume too much of the service that is provided by the government agency and consume too little of the item that is taxed.

In the context of land use decisions involving office, industrial and business parks, efficiency requires that land be developed only when the stream of services that can be generated by its “highest and best use” is more valuable than the cost of developing the property. As in other markets, this occurs when property owners and developers face the full incremental costs associated with developing their properties. In other words, if property owners personally bear the full costs associated with transforming their land to a developed use, they will always make decisions aimed at putting that land to its best economic use. On the other hand, if local governments provide basic infrastructure to landowners at a price that differs from the marginal cost of providing these goods and services, then private land-use decisions will be distorted.^{xliii} As a result, the location and type of new development may not be the most economically efficient because developer has been “misinformed” by the market subsidy. This may cause the developer to develop the land in a way that is most financially beneficial to the developer and/or the developer’s client, but that may not necessarily be its best economic use.

Financing Effectiveness

A key aspect of any financing program is how well it generates revenue. For a financing program or a particular financial instrument, fee or charge to be undertaken, it should be capable of producing adequate revenue to address the financial needs to which it is applied. The revenue stream should also be stable and predictable over time to allow sound long-range planning.

Financing Equity

The most common concern over taxes and impact fees is their equity, or fairness. Fee and tax equity is the proper concern of both social and economic analysis and should be addressed as objectively as possible. There are many different way of interpreting the “fairness” of a tax, and so there are many different measures of equity. The two traditional forms of equity are horizontal and vertical equity.

^{xliii} See generally, Tiebout C. “Pure Theory of Local Public Expenditures: 1956; Barnes, W. R. and L. C. Ledebur, *The New Regional Economics*: 1998.

Horizontal equity requires the equal tax treatment of taxpayers in equal circumstances (“equal treatment of equals”). For example, in the case of property tax, office properties of equal value in the same jurisdiction should be taxed the same amount. Vertical equity entails the “fairness” of the distribution of tax liabilities among taxpayers not in similar circumstances. The most common index of vertical equity is income (profits), and discussions of vertical equity usually focus on the distribution of the burden of a tax structure. Taxing structures are traditionally characterized as “progressive” (tax burden varies with income), “regressive” (tax burden and income are inversely related), or “proportional” (no change in tax burden as income changes). For example, in terms of vertical equity, sales and gasoline taxes are the most highly regressive taxes, property and vehicle taxes are more moderately regressive, and income taxes are progressive.

Financing System Ease of Use and Administration:

Another basis commonly advanced for choosing among revenue alternatives is the ease and expense of collecting the tax/fee. It is preferable to choose revenue sources that are: easy to administer and collect; have low administrative costs; are easy to understand; and, are relatively free of opportunities for fraud and evasion. Simplicity in record keeping and calculation should be encouraged. Simplicity coupled with low administrative expenses increase taxpayer understanding, support and compliance.

Economic Neutrality:

Economic neutrality refers to the influence (or absence thereof) that any particular design (i.e., tax, charge or fee) has on economic behavior. Typically, taxes are perceived to dampen economic activity as taxing income reduces the incentive to work, taxing sales discourages retail transactions, and taxing savings reduces the propensity to save. Taxes that are not economically neutral can cause problems in other evaluation criteria. For example, market distortions that under-price one mode of transportation over another reduce economic efficiency and horizontal equity.

The more a tax is perceived to be neutral, the fewer identifiable distortions it imposes on the economy. Economic neutrality requires that different goods be priced according to the same principles, regardless of whether they are provided by public agencies or private firms, unless a subsidy is specifically justified.^{xliv} Economic neutrality also requires that public investments be unbiased. Certain states tend to favor highway development transportation funding over other alternatives, even when those alternatives could provide mobility benefits at a lower cost.^{xlv}

^{xliv} Smith, Stephen, “Environmental Tax Design,” *Ecotaxation*, Earthscan (London), 1997.

^{xlv} *Getting a Fair Share*, Surface Transportation Policy project (Washington D.C.), July 1996.

Political Acceptability:

Infrastructure funding decisions are made through the legislative process. This requires that alternative infrastructure funding mechanisms be analyzed in terms of their political acceptability. Political acceptability is always determined locally. Moreover, what is politically attractive one day may not be the next. For example, in past decades, the use of fuel taxes as the most common means of transportation finance was politically popular in many portions of the country. Today, few legislators want to be identified with any attempt to raise fuel prices. Although favoring or opposing a funding measure solely on its “political attractiveness” is an inappropriate path, it would also be a mistake to fail to consider the political realities in public funding issues.

4.1.2 Specific Revenue Criteria

The application of the general evaluation criteria to user charges and impact fees implies more specific evaluation criteria that are focused on measures of successful system implementation and system outcomes. The criteria identified below supplement the general criteria already outlined.

4.1.2.1 “User Charges” Pricing Criteria

User Charges are fees and taxes paid in exchange for the direct use of an infrastructure system. The revenues generated by these charges are used to build, operate and maintain infrastructure systems. User charges include water supply connection fees, federal and state fuel taxes, state license fees, transit fares, and state and local tolls.

Marginal Costing

Economic efficiency is usually maximized when price equals marginal costs.^{xlvi} As much as possible, charges should reflect the specific costs imposed by a particular use. For example, road users would be charged for all road congestion, damage, parking facilities, accident damages, and environmental damages they cause. In practice, perfectly marginal pricing is impractical due to high discovery and transaction costs. However, some price structures are more suitable for marginal costing than others.

Full Cost Pricing

Full cost pricing requires that individuals or groups pay their fair share of total costs. There are two justifications for full cost pricing.^{xlvii} The first is horizontal equity that implies that users should “get what they pay for and pay for what they get.” If users pay less than the total costs they impose, someone else subsidizes their consumption. The second justification is for economic neutrality. Since prices in most markets are priced on full cost pricing,

^{xlvi} Economic Union, *High Level Group on Transport Infrastructure Charging: Final Report*, (Brussels), June 1998

^{xlvii} Lee, Douglas, “Uses and Meanings of Full Social Cost Estimates, Springer (Berlin) 1997.

infrastructure services should be priced comparably. Such pricing encourages consumers to use resources efficiently.

Transaction Costs

Transaction costs are commonly minimized with a fixed charge or by raising current taxes rather than imposing new charges. Vehicle registration fees are an example of transaction costs. In practice, there is a three-way trade-off between efficiency, horizontal equity and transaction costs. Optimal pricing represents the area where these three criteria best balance. Although there is much debate as to where the optimal balance is for these three criteria, there is little disagreement that these three criteria are critical in evaluating user charges.

4.1.2.2 Impact Fee System Evaluation Criteria

Impact fees differ from user fees in that they are not necessarily paid by users of the infrastructure system, but rather by the residents and enterprises who benefit from the infrastructure system. Because of their individualized nature, impact fee systems require a broader set of evaluation criteria. Additionally, specific legal requirements may significantly influence certain of the criteria below.

- ***Processing Time:*** The time it takes to develop, process, evaluate and review impact fees is an important aspect of any fee system. Extended periods of review are extremely expensive and can result in the abandonment of projects. Impact fee systems should have preset and published processing times. Processing times for refunds and credits should also be specified and reasonable.
- ***Cost Development and Allocation Methods:*** Cost development and allocation methods must be consistent, predictable, and understandable. Adequate methods for accurately identifying the mix of users on each capital facility need to be employed. The system needs cost horizons that are representative of the system's anticipated useful life. Allocation methods must use units of measure that are both relevant to the costs incurred as well as easy to use. All cost estimates build-ups, including overhead (burdens) must be documented and subject to examination.
- ***Comprehensiveness:*** The system must be comprehensive in application and scope. It must discourage the creation of "free-riders." All development, no matter how small, must be included in the allocation base. Fee waivers must be visible and the fee waivers costs should not be absorbed by other development.
- ***Prepayment of Impact Fees:*** Developers and individuals would find it advantageous to have the ability to "lock-in" a rate through prepayment via a prepayment instrument.
- ***Assessment of Current Costs:*** The jurisdiction needs a method for assessing itself regarding the burden of existing users; new development should not be required to pay for solutions to existing problems nor for facilities that will be heavily used by

existing users. Additionally, it is critical that the method exclude assigning responsibility for the burden of “through” traffic, which both originates and ends outside of the impact fee area, to the fees that are to be collected.

- ***Fees Based On Burden:*** Fees should be geared towards facility usage or burden rather than to benefits received.
- ***Reimbursements, Credits and Refunds:*** The system should include methods for reimbursements, credits and refunds. Credits and refunds generally occur as a result of “conditioned oversizing” of infrastructure. To be useful, credit instruments must include mechanisms that allow easy transferability of credits to the widest possible geography and transferee base. Credit and refund instruments need to be valued at the amount paid and should be paid promptly. To the extent that refunds and credits are the result of government requirements, processing fees for refunds, reimbursements and credits should not be charged.

4.2 USER CHARGES ANALYSIS

Services provided by the government can be found along a continuum from pure public goods at one end (e.g., national defense) to pure private goods at the other (e.g., private jet) at the other end. The more the characteristics of a good or service resemble a private good, the more desirable it is to charge for the good directly. For example, while the provision of potable water possesses some elements of public goods, it is more like a private good and, therefore; it is desirable to charge directly for potable water. Moreover, user charges or fees also assist in financing infrastructure by providing a source of revenue to recover costs.

A public good is defined by two characteristics: non-exclusivity (it is difficult or prohibitively costly to prevent some one from using the good) and (2) non-rivalness (one individual’s enjoyment does not, up to congestion, adversely affect another’s enjoyment). The characteristics of public goods necessitate government oversight and/or responsibility. Although many goods and services provided by government exhibit some “publicness” (such as public education), there are very few pure public goods. In contrast to public goods, private goods can be characterized as (1) having clearly identifiable beneficiaries; (2) the quantities consumed are easily determined; (3) individuals may be excluded from the market by a pricing mechanism; (4) spillover effects (negative externalities) do not exist from either over or under consuming the good or services; and, (5) the provision of the service is not intended to redistribute income.

The main economic reason for user charges is to promote efficiency. The key to successful user charges is the important economic notion of individuals and ratepayers paying the full marginal costs of providing and maintaining the infrastructure for services provided. Ideally, market prices reflect the full cost of producing a good or service. Prices help consumers make informed decisions by reflecting the cost of one good compared to another. In practice, market prices also reflect public policies in taxation, regulation, management of natural

resources and other factors.

4.2.1 Wet Utilities

User fees for municipal systems vary widely, and many systems do not pay for themselves. For example, a survey by the Minnesota Pollution Control Agency (MPCA) indicated expenses for operation and maintenance exceeded user charges.^{xlviii} Systems with uniform fees for water provision and wastewater treatment in metropolitan regions can produce subsidies from the fully developed central cities and inner-ring suburbs to the outer-ring of municipalities. There are two “best practice” methods in water service delivery. These are (1) the privatization or outsourcing of water delivery, and (2) the use of a utility structure.

Privatization & Outsourcing

The academic literature is brimming with numerous studies documenting the cost savings that results from privatization.^{xlix} These studies cover the range of services from wet utilities to education.

A service-delivery survey by the International City/County Management Association (ICMA) conducted in 1997 showed that 1 in 15 cities outsourced operation of water and sewer systems. A 1996 Reason Foundation study found that investor-owned water companies in California provide water at the same price to consumers as municipal water companies, even though the former must pay taxes, do not use tax-exempt debt, and are required to earn a profit. The three case studies below exemplify the results of outsourcing water provision.

- **Jersey City, New Jersey** - In May 1996, Jersey City outsourced its water operations to United Water, the winner in a competitive bidding process. United Water is responsible for all aspects of the provision of water to include capital infrastructure and billing. The City received a 35% reduction in costs in the first five years.
- **City of Hawthorne, California** - In 1996 Hawthorne completed the first long-term lease of an existing water supply system in California with the California Water Service Company (CAL Water). Cal Water is responsible for all needed capital improvements. Residents are benefiting from economies of scale from the sharing of fixed costs with Cal Water’s adjacent Hermosa-Redondo Beach operations.
- **Atlanta, Georgia** - Atlanta’s water system was in non-compliance with environmental standards, and the water utility’s estimate for compliance required a water rate

^{xlviii} Minnesota Pollution Control Agency, *Summary Survey System Report*, 1995.

^{xlix} Examples of these studies include Bennet and Dilorenzo (1983), Bennet and Johnson (1979, 1980), Bereny and Stevens (1988), Brooks (1996), Dubin and Navarro (1988), Edwards and Stevens (1978), Kitchen (1976), Linowes (1990), McDavid (1985), Perry and Babitsky (1986), Savas (1977, 1979, 1982) and Steven (1978) to name just a few.

increase of more than 100%. Instead the city chose to outsource the Utility for 20 years and reduced the water rate increases to less than 30 %.

Utility Structures

Most states afford jurisdictions the ability to create utilities for the provision of public services. Utilities are widely used for water, wastewater, and stormwater/drainage. The major advantage of a utility is that it can develop optimal user charges that require users to internalize costs. Although utility fees are earmarked in the sense that they must be used by the utility, they still maintain flexibility of use within the utility. Also unlike user fees, properly designed utility user charges also are assessed on all users.

National Trends

There is a trend nationally to shift to more market-driven pricing of wet utilities. Unlike many transportation services, wet utilities are generally easy to meter and price. Despite the relative ease and cost-effectiveness of metering, some communities still charge a flat fee for wet utilities. As in the case of transportation markets, underpricing of wet utilities leads to market distortions.

The formation of utilities, along with an increase in outsourcing and privatization of water services, continues across the United States. This appears to be more common in non-arid regions where water is plentiful. Conversely, non-arid areas have a greater concern with stormwater (drainage) issues and are more likely to consolidate and/or regionalize wastewater and sewage treatment facilities. Arid regions such as southern Nevada have tended to consolidate their water services. This appears to be a result of a focus on water sourcing as well as quality.

Most jurisdictions finance utility infrastructure with revenue bonds that are retired entirely through revenues from ratepayers over the life of the bonds. Revenue bond financing usually ensures that the beneficiaries of the utility service (ratepayers) pay for the improvements. Revenue bonds recover the cost of infrastructure over a long period of time and spread the costs across a representative ratepayer base.

According to Moody's Investors Services, municipalities that have outsourced the management and operations of their wet utilities to private companies are also more likely to be privatizing their wet utilities over the few years.¹ According to the Moody report, "public policymakers will turn to the private sector for financial, technical, and operating assistance when the municipal water system receives reliable and reasonably priced services. Furthermore, with supportive state regulation, the investor-owned water company is more inclined to acquire the public system."^{li}

¹ Moody's Investors Services, "*Consolidation Will Pressure Ratings of the Water Utilities*", June 2000.

^{li} Ibid.

4.2.2 Transportation Systems

Sub-optimal user pricing is a major problem in transportation service provision. In addition to paying the full incremental costs of providing and maintaining infrastructure, transportation user charges must consider full user charges for road use resulting in congestion and pollution. Table 4-1 describes characteristics of common local option taxes levied for transportation system development, operations and maintenance.

Table 4-1, Characteristics of Common Local Option Transportation Taxes

	Sales	Property	Fuel	Vehicle	Income
Equity					
Do all households pay?	Yes	Yes	No	No	Yes (a)
Is the tax regressive?	Yes	Moderately	Yes	Yes (b)	No
Stability					
Broad tax base?	Broad	Very Broad	Narrow	Narrow	Broad
Indexed for inflation?	Yes	Yes (e)	No	No (d)	Yes
Fluctuates with economy?	Yes	No	Some	No	Some
Transportation Relevance					
Relevance to highways?	Weak	Moderate	Strong	Strong	Moderate (c)
Relevance to streets?	Weak	Strong	Strong	Strong	Weak
Relevance to transit?	Moderate	Strong	Moderate	Moderate	Moderate (c)
Typical Applications					
Types of projects funded	Hwy/Transit Capt. & Oper.	Street/Transit Maint. & Oper.	Highway Cap. & Maint.	Highway Cap. & Maint.	Transit Operations
Typical tax rate	0.50%	5 mills	5 cents per gal.	\$10 per vehicle	0.25%
Typical revenues per capita	\$40-\$70	\$30-\$300	\$10-\$35	\$7-\$8.50	\$30-\$60

- Notes:
- a. Except people with very low incomes.
 - b. Flat vehicle taxes are strongly regressive, and value-added (*ad valorem*) taxes are moderately regressive.
 - c. Payroll taxes only.
 - d. *Ad valorem* vehicle taxes keep pace with inflation.
 - e. Except where property tax limitation measures interfere.

Improved transportation system user charges are best demonstrated in the use of value pricing and pay-as-you-go insurance models. Examples of value pricing and pay-as-you-go insurance are described below.

- **Value Pricing-Toronto Route 407:** - Value pricing is becoming popular internationally and has been implemented in parts of France, Singapore, Norway, and Canada as well as the United States. Approximately 200,000 vehicles per day use Toronto's Highway 407. Regular users are billed at discount rates via in-vehicle transponders while casual users have their license plate pictures taken and are billed by mail. While electronic tolling frequently raises privacy issues, Highway 407

users do not appear to be very concerned as only two dozen of the 250,000 transponder users have signed up for available anonymous accounts.

- **Pay-as-you-go insurance—Texas:** - Progressive Auto Insurance’s pay-as-drive car insurance has had success in Texas. Individuals have saved an average of 25% on their insurance premiums. Progressive’s system uses GPS technology to track when and where vehicles are used and how far they are driven and produces a bill much like a utility bill. 1,100 Texans have signed up for the trial program.

Transportation System Market Distortions

A properly functioning market allocates resources efficiently. These markets reflect certain economic principles including choice, competition, access to information, optimal pricing and economic neutrality. American transportation markets currently violate the majority of these principles. Transportation pricing should be based on long-run marginal costs that include recovery of capital costs as well as the cost of roadway congestion and pavement damage.^{lii}

Although individually these violations of market principles appear modest and/or justified, they are having considerable negative effects on transportation funding, road congestion, and air quality. These market distortions are inflating the demand and costs of transportation infrastructure. Moreover, many of these costs are being shifted to new development under the guise of “smart growth”. Market reforms that reduce these distortions will provide significant economic benefits to jurisdictions and developers.

Current policies reflect older economic objectives and transportation, communication and information technologies. A study funded by the United States Environmental Protection Agency modeled the likely effects of 19 technically feasible transportation-pricing reforms.^{liii} The study evaluated three “reform packages” (that included 5 to 7 mechanisms) that were considered cost-effective, while also providing other economic and social benefits. According to the study’s results, these reforms would reduce excess automobile use by 15-35% even without other transportation demand management strategies.

There is a consensus that transportation in the United States is significantly underpriced.^{liv} This underpricing reduces the incentives for individuals to use the cheapest overall travel option for any particular trip. Evidence exists that shows transportation system underpricing

^{lii} Gomez-Ibanez, Jose A., “Pricing”, *Essays in Transportation Economics and Policy*, Brookings Institute Washington D.C., 1999

^{liii} Littman, Todd, Charles Komanoff and Douglas Howell, Road Relief: Tax and Pricing Shifts for a Fairer, Cleaner, and Less Congested Transportation System in Washington State, Climate Solutions 1998.

^{liv} See David Lewis and Steven Lewis-Workman, *Economically Optimal Transit Subsidies in the United States*, Transportation Research Board Annual Meeting, Paper #971093, 1997;

Todd Litman, “Using Road Pricing Revenue: Economic Efficiency and Equity Considerations,” Transportation Research Record 1558, 1996;

results in numerous systemic problems, including increased infrastructure demand and overuse. Underpricing transportation services reduces overall economic efficiency. External costs show up as higher prices for commercial goods (e.g., parking subsidies), increased local taxes (e.g., increased signalization costs), and increased health expenses (e.g., pollution and accidents). Since certain drivers benefit at the expense of others, underpricing of transportation services is horizontally inequitable. Furthermore, underpricing results in regressive cross-subsidies, since automobile use generally increases with income. Additionally, underpricing of transportation services increases housing prices.^{lv}

The impact of the underpricing of external transportation costs can be seen in emissions costs. Most objective estimates indicate that motor vehicle air, noise, and water pollution costs together average 2-6-cents per vehicle mile.^{lvi} Deakin and Harvey^{lvii} estimated that an emission fee averaging 1-cent per mile implemented in California's urban areas would reduce vehicle travel by 2%, congestion by 3%, and water pollution by 5-20%, depending on the pricing instrument and type of emission. Work done by Delucchi^{lviii} and others suggests that more efficient pricing would increase variable expenses by 20-50-cents or 200-500% over current variable costs. It is unlikely that charges greater than this could be imposed politically.

Table 4-2 provides a composite survey of optimal pricing strategies suggested by various authors such as Delucchi, Litman and the United States Federal Highway Administration.

Table 4-2, Optimal Transportation Pricing Strategies

Strategy	Pricing Instrument	Revenue/Mile
Road expenses borne by general taxes:	Weight-Distance Fee	1-2 cents
Roadway Services	Mileage Fee	1-2 cents
Roadway Land	Mileage Fee	3-4 cents
Pollution	Mileage Fee	2-6 cents
Congestion	Tolls on Congested Roads	0-10 cents
Insurance	Mileage-based pricing	4-6 cents

According to the 1997 Federal Highway Cost Allocation Study^{lix}, automobiles pay only about 70% of the roadway expenses they cause. Vehicle charges would need to increase

^{lv} Littmann, Todd, *Parking Requirement Impacts on Housing Affordability*, VTPI (1997)

^{lvi} See Delucchi, Mark, *Annualized Social Cost of Motor Vehicle Use in the United States, Based on 1990-1991 Data*, University of California at Davis, 1996; FHWA, 1997 Federal Cost Allocation Study, USDOT 1998

^{lvii} Deakin, Elizabeth and Greig Harvey, *The STEP Analysis Package, In Guidance on the Use of Market Mechanisms to Reduce Transportation Emissions*, USEPA, Washington D.C. 1997

^{lviii} See note *xxi* above

^{lix} Department of Transportation, *Federal Highway Cost Allocation Study*, Washington D.C.: U. S. Government Printing Office: (1997)

43% to fully recover these costs. Economic principles assume rational consumers typically want to minimize their costs, even if doing so shifts costs elsewhere in the economy. Automobile owners and operators will prefer underpriced transportation systems, lower insurance rates, low fuel taxes and the absence of emission charges.

The current trend is not to adjust these costs, but to advocate either impact fees or additional taxes on new development. Moreover, the current system provides that motorists only receive part of the savings that result when they drive less. An efficient transportation system gives drivers the full savings produced when they reduce their mileage, which provides a better incentive for efficient transportation choices.

4.3 BENEFIT CAPTURE METHODS ANALYSIS

The key to successful benefit capture methods is to develop mechanisms that are equitable, easy to administer and understand and provide stable forms of revenue. Principal methods include property taxes, special districts and development taxes.

4.3.1 Property Tax

Property taxes are key to financing local government. Property taxes are a key component of any infrastructure-financing portfolio. Property taxes are generally viewed to be equitable, efficient, easy to administer and understand and uniquely stable. The main caveat is that the property tax system be broad-based. States can defeat some of the key characteristics of a broad-based property tax by design. For example, Proposition 13 in California caps growth of assessed value negating the inflationary protection of a well-designed property tax. Conversely, property taxes with large fixed-dollar homestead exemptions, such as those in Florida and Louisiana, will grow faster than inflation and allow property taxes to be most effective and equitable.

Several factors contribute to the progressivity of a tax system. A graduated tax rate system, as well as exemptions and credits lessen the regressivity of the property tax and will increase the progressivity of a tax system. A state-by-state comparison of commercial property taxes is presented in Table 4-3.

National Trends

The shift away from local government dependence on property taxes, which began in the early 1970s, has diminished in most states. However, Oregon enacted legislation in 1997 to reduce property taxes and Minnesota reduced property tax rates on commercial and industrial properties effective in 2001. Both these states are considered high-tax burden states.

Oregon's redesign of its property tax system is indicative of the potential negative impacts of a state-specific design limitation to the broad based property tax. The tax limitation brought about by Ballot Measure 5 in 1990 changed the way in which Oregon's local governments finance public infrastructure. Measure 5 limited the amount of tax local governments can

levy for funding the operations of public schools and other government services. Measure 50, passed in 1997, limited the rate of assessed value growth for unimproved properties. These measures have the effect of reducing and limiting property tax collections.

Despite these two situations, property taxes are finding a renewed popularity in many other states. The principal reasons are its inherent stability, efficiency, and the ease of use compared to the alternatives.

**Table 4-3, Commercial Property Taxes – Listed by Rank
Payable 1998 – Largest Urban Areas**

Rank	State	Total Net Tax	Total ETR	Rank	State	Total Net Tax	Total ETR
1	Illinois	\$1,805,259	6.018%	27	Colorado	607,059	2.024%
2	New Jersey	1,491,250	4.971%	28	South Dakota	592,450	1.975%
3	Minnesota	1,410,837	4.703%	29	Georgia	564,885	1.883%
4	Rhode Island	1,181,251	3.938%	30	North Dakota	548,819	1.829%
5	Iowa	1,111,112	3.704%	31	Alaska	532,095	1.774%
6	Michigan	1,035,961	3.345%	32	Idaho	516,859	1.723%
7	New York	1,032,884	3.443%	33	West Virginia	513,376	1.711%
8	Pennsylvania	1,020,413	3.401%	34	Ohio	510,202	1.701%
9	Arizona	1,007,756	3.359%	35	Montana	495,125	1.650%
10	Connecticut	970,498	3.235%	36	South Carolina	491,217	1.637%
11	Massachusetts	960,289	3.201%	37	Virginia	487,195	1.624%
12	Maryland	909,000	3.030%	38	Oregon	436,167	1.454%
13	Florida	853,610	2.845%	39	Utah	418,748	1.396%
14	New Hampshire	849,110	2.830%	40	North Carolina	376,500	1.255%
15	Wisconsin	830,366	2.768%	41	Kentucky	372,271	1.241%
16	Texas	822,818	2.743%	42	New Mexico	362,819	1.209%
17	Missouri	784,490	2.019%	43	Oklahoma	358,417	1.195%
18	Kansas	758,505	2.528%	44	Alabama	349,689	1.166%
19	Maine	726,792	2.423%	45	Arkansas	336,114	1.120%
20	Vermont	726,473	2.422%	46	Washington	335,565	1.119%
21	Indiana	685,254	2.284%	47	California	315,900	1.053%
22	Nebraska	678,904	2.263%	48	Nevada	305,358	1.018%
23	Dist. of Columbia	676,325	2.254%	49	Delaware	283,609	0.945%
24	Tennessee	664,052	2.214%	50	Wyoming	225,948	0.753%
25	Louisiana	653,825	2.179%	51	Hawaii	203,432	0.68%
26	Mississippi	639,174	2.131%		AVERAGE	\$682,863	2.28%

Notes: ETR: Effective Tax Rate
 \$25 Million Valued Property
 \$25,000,000 Land and Building
 \$5,000,000 Fixtures

(Source: Minnesota Taxpayers Association,
 Individual State Tax Tables)

4.3.2 Special Districts

Improvement districts are created to fund public improvements such as roads, curbs,

sidewalks, utilities and other infrastructure. These districts function as mainstays of local infrastructure financing. They have been in existence since the 13th Century. Benefit assessment districts are often employed when multiple types of infrastructure need to be completed in a pre-defined area, and when it can be demonstrated that the additional infrastructure directly benefits the property owners within that area. Special assessments can be made that are proportional to the benefits received.

A distinct advantage of benefit assessment districts is that they raise little general political opposition outside the district. However, benefit assessment districts are inflexible, require special studies, and serve only a limited geographic base. The use of benefit assessment districts is often significantly limited by statute. Table 4-4 summarizes the use of various types of improvement districts by state.

Table 4-4, Improvement District Utilization by State

State	SID	BID	CID	LID	RID	State	SID	BID	CID	LID	RID
Alabama	No	Yes	No	Yes	No	Montana	Yes	Yes	No	Yes	Yes
Alaska	Yes	No	No	Yes	Yes	Nebraska	Yes	Yes	No	Yes	Yes
Arizona	Yes	No	Yes	Yes	Yes	Nevada	Yes	No	No	Yes	Yes
Arkansas	Yes	Yes	No	Yes	Yes	New Hamp.	No	No	No	Yes	No
California	Yes	Yes	Yes	Yes	Yes	New Jersey	Yes	No	No	Yes	Yes
Colorado	Yes	No	No	Yes	Yes	New Mexico	No	Yes	No	Yes	Yes
Connecticut	Yes	No	No	No	No	New York	Yes	Yes	No	Yes	Yes
Delaware	No	Yes	No	No	No	North Carol.	Yes	No	No	Yes	No
Florida	Yes	No	No	Yes	No	North Dakota	Yes	Yes	No	Yes	Yes
Georgia	No	Yes	Yes	Yes	No	Ohio	Yes	No	Yes	Yes	Yes
Hawaii	Yes	No	No	No	No	Oklahoma	Yes	No	No	Yes	Yes
Idaho	Yes	No	No	Yes	Yes	Oregon	Yes	Yes	No	Yes	Yes
Illinois	Yes	No	No	Yes	No	Pennsylvania	No	Yes	No	Yes	Yes
Indiana	Yes	Yes	No	No	No	Rhode Island	Yes	No	No	Yes	No
Iowa	Yes	No	No	Yes	Yes	South Carol.	Yes	No	No	Yes	No
Kansas	Yes	Yes	No	Yes	Yes	South Dakota	Yes	Yes	No	Yes	No
Kentucky	Yes	No	Yes	Yes	No	Tennessee	Yes	Yes	No	Yes	Yes
Louisiana	No	No	No	Yes	No	Texas	Yes	No	No	Yes	Yes
Maine	Yes	No	No	No	No	Utah	Yes	Yes	No	Yes	No
Maryland	Yes	No	No	No	No	Vermont	Yes	No	No	Yes	No
Massachusetts	Yes	Yes	No	No	No	Virginia	Yes	No	No	Yes	Yes
Michigan	Yes	Yes	No	No	No	Washington	No	No	No	Yes	Yes
Minnesota	No	No	No	Yes	No	West Virginia	No	Yes	No	No	No
Mississippi	Yes	Yes	No	Yes	No	Wisconsin	Yes	Yes	No	Yes	No
Missouri	Yes	No	Yes	No	Yes	Wyoming	Yes	No	No	Yes	No

Notes: SIDs-Special Improvement Districts (Source: Robert Schmidt and Richard Ansson 2002)
 BIDs-Business Improvement Districts
 CIDs-Community Improvement Districts
 LIDs-Local Improvement Districts
 RIDs-Road Improvement Districts

Special districts use specialty bonds for these purposes that are paid for by the beneficial property owners. For example, the Summerlin development in Las Vegas, Nevada is the largest master-planned community in the United States. In 1989, Howard Hughes Corporation created the Summerlin Assessment District. The District was created for the purpose of acquiring and improving streets, streetlights, street signalization, Summerlin Parkway, intersection development, sanitary sewer supply, water, storm water, and landscaping. The cost was financed with \$73,885,000 of bonds that are to be paid by special assessment, according to benefits, levied against the benefited lots, tracts and parcels of land in the District.

Communities in California use a specific kind of benefit capture method entitled to raise monies to build infrastructure known as a Community Facilities District (CFD) or Mello-Roos District. Mello-Roos districts are easier to form than other special assessment districts. First of all, Mello-Roos districts are allowed irregular boundaries to conform to a developer's plan or to avoid pockets of resistance. (Properties in other types of special assessment districts must be contiguous.) Mello-Roos districts are also unique in that they have greater financial flexibility. For example, their assessments are not required to allocate costs precisely according to the level of benefits received and taxes may change as the development takes place.^{lx}

4.3.3 Tax Increment Financing

Tax increment financing (TIFs) mechanisms vary considerably by state. Minnesota is a leader in use the TIFs. In Minnesota, TIFs are the most visible tool available to all jurisdictions to assist them in their economic development activities. Nevertheless, the state has been critical of the expansive use of TIFs and has been implementing restrictions on TIF usage.

The City of Elk River, Minnesota offers TIF financing to qualified industrial or commercial projects for land write-down and/or site infrastructure. Private development projects must meet certain objectives. These include: retention of local jobs and/or increase the number and diversity of jobs that offer stable employment, encouragement of additional unsubsidized private development in the area, and facilitation of the development process and to achieving development on sites which would not be developed without TIF assistance. The objectives also include removal of blight or encouragement of redevelopment, creation of opportunities for affordable housing, and contribution to the implementation of public policies such as the promotion of quality urban design and energy conservation.

4.3.4 Development Impact Fees

Twenty-two (22) states authorize the use of impact fees although they are used in all states in one form or another. Enabling legislation has not been adopted in all states that utilize impact fees. For example, Florida has used impact fees extensively, yet it does not have any

^{lx} Fulton 1999; Hitchcock 2000

enabling legislation. Like several states, Florida’s lack of enabling legislation appears to provide jurisdictions with greater latitude in the implementation of impact fees.

Table 4-5 identifies how the impact fees are used for a number of these states. Surveys suggest that California has the largest amount of communities with impact fees, followed by Florida, Washington, Oregon, Colorado, and Texas. The growth of impact fees has slowed from its peak in the early 1980s. This can be attributed to saturation and the increasing use of alternative methods. The amount of impact fees is generally highest at the urban fringe and smallest at the urban core.

Table 4-5, Impact Fees for State’s with Enabling Legislation

State	Roads	Solid Waste	Sewer	Storm water	Parks	Fire	Police	Library	Waste	School
Arizona (cities)	x	x	x	x	x	x	x	x	x	
Arizona (county)	x	x	x	x	x					
California	x	x	x	x	x	x	x	x	x	x
Georgia	x	x	x	x	x	x	x	x		
Hawaii	x	x	x	x	x	x	x	x	x	x
Idaho	x	x	x	x	x	x	x			
Illinois	x									
Indiana	x	x	x	x	x					
Maine	x	x	x		x	x			x	
Nevada	x	x	x	x	x	x	x	x		
New Hampshire	x	x	x	x	x	x	x	x	x	x
New Jersey	x	x	x	x						
New Mexico	x	x	x	x	x	x	x			
Oregon	x	x	x	x	x					
Pennsylvania	x									
Rhode Island	x	x	x	x	x	x	x	x	x	x
South Carolina	x	x	x	x	x	x	x			
Texas	x	x	x	x						
Utah	x	x	x	x	x	x	x			
Vermont	x	x	x	x	x	x	x	x	x	x
Virginia	x									
Washington	x				x	x				x
West Virginia	x	x	x	x	x	x	x			x
Wisconsin (city)	x	x	x	x	x	x	x	x	x	
Wisconsin (county)		x	x	x	x	x	x	x	x	

(Source: James Duncan & Associates 2000)

Theoretically, impact fees are charges levied against new development in order to generate revenue for funding the capital improvements necessitated by that development. Impact fees can range from several hundred dollars to thousands of dollars per house, dwelling unit, or building. A recent (2000) survey of over 100 jurisdictions across the nation provides a

representative sample of impact fees by type of infrastructure and land use. As shown in Table 4-6, the highest fees are for water services, transportation and schools.

Table 4-6, National Average Impact Fees

Infrastructure	Single- Family (per unit)	Multi- Family (per unit)	Office (per 1,000 Sq. ft.)	Industrial (per 1,000 Sq. ft)
Water	\$2,189	\$1,599	\$961	\$487
Wastewater	\$1,956	\$1,599	\$809	\$522
Roads	\$1,535	\$1,065	\$1,792	\$881
Park	\$1,218	\$1,018	\$0	\$0
Library	\$ 326	\$ 228	\$0	\$0
Public Safety	\$ 493	\$ 493	\$155	\$68
Schools	\$2,750	\$1,467	\$0	\$0
Public Buildings	\$ 616	\$ 579	\$343	\$182

(Source: James C. Nicholas, Holland Law Center, University of Florida, 2000)

In theory, impact fees represent a direct and equitable method for local governments to require new development to pay for those additional costs that new development imposes on a given region or jurisdiction. Unfortunately, in practice the design of impact fee mechanisms invariably over-charges one group of development and under-charges others (reference Section 5.2 of this report).

Proponents of impact fees site their advantages over taxes:

- **Political Acceptability:** - Taxpayers believe that only developers and “newcomers” pay for impact fees. This belief coupled with the current political aversion to property taxes makes impact fees a favorite strategy of locally elected officials.
- **Developer Support:** -In many communities, developers are supportive of reasonable impact fees because the alternatives may include either the lack of provision of necessary infrastructure or higher overall costs. Additionally, many developers cite the benefit of knowing the cost imperatives in advance as well as decreasing the amount of negotiations as distinct advantages of a sound impact fee system.
- **Equity:** - If properly designed, the levying of impact fees can cause users to pay for the incremental cost of development. Also, sound systems assure that small developers and “late-comers” do not “free-ride” on the backs of large developers.
- **Reduced Public Borrowings:** - As noted earlier, local jurisdictions have debt ceilings. Impact fees may assist by providing necessary funds on a timely basis. Without impact fees many jurisdictions could not afford to fund infrastructure.
- **Control Growth:** - Many high growth communities have used to promote one form of growth over others. Although many fault this policy on economic grounds, many urban planners support it as a key growth control mechanism.

Although impact fees have wide use throughout the country, there are inherent disadvantages that must be considered:

- **Equity:** - Impact fees place greater burdens on new developments over existing properties/residents that have not been assessed impact fees. Traditionally, providing needed public facilities had been considered a key role of government. By making only new residents pay, a problem of inter-generational equity occurs. Additionally, equity issues arise whenever impact fees are used for facilities that are not used exclusively by fee payers.
- **Administration and Ease of Use:** -Impact fee systems require the development of proper planning, estimating, budgeting and cost management systems that may be different from existing systems. Also the earmarking of funds requires special collection, management and disbursement methods. Assumptions regarding levels-of-service, growth and related demographics must be well documented and legally supportable. Therefore, impact systems must be individually designed to meet unique characteristics.
- **Impact Fees Can Decrease Development:** -Development impact fees are not a stable source of income. Often overlooked in today's strong regional economies, marginally excessive impact fees can retard development significantly. Developers, in price-sensitive markets, will discontinue construction if they cannot realize an adequate return on their investment.

Poorly designed impact fee mechanisms have numerous unintended consequences. For example, as an empirical study of impact fees in the Chicago region points out: "Impact fees may provide incentives for municipal officials to behave irresponsibly and, because of the ambiguity regarding the correct levels of fees to set, are likely to be inefficient. Impact fees are also often regressive: they may encourage developers to produce more expensive homes, thus pricing lower-income buyers out of the market, and they may also place a disproportionate burden upon the poor and middle-income homebuyers, since fees represent a higher percentage of the sale of lower-priced home than a higher-priced home."^{lxi}

Impact Fee Calculation Systems

The systems used to calculate impact fees vary significantly by jurisdiction and reflect the sophistication of the jurisdiction, legal requirements, and unique geographic and economic considerations. The underlying philosophy in developing impact fees is that the fees should be roughly proportional to the impacts caused by the new development. Most impact fee systems use a series of formulas to determine what portion of the budgeted capital amount is attributable to new development.

^{lxi} Baden, Brett M., Don L. Coursey, and Jeannine M. Kannegiesser. *Effects of Impact Fees on the Suburban Chicago Housing Market* presented in the Workshop in Economic Policy and Public Finance, University of Chicago Department of Economics, January 30, 1996.

Impact Fee Credit System

Most established impact fee systems authorize that approved improvements furnished by developers that go beyond the standards established by the jurisdiction be reimbursed. This credit is usually restricted to the incremental cost of the improvement. These credits could include costs from over-sizing requirements and/or land dedications.

Portland has a credit system that allows credits for improvements made to 36 projects referred as “Qualified Public Improvements.” However, the value of the credits is determined at the discretion of the Administrator. Certain systems also allow for credit transfers to other parties. Presently, credits can generally only be transferred or sold for use within the impact fee area; consequently they are of limited use. For example, a typical transportation impact fee zone in Florida is only 10 square miles. The larger the development area and the earlier the credit results in higher value.

Best Practices in Impact Fee Systems

Following are two different mechanisms used to establish impact fees that were developed by local governments in Lancaster, California and Las Vegas, Nevada:

- ***USP Program***, Lancaster, California - The City of Lancaster developed their fee structure under the Urban Structure Program (USP) to allocate technical infrastructure costs based on such factors as distance from the urban core. The designers of the USP model integrated both new and existing fees into a unified model allowing the city to define, relate, and modify each impact fee in a consistent and comprehensive manner. The model allows one to analyze three nexus relationships—burden, type, and cost—for each impact fee. Because distance from the urban core significantly impacts the cost of infrastructure, costs are often higher at the fringe. Nevertheless, the model does not create additional multipliers to encourage urban density.

Users state that the model is easy to understand, apply and provides consistent outputs. Additionally, the model is comprehensive in that it is applied to all development. The development community was involved in the models design. In its current form, the model has certain limitations for use beyond Lancaster. For example, certain fees that are common in California would need to be revised and/or eliminated and certain assumptions would need to be modified. Nevertheless, it may be a useful basis for other communities.

- ***Public Facility Needs Assessment Concept (PFNA)*** Clark County (Las Vegas area), Nevada - The stated purposes of the PFNA are to (a) determine the infrastructure requirements of the planning area at build-out and (2) to create a mechanism to pay for the infrastructure. The major benefit of the PFNA includes a mechanism so that all development (regardless of size) contributes on an “equitable share” basis toward infrastructure needs. Previously, smaller developments could and did escape paying a share of the infrastructure.

4.4 SUBSIDIES ANALYSIS

Although federal monies have decreased in the last three decades, certain mechanisms still assist jurisdictions finance infrastructure needs. The following highlight the best subsidy-related infrastructure funding mechanisms currently available.

4.4.1 State Infrastructure Banks

State infrastructure banks (SIBs) provide low-cost loans that support the creation of infrastructure for economic development. Funds are generally part of a State Revolving Fund Program. Generally, loans are available in the range of \$250,000 to \$20,000,000 depending upon the state, with a financing period of up to 30 years. Entities that are eligible generally include any subdivision of a local government.

In many states the infrastructure bank also serves as a conduit for a wide variety of financing mechanisms such as rate reduction bonds, industrial development bonds, 501 (C) (3) bonds and exempt facility bonds. Project types include county roads, public transit, drainage and flood control, environmental mitigation, sewage treatment and water treatment and distribution. SIBs can enhance private investments by lowering the financial risk and helping to attract private developers wishing to take an equity interest in projects. Additionally, project funds are recycled as a source of new infrastructure projects. The program funds among other projects: water and wastewater facilities serving primarily industry and commerce; access roads to industrial parks or sites; and business incubator facilities. The size of the average grant in 1999 was \$829,000.

4.4.2 State Revolving Fund Loan Programs

Many states have instituted State Revolving Loan Fund (SRF) programs specifically for water quality problems associated with discharges from publicly owned wastewater treatment plants, non-point sources and storm drainage sources. The federal Clean Water Act of 1987 created the SRF program. All federal and state contributions and monies received from loan repayments remain in the fund to finance eligible projects. In most states, public agencies, private parties and nonprofit agencies may apply for funding for non-point source and estuary enhancement projects. In 2001, Congress authorized \$1.35 billion for the EPA's clean water SRF grants and \$825 million for EPA's drinking water SRF grants. For example, Wisconsin's SRF was established in 1987. The fund provides low-interest loans to local governments ranging from 55-70% of the market rate. The state match for federal capitalization grants is provided through general fund obligations.

The interest on municipal bonds is normally exempt from federal taxation, unless the bonds are arbitrage bonds. Although the IRS definition of arbitrage bonds is complex, in simple terms its intent is to prevent municipalities from obtaining a profit from their tax-exempt status. In the world of municipal finance, arbitrage is a municipality's profit from borrowing funds in the tax-exempt market and investing in the taxable market. Prior to the Tax

Reform Act of 1986, an abuse of arbitrage profits was possible. The 1986 Tax Act requires that money raised through the issuance of tax-exempt bonds not be invested to earn more than 0.125% above the interest rate at which the bond was issued. These provisions apply to SRFs and restrict interest that could be used for infrastructure. Also the complexity of reporting on arbitrage compliance has escalated administrative expenses. Exempting SRFs from arbitrage restrictions would increase funds available for infrastructure.

SRFs could also be improved by modifying the SRF rules to create more investment by enlarging eligibility to private facilities, allow loan maturities of greater than 20 years and expedite federal funds delivery to SRFs. Private wastewater utilities are currently ineligible for the SRF program. Like private water providers, they should have access to SRF funds. A reason why certain states have not leveraged SRF grants may be institutional. According to the GAO, staff that is uncomfortable with the complex disclosure and arbitrage rebate requirements of SRFs may manage some SRFs. Another limit is legal. Certain states, like Florida, prohibit by law the SRF from participating in the bond market.

In addition to the three supplemental funding sources identified above, there are numerous other sources of federal and state funds available to rural and disadvantaged communities. These include the Department of Housing and Urban Development's (HUD) Community Development Block Grants (CDBG) funds and the Department of Commerce's Rural Economic Development Infrastructure Program.

4.4.3 Grant Anticipation Revenue Vehicles (GARVEEs)

The issuance of grant anticipation notes (GANs) is a long-standing practice of public infrastructure providers for schools, hospitals, and now roads and transit systems. GARVEEs use federal-aid highway funds as the primary source of repayment of debt. The Federal highway Administration defines eligible debt instruments as "any bond, note, certificate, mortgage, lease, or other debt financing instrument issued by a state or political subdivision of a state or public authority, the proceeds of which are used to fund a project eligible for assistance under Title 23."

New Mexico, Ohio, and Massachusetts were early pioneers in the issuance of GARVEES or GAN notes for transportation, followed more recently by Arizona, Colorado, Mississippi, and New Jersey. A number of other states including Alabama, California, Florida, Nevada, and Oklahoma have recently passed legislation to authorize GANs. For the most part, states have used GARVEEs for large-scale, critical projects that require quicker action than that provided by a traditional funding approach and that have economic or other benefits that further outweigh the potential debt issuance costs. In certain circumstances, states are considering the use of GARVEEs in instances where the state may be unwilling or unable to support a particular bond issue with its full-faith and credit or taxing authority as often required for highly rated bonds. New Mexico financed \$100 million of State Route 44 through a GARVEE.

The primary benefits of GARVEEs include accelerated project delivery by accumulating capital in a lump sum, better funds management, avoidance of construction and right-of-way

cost inflation, and the earlier realization of economic benefits. According to Standard and Poor's, many backstopped GARVEEs have ratings of AAA and AA. The potential limitations of GARVEEs include inflexibility (as a long-term commitment for repayment implies that future federal funds must be used for debt repayment), increased management expense, the potential of artificial inflation from increased demand, and that appropriation of federal funds is always uncertain and may be limited by category and/or conformity requirements.

States that have been successful with GARVEES utilize statutes that include broad project eligibility; a basic set of eligibility and selection criteria to be implemented by the state's DOT; limits on the percentage of the state's federal-aid funds that can be committed to GARVEEs; limits on the maximum term of the bonds and the ability for issuers to obtain bond insurance and provide both stand-alone and backstopped debt.

4.4.4 Transportation Infrastructure Finance and Innovation Act

Another tool available to support expanded transportation financing is the Transportation Infrastructure Finance and Innovation Act (TIFIA) program. TIFIA was enacted as part of TEA-21 to help advance projects that have dedicated revenues, including tolls and a wide variety of other user charges, as well as state and local dedicated funds. The United States Department of Transportation (DOT) interprets the term "dedicated revenue sources" to include tolls, user fees, special assessments, tax increment financing, any portion of a tax or fee that produces revenues that are pledged for the purpose of retiring debt on the given project." The U.S. DOT also may accept general obligation pledges and other pledges on a case-by-case basis. TIFIA is intended to address market gaps in completing project plans of finance. TIFIA assistance may be provided in the form of direct loans, loan guarantees, or standby letters of credit. Projects must be at least \$100 million in size (\$30 million for Intelligent Transportation Systems (ITS) projects) and can support up to one-third of project costs.

Examples of projects benefiting from the TIFIA program include the Miami Intermodal Center, a \$1.3 billion project designed to improve access to and within Miami International Airport and State Route 125 in San Diego, California, a critical transportation link to provide improved access to the Otay Border Mesa Crossing.

4.4.5 Sales Taxes

Although property taxes raise more overall revenue for local jurisdictions, the sales tax has become the most important tool for funding technical systems infrastructure. In many states sales tax is the only politically feasible method of raising taxes. . The reason is that within the last decade, individuals are more willing to authorize a sales tax increase than any other tax increase. Unfortunately, besides being regressive, sales taxes are less stable than property taxes and do not have a strong fiscal relationship to most infrastructure systems. Table 4-7 lists the state level sales and use tax rates imposed as of July, 2001. The range of local taxes is also included as a quick reference. The information concerning local use tax rates can be used to determine whether the use tax also applies to local taxes.

Table 4-7, Sales and Use Tax Rates

State	State Rate	Range of Local Rates	Local Rates Apply to Use Tax	State	State Rate	Range of Local Rates	Local Rates Apply to Use Tax
Alabama	4.000%	1%-7% (7)	Yes	Montana	0.000%	0%	N/A
Alaska	0.000%	0%-7% (7)	Yes/No (1)	Nebraska	5.00% (11)	0%-1.5% (7)	Yes
Arizona	5.600%	.25%-3.8% (7)	Yes/No (2)	Nevada	4.250%	0%-#5	Yes
Arkansas	5.125%	.5%-4.75% (7)	Yes	New Hampshire	0.000%	0%	N/A
California	5.750%	1.25%-2.75%	Yes	New Jersey	6.000% (8)	0%	N/A
Colorado	2.900%	.25%-7.00% (7)	Yes/No (1)	New Mexico	5.000% (9)	.125%-2.43%	No
Connecticut	6.000% (10)	0%	N/A	New York	4.000%	2%-2.5%	Yes
Delaware	0.000%	0%	N/A (3)	North Carolina	4.000% (10)	2%-2.5%	Yes
Dist. of Columbia	5.750%	0%	NA	North Dakota	5.000% (10)	1%-2%	Yes
Florida	6.000% (10)	.5%-1.5% (4) (7)	Yes	Ohio	5.000%	.5%-2% (7)	Yes
Georgia	4.000% (10)	1%-3%	Yes	Oklahoma	4.500%	.2%-6.25% (7)	Yes/No (1)
Hawaii	4.000% (10)	0%	N/A (5)	Oregon	0.000%	0%	N/A
Idaho	5.000%	.5%-3% (7)	No	Pennsylvania	6.000%	0%-1% (7)	No
Illinois	6.250% (10)	.25%-2.75% (7)	No	Rhode Island	7.000%	0%	N/A
Indiana	5.000%	0%	N/A	South Carolina	5.000% (10)	0%-2% (7)	Yes
Iowa	5.000%	0%02% (7)	No	South Dakota	4.000% (10)	1%-2% (7)	Yes
Kansas	4.900% (10)	0%-2% (7)	No	Tennessee	6.000% (1)	1%-2.75%	Yes
Kentucky	6.000%	0%	N/A	Texas	6.250%	.5%-2% (7)	Yes
Louisiana	4.000% (10)	.3%-6.75% (6) (7)	Yes	Utah	4.750% (10)	1%-3.25%	Yes
Maine	5.000% (10)	0%	N/A	Vermont	5000% (10)	0%-1% (7)	No
Maryland	5.000%	0%	N/A	Virginia	3.500% (10)	1%	Yes
Massachusetts	5.000%	0%	N/A	Washington	6.500%	.5%-2.1%	Yes
Michigan	6.000% (10)	0% (10)	N/A	West Virginia	6.000%	0%	N/A
Minnesota	6.500% (10)	.5%-1% (7)	Yes/No (2)	Wisconsin	5.000%	.1%-1.0% (7)	Yes
Mississippi	7.000% (10)	0%-.25% (7)	No	Wyoming	4.000% (10)	1%-2% (7)	Yes
Missouri	4.225%	.5%-4% (7)	Yes/No (1)				

(Source: State Department of Revenue materials and Vertex, Inc., 2001)

- Notes:
1. Some of the cities and counties do apply use tax.
 2. Some of the cities do apply use tax. The counties do not apply a use tax.
 3. Delaware does not have a sales tax. They do have a rental tax of 1.92%.
 4. The local sales/use tax does not apply on sales amounts above \$5,000 on any item of tangible personal property.
 5. There is a .500% use tax on merchandise imported into the state for resale purposes. Imports for consumption are taxed at the same rate as the sales tax.
 6. The combined local rates for a particular city range from 1.8% to 6.75%.
 7. Some local jurisdictions do not impose a sales tax.
 8. Effective 7/1/94, sales occurring in Salem County will be taxed at the reduced state sales tax rate of 3%.
 9. The basic state gross receipts tax rate is 5%. The law provides for an automatic credit of up to .5% for municipally imposed gross receipts taxes.
 10. The state has reduced rates for sales of certain types of items.
 11. Nebraska has reduced its state tax rate from 5% to 4.5% effective 7/1/98.

Southern Nevada is financing a significant portion of both its water provision and mass transit infrastructure from local option sales taxes. The Southern Nevada Water District receives a 0.25% increment of sales tax specifically to fund a portion of the \$3.1 Billion in new water provision infrastructure. The Regional Transportation Commission also receives 0.25% for mass transit infrastructure needs.

5.0 INFRASTRUCTURE FINANCING CASE STUDIES

To more closely examine how and why economic, political, geographic, and legal concerns affect the development and implementation of regional infrastructure programs, two types of case studies were conducted as part of this research. The first compares how four cities – Atlanta, Georgia; Las Vegas, Nevada; Portland, Oregon; and Minneapolis-St. Paul, Minnesota – have addressed regional infrastructure development. The second examines two of the regions, Las Vegas, Nevada and Portland, Oregon in more detail. This is accomplished by comparing actual data on impact fees for Las Vegas and Portland regional development projects to the impact fees that would have been assessed utilizing the USP Program (Lancaster, California), one of the “best practices in impact fee systems” identified in Section 4.0. The results of the latter case study are used to evaluate the usefulness of the “Lancaster Model” to industrial and office developers in other regions throughout the country.

5.1 COMPARATIVE REGIONAL EVALUATION

Each of the four regions analyzed to examine the impact of regional governance forms on the financing of regional infrastructure represent a set of significantly divergent approaches to regionalism. Portland and Minneapolis/St. Paul are two of the North American approaches to regionalism most often cited as examples of successful regional governance, while Las Vegas and Atlanta are most often cited as regions with problems resulting from high growth. On closer examination, however, it appears that there are as many negatives as positives in both Minneapolis/St. Paul and Portland and that Las Vegas and Atlanta have both made major strides in addressing the infrastructure needs of their respective communities notwithstanding the fact that neither region has an effective formalized structure of regional governance. The individual case study of each of the four regions is presented in Appendix A.

These case studies are presented to examine the context within which their regional structures developed. This understanding is necessary to ascertain the transportability of their respective models to other regions. For example, Minneapolis/St. Paul has had mixed results in regional governance. In particular, the region has had some success in sewerage treatment, but has had significant failures in transportation infrastructure. Minneapolis/St. Paul has been successful in facilitating a regional solution to the historical problem of effective sewer treatment. Failure of the region to properly address its sewage needs had resulted in a major environmental catastrophe by the early 1960s. Although the formation of the Metropolitan Council was largely in response to the regions immediate need to address sewerage issues, the seven county regional organization now has additional responsibility for partial coordination of transportation infrastructure through the Major Transportation Projects Commission.

The current Major Transportation Projects Commission serves a short term purpose by proposing and offering a neutral forum in which to discuss ideas. Currently the Metropolitan Council and Minnesota Department of Transportation and the local governments that concern themselves with transportation planning are all operating in separate transportation segments and there is no single entity empowered to resolve disputes among and between jurisdictions. The current legislation has resulted in both excessive transportation costs and substantive delays.

Atlanta has led the way in regional planning, but has also demonstrated that regional planning, in and of itself, is an ineffective method of addressing regional issues. The Atlanta Region Commission has been involved in the planning of the Atlanta region for over five decades. By its own admission, it has had limited success in addressing the regions critical issues of water and air pollution.

Portland “Metro” started life as a solid waste disposal agency, later it took on the Portland Zoo, then became the Metropolitan Planning Organization for transportation within the region and has continued to absorb additional regional responsibilities ever since. Although its impact on urban infrastructure is mixed, its policies have dramatically increased urban housing prices and decreased the affordability of urban residences.

Las Vegas has grown at a rate six times the national average for over two decades. It has large single purpose government organizations responsible for water provision and regional flood control. The regional transportation commission contracts out operations and coordinates planning activities by determining funding priorities for local jurisdictions. Jurisdictionally distinct agencies operate independent sewerage treatment facilities. Integrated regional planning exists through cooperative agreements between jurisdictions.

The forms of governance employed in these regions reflect most importantly their topography and each regions unique political history. Their infrastructure financing methods are as diverse as their topography. Minnesota relies on broad based taxes, tax incentive financing, and special assessments to fund infrastructure. Minnesota has not allowed jurisdictions to levy impact fees. Conversely, Portland has one of the most extensive and complicated impact fee systems in the nation. Las Vegas utilizes a combination of impact fees, development conditions and taxes to generate funds for infrastructure. Georgia has been dependent on special local option sales taxes and general taxes to support needed new capital.

In addition to the four case studies, the study examined several infrastructure providers that had “regionalized” or consolidated over the last decade. The following findings are representative of the data examined:

- The savings in labor costs were illusory. Many consolidation agreements expressly prohibited salary reductions. In every region where regional forms of governance have been utilized average salary rates have increased at a greater rate than that of corresponding representative job titles in the private sector. For example, Clark County, Nevada’s regional governance structures had salary growth rates nearly

60% higher than that of comparable private sector employees. Nevada's city and county employees are now the 8th highest paid employees in the nation.

- With one exception, some form of bureaucracy increased. In some cases it was additional personnel. In other words, extra layers of management were imposed between operational personnel and elected officials. In older regional forms, such as Portland's Metro, additional structures were added to the base organization over time.
- Jurisdictions in the "growth" areas of southern Nevada, southern California, Atlanta, Georgia, and Minneapolis-St. Paul, have seen increased revenues in recent years while jurisdictions in relatively "built out" regions have suffered. Ideally, regional consolidation and integration would take place between "growth" area districts and "built out" districts.
- There needs to be an incentive for "growth area" districts to participate. Otherwise one district subsidizes the other. Successful consolidations have taken place where the "built-out" district can offer political strength, financial strength (in terms of reserves or enhanced credit ratings) or organizational strength (in terms of personnel, equipment or facilities).

The issue of representation is important when examining regional structures. Citizens in small districts often fear they will lose control and identity in a merger with a bigger government. Moreover, if a rural, sparsely populated district combines with a more densely populated suburban or urban district, at-large elections will favor the more populous community.

Interviews with public officials in the case study areas suggest that the Supreme Court cases of Nollan and Dolan have encouraged many jurisdictions to shift away from demanding land exactions through development agreements and toward imposing impact fees. The analysis confirms the finding that impact fees generate fewer constitutional concerns for jurisdictions since they can easily tailor them to the impacts created by a specific development. The data suggests that when jurisdictions pay greater attention to nexus and rough proportionality requirements and engage in more systematic and integrated long-range planning they often justify higher impact fees than they previously charged. For example, Santa Rosa California was able to raise their fees by \$1.43 per square foot over the old fee and Eldorado County, California tripled their fees after conducting a development impact study.

5.2 REGIONAL INFRASTRUCTURE FINANCIAL MODEL

The Lancaster, California Urban Structure Program (USP) was prepared for the City of Lancaster Department of Community Development in 1993.^{lxii} The report provides the operating procedures, and specifies the functions, inputs and outputs of the Lancaster USP,

^{lxii} City of Lancaster, Department of Community Development, *Urban Structure Program Documentation Report*, 1993

also referred to informally as the Lancaster Model. This USP is actually an impact fee calculator, specific to Lancaster, California. The tool, a set of computer spreadsheets, is used to estimate impact fees for a project based on submission of an application form. The application form is used to gather the necessary project characteristic information needed to assess impacts. The USP provides two reports, the first, a summary of the project characteristics, and the second, estimated impact fees for the project.

Analysis

While the Lancaster Model is suitable as a starting point for impact fee estimation and comparison, it is not designed as a universal fee calculator. The majority of the effort associated with impact fee modeling is the preparation of project characteristics, as would be required in actual planning. The model must be tailored to each community and effort is required to research local impact fee burden, type and cost relationships, including the rates, methods of calculation and fee purpose. The Lancaster Model cannot estimate fees for highly complex projects such as business parks or master planned communities without significant redesign of the tool. A key example of this limitation is the inability to represent rate changes over time. Modification of the model can be accomplished once local community ordinances and methods for fee determination are understood; however, the cost of nationwide research and problems with maintenance to keep pace with local rule changes suggest a universal application would be impractical.

The Lancaster Model therefore, will not in itself solve problems associated with impact fee assessments. However, the use of computer automation to assist developers and communities to better understand and administer impact fees is a sound concept. The consistent application of the local impact fee rule set, the support for developers when performing design trade studies, and most significantly the capture of historical data in a format that allows review and comparison, suggest communities should adopt an automated capability to calculate and store data related to impact fees. Certainly, some method of recording detailed information about a developer's cost and fees is required to enable a credit system. The study necessary to build such a software capability should drive decision-making related to how such a credit system would be fairly administered, since a documented set of rules would be needed to design and create the software program or spreadsheets.

Ideally, a fee calculator or software program would be available to both the community planners and all developers. This would allow developers to perform impact fee calculations related to a new development with ease. Shared access to the same calculator would advance the level of confidence a given developer's fee estimates are consistent with those of other developers, and the community fee authority. Since this would be a single computer application, within any one community, the associated financial data would be captured, formatted and stored in a consistent fashion, thus simplifying historical analysis and comparative evaluation

Application within this Study

The Lancaster USP has been used as a template for the financial models within this study. The cost nexus for Las Vegas, Nevada and Portland, Oregon were researched to enable use of current fee information. A common set of notional project characteristic data was used to normalize the model between the locations. The comparison of residential and commercial fees is based on the amount of land developed. The January 2001 Southwest Las Vegas Valley Public Facilities Needs Assessment Report (PFNA)^{lxiii} was used to establish an approximation of land area required for each residence. This land use assumption was applied for both case study locations to establish a standard unit of reference. A comparison of commercial and residential development fees based solely on land area, is inconclusive, yet such a comparison allows evaluation of the utility provided by automated fee calculation, such as that provided by the Lancaster model.

The case study financial models are based on using land area as a common denominator to allow a comparison between residential and commercial property development. The size of a residential lot was based on the average lot size represented by dividing the total single-family residential acres by the number of single-family residences as predicted from now through build out in 2031 by the PFNA study. This resulted in land area of 11,773 sq ft for each single-family residence. The result was then standardized for both communities to normalize the comparison. The commercial land area for each of the three notional commercial properties was divided by this notional residential lot size to determine how many residences would be built on the same land. An example using the notional 2-story office development shows the 281,200 sq ft land area is sufficient for 23.9 single-family houses. ($281,200/11,773 = 23.9$) See Appendix A for details of the three notional commercial properties.

Comparisons of case study communities can be accomplished using the modified Lancaster Model, as demonstrated in the attached fee models for Las Vegas and Portland. However, valid, cross-community comparison of fees is not possible except when each community has assessment for the same type of infrastructure. An example of this limitation is drainage or storm water related infrastructure. Las Vegas funds drainage infrastructure from sales tax revenue, but Portland charges a System Development Charge (SDC), or impact fee, based on impervious land area, frontage and daily vehicle trips. Signalization costs cannot be readily compared between the case study locations. More significantly signalization costs cannot easily be related to a single development, as traffic patterns are altered over time and traffic pattern influences exist that cannot be adequately predicted nor measured with today's axle-count technology.

The Las Vegas and Portland impact fee models include the three infrastructure elements in common: water, sewer and streets. The model calculates impact fees for three differing commercial properties and residential development. Water related fees are based on a Regional Connection Charge assessed during service initiation. The fees are based on

^{lxiii} Clark County, Nevada Comprehensive Planning Department, Advanced Planning Division, *Southwest Las Vegas Valley Public Facilities Needs Assessment Report*, January 2, 2001.

service/meter size, residential unit density, or land use. Single-family residential fees are based on 2002 rates for eight or fewer units per acre and ¾” meter size. Multi-family rates are based on 2002 rates for more than eight units per acre and master metered. This does not account for individual metering of multi-family residential development, which would result in a significantly higher fee. Street assessments for development are based on a Regional Transportation Commission fee of \$0.50 per rentable square foot (RSF) on industrial and office properties and a fee of \$500 per residential development unit (RDU) for residential development.

Portland water related fees are based on estimates provided by the City of Portland Development Services Center for commercial properties, and single-family home development. Portland sanitary service rates are defined in title 17.36.020 of municipal code as Sanitary Systems Development Charges. These sewer impact fees are calculated using Equivalent Dwelling Unit (EDU) based on the current charge of \$2,139/EDU. The municipal code and the Bureau of Environmental Services define dwelling unit equivalencies for commercial and industrial buildings to be used as multipliers. The fees for street impacts of development in Portland are assessed using City of Portland Office of Transportation System Development Charge rate tables valid through June 30, 2002. Residential rates for single-family units are \$1,491 per unit, and commercial rates are based on building size, purpose and are calculated on gross floor area (GFA) for the three commercial properties notionally represented in the impact fee model.

A review of the case study impact fee models indicates a logical nexus for sewer and water fees. The data appears to have a direct and proportional relationship to expected water use, and seems equitable. The impact charges for streets appear to be skewed. Significantly higher fees are levied against the industrial and office property developer in relation to streets. Table 5-1 provides a summary of the total impact fees (TIF) for commercial and residential developers in both case study locations.

**Table 5-1, Portland, OR and Las Vegas, NV
Total Impact Fees for Water, Sewer and Streets**

Type Nexus	Industrial, Office TIF	Residential TIF	Houses on Equivalent Land
Portland, Oregon			
Flex Office	\$213,311	\$105,877	14.7
2-Story Office	\$347,641	\$171,997	23.9
Warehouse	\$175,649	\$203,680	28.3
Residential SF		\$7,201	1.0
Las Vegas, Nevada			
Flex Office	\$69,707	\$77,044	14.7
2-Story Office	\$113,239	\$125,158	23.9
Warehouse	\$134,099	\$148,213	28.3
Residential SF		\$5,210	1.0

The comparison is based on developing the same land area, as previously described. Taking the “flex office” as an example, the commercial developer would be assessed \$213,311 in fees, while the residential developer of the same land area, 173,100 sq ft, would be assessed \$105,877 in fees based on building 14.7 single-family residences on the same size plot of land.

Comparison of the fees in the two case study locations shows developers fees are higher in Portland. This occurs even though the Portland Bureau of Environmental Services charges a lower overall fee for Sanitary Services, and water connection fees are also lower. The higher total cost is due to the significantly higher impact fees for streets. The Portland Office of Transportation imposes a much higher rate per square foot than Las Vegas, and also calculates the fee using Gross Floor Area.

A comparison of fees assessed for residential and commercial developers shows higher fees are levied against commercial developers in both communities. The difference in Portland is again driven mainly by transportation assessments. The difference for developing the 6.4 acre (281,200 sq ft) land area used in the study provides the greatest contrast. Assuming an 11,773 sq ft use per residence, this plot would be suitable for 23.9 single family houses. The residential developer of this land pays roughly half of the fees levied upon the commercial developer.

Although the data used in this study indicates commercial developers are assessed higher transportation related fees than residential developers in both case study communities, the financial models in this study do not provide sufficient evidence of biased fee structures. Since the differences in fees are largely based on transportation costs, comparable, sound traffic impact studies would be needed for both case study locations, along with a significant amount of valid historical data before such a conclusion could be drawn from the financial model alone. Furthermore, without assessing both actual costs and profit margins, no clear case can be made in regard to fairness. Therefore, the financial models are more valuable as a point of reference for discussion of the value of an automated capability to calculate and store fees and their bases, and the problems associated with creating, fielding and maintaining such capabilities.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The financing of regional infrastructure continues to evolve as two conflicting trends emerge simultaneously across the nation, namely to increase local authority while at the same time restricting it. Much of the restriction is coming in the area of finance, where states are allowing an increase in the authority to charge fees, while at the same time instituting greater restrictions on such financing mechanisms as tax-exempt bond ceilings. These two trends have led jurisdictions to seek alternative financing methods, many of which are inappropriate from a policy perspective.

The most important consequence of this dilemma is the rapid increase in the use of impact fees. It is a generally accepted principle that property owners and developers should bear the full costs of property development and that local communities should not have to subsidize property development. Appropriately designed impact fees systems are one way accomplish this goal. However, impact fees systems are now often motivated more by political considerations than by issues of equity. For example, there are over 20 statutorily identifiable categories of facilities and activities that can be financed through impact fees on new development.^{lxiv} Most reflect political goals rather than new development impact. This misuse of impact fees creates substantial efficiency, equity and economic neutrality issues. A major reason for misuse of impact fees is the political cover that they can provide for local politicians. For example, politicians can argue that the new charges are not taxes, but fees. Also many politicians cloak impact fees in the guise of “smart growth” and “growth management” arguments.

The financing of technical systems infrastructure involves a combination of user charges, benefit assessment methods and federal and state subsidies. Table 6-1 summarizes some of the advantages and disadvantages of the various financing sources. Infrastructure financing sources vary substantially by state; the following apply to many jurisdictions.

Wet Utilities

Wet Utilities infrastructure is largely funded through SRFs, and local sales tax option-backed bonds. Currently, federal mandates for safe drinking water and pollution control cannot be met adequately through federal grant applications. In addition to federal grants, the preferred methods of funding off-site infrastructure are user fees, municipal bonds backed by local sales option taxes, and/or privatization. Unlike transportation services, wet utilities are more easily adaptable to use-based financing mechanisms. Various methods of measurement are discussed in the report. Preferable are those methods utilizing simple cost-effective metering methods.

^{lxiv} James Duncan & Associates, 2000.

Table 6-1, Sources of Infrastructure Financing

Financing Source	Repayment By	Advantages	Disadvantages
Taxes (pay as you go)	All taxpayers immediately	Preserves borrowing capacity; saves interest cost	Funds may be insufficient; may not relate payment to benefits received
General obligation (G.O.) Bonds - Limited or Unlimited Tax	All taxpayers over 1-30 years	Makes funds available immediately; ties payment to benefits received; potentially lowers interest costs	Increase taxes; competes with other local services for limited resources; separates payment from benefit
Revenue Bonds (or "rate-supported" bonds)	Rate payers over 1-30 years	Makes funds available immediately; ties payment to benefits received	Increases rates or fees; interest costs potentially higher than GO bonds
Tax increment Financing Bond	Taxpayers within subarea of jurisdiction	Ties payment to benefit received within subarea	Revenues dependent on growth in assessed value within subarea
User Charges	Rate payers immediately	Eliminates need for borrowing or reserves	Impractical for large projects; may make rates erratic from year to year
Special Assessments and Special Districts	Customers assessed at time of construction; if bonded, over 10-30 years	Makes funds available immediately; matches payment and benefit	Requires legislative approval; may seriously affect assessed customers
Negotiated Exactions or Impact Fees	Developers or customers immediately	Requires new customers to pay for impacts they place on system	Political problems (viewed as "anti-development"; ineffective where there is little or no growth; affects housing affordability)

Sources: S. G. Robinson et al., *Building Together: Investing in Community Infrastructure* (Washington, D. C. Government Finance Officers Association, 1990); and R. W. Burchell et al. (*Development Impact Assessment Handbook*, Washington, D.C.: Urban Land Institute, 1994).

Transportation Systems

Transportation systems are currently highly dependent on federal and state funding raised by gasoline and vehicle taxes and fees. Local transportation infrastructure is under-financed, largely because the original tax and fee mechanisms have not been indexed to reflect changes in economic conditions and the advancements in automobile technology. Various innovative methods have been proposed to finance transportation infrastructure. Some of the more promising methods are the expansion of value pricing, tolls, and pay-as-you-go-insurance.

Single-purpose Structures

The vast majority of “regionalized” providers of infrastructure are (1) single-purpose providers (e.g., water districts); and (2) those serving less than three jurisdictions. Because of this narrowness of focus, most “regionalized” financing methods take the form of either user fees for regionally operated services such as parks or water districts, or regional subsidies

such as federal highway funds, EPA grants, or local option sales taxes. The current financing of these infrastructure delivery systems provide minimal information regarding future infrastructure financing. They do inform us that single-purpose structures, although prevalent, are not, in reality “regional” in operation.

Improvements to Infrastructure Financing

User fees that are optimally priced should be encouraged, as they tend to support the economic notions of efficiency, equity, and economic neutrality previously discussed. Most observers concur that a major cause of the negative externalities of automobile use in the United States is the underpricing of transportation infrastructure. Corrections in the pricing of transportation system use would substantially reduce the demand for transportation infrastructure. The current systems miss-pricing has contributed to increased use of impact fees and federal and state subsidies, particularly the use of local option sales taxes.

Benefit-Capture Methods

Despite all of its apparent negatives, a well designed, broadly based, property tax system with an ample homestead exemption (to protect the poor against growth in assessed value in times of high inflation) meets most of the evaluation criteria identified in this report. Specifically:

- ***Equitable distribution of tax burdens:*** By definition, broad-based property taxes distribute tax burdens in proportion to the ability to pay as measured by wealth (though not by consumption or income). They are typically not as regressive as state sales taxes.^{lxv}
- ***Easily Administered:*** Most property tax systems are impossible to avoid and property taxes are considered easy to collect compared to their alternatives.^{lxvi}
- ***Minimal economic distortion:*** Although all taxes cause some form of economic distortion, because of property tax’s large base and minimal rates it typically has minimal economic distortion, compared to impact fees and other taxes.^{lxvii}
- ***Accountability:*** Unlike most other taxes, the level of government that spends the revenues received also has responsibility in collecting the revenues.^{lxviii}

^{lxv} See, for example, R. J. Hy and W. L. Waugh, eds. *State and Local Tax Policies* (Greenwood Press 1995); National Governor’s Association, *Financing State Government in the 1990s*, (1993); Rhode Island Public Expenditure Council, *Modernizing the Property Tax: An Issue of Fairness* (1995).

^{lxvi} *Ibid.*

^{lxvii} *Ibid.*

^{lxviii} *Ibid.*

- **Stability:** Property tax revenues are generally consistent despite wide fluctuations in economic conditions. Unlike sales taxes and impact fees, they are not subject to wide variations resulting from business cycles and can be accurately known prior to collection.^{lxix}

Many organizations that oppose the property tax offer alternatives that result in greater problems. Most importantly, they tend to lean on methods of raising revenue that create other problems such as impact fees.

Impact fees are an increasingly common tool that municipalities around the country use to pay for new schools, sewers, roads, parks, and other public facilities. In many areas of the nation impact fees have increased repeatedly and exponentially. Many developers support reasonable impact fees since financial obligations can be quantified at the outset of a project; however, many question the equity of the impact fee system in terms of only “paying their fair share.”

Benefit-capture mechanisms such as TIFs and special districts have grown substantially in recent years. Although they represent an improvement over impact fees, a proliferation of special districts may result in long-term political and financial problems for jurisdictions should property-owners begin to default. Additionally, special districts can complicate the “marketability” of property.

Subsidies

Any infrastructure provision program that relies on subsidies should be regarded with at least some skepticism. Such programs need to be carefully designed. For example, when the federal government was heavily subsidizing the construction of rail transit, planners in Houston conducted studies that substantially overestimated land densities in Houston. The result was that Houston obtained an extremely inefficient transit system.

To be effective federal subsidies should be available to all on an equal basis. Rather than having regions compete for subsidies, we recommend the following changes to the federal system of infrastructure subsidies:

Mandated Infrastructure Facility Bonds: The federal government continues to impose increasing responsibilities on states and municipalities without providing adequate corresponding funds to meet these mandates. Complicating these requirements are federal limits on the issuance of tax-exempt municipal bonds. Congress should adopt a new category of tax-exempt bonds, specifically to fund mandated infrastructure called Mandatory Infrastructure Facility bonds. This category of bonds would be used to finance mandated infrastructure facilities. The MIF bonds should not be subject to complex arbitrage requirements, statewide volume caps, and limitations on advance refunding. This type of dedicated bond has

^{lxix} *Ibid.*

substantive use internationally and is supported by various governmental organizations.

The following two subsections present findings and conclusions that resulted from the research presented herein. The first subsection does so by providing the answers to the questions first posed in the objectives section of this document. The second subsection presents policy conclusions related to regional infrastructure development.

6.1 FINDINGS

6.1.1 What Is The Rationale For Regional Infrastructure Planning?

The specific rationale for regional infrastructure planning is generally predicated within technocratic arguments of effectiveness or efficiency. Additionally, environmental concerns, particularly air and water quality are also prime tenets for supporting regional infrastructure planning. For some, it is an external federal and/or state mandate; for others, it may be the result of unique regional needs. Nevertheless, there are several conditions that are consistently suggested by regional planning proponents. These are (1) the alleged failure of localized land use planning models; (2) federal and state funding mandates; (3) environmental protection; and, (4) the reduction of infrastructure operations and maintenance expense.^{lxx}

The alleged failure of localized land use planning models: Ever since the United States Supreme Court decided the landmark case of *Euclid v. Ambler Realty Co.*, in which the Court upheld a local comprehensive planning ordinance in the face of due process, takings and equal protection claims, federal authorities have recognized that land use planning was a localized concern. This view was further entrenched when the U.S. Department of Commerce released the Standard Zoning Enabling Act, which a majority of state's used to create their own legislation to delegate state zoning authority to local municipalities.

The notion that municipalities were isolated land use planning and enforcement entities ultimately resulted in the rise of American urban centers fragmented by localized economic self-interests. Specifically, detractors have suggested that localized self-interest too often fails to adequately address the "regional infrastructure needs" of today's modern regional community. Detractors most often point to such externalities as air pollution and water pollution as the direct result of inadequate regional planning.^{lxxi}

^{lxx} See Charles Schmidt, "The Specter of Sprawl", *Environmental Health Perspective* 106, no. 6 (June 1998): A27479; Peter Katz editor, *The New Urbanism: Toward an Architecture of Community* (New York: McGraw-Hill, 1994); Peter Calthorpe, *The Next American Metropolis: Ecology, Community and the American Dream* (New York: Princeton, 1993); Peter Hall, *Cities in Civilization* (New York: Pantheon Books, 1998).

^{lxxi} *Ibid*

The detractors of the localized land-use planning model argue that only through regional planning efforts for such regional activities as transportation and water provision can regions properly address the needs of the community.^{lxxii} Given a variety of federal and state environmental and “smart growth” initiatives over the last two decades, the federal government and several states have begun to re-examine the delegation of land use planning to local municipalities. For example, the General Accounting Office (GAO) recently examined the federal government’s role in a 2000 report entitled “Community Development: Local Growth Issues—Federal Opportunities and Challenges (hereafter referred to as the GAO-Growth Issues Report”).

In addition, several public interest and environmental organizations, such as the American Planning Association (APA) and the Sierra Club, have asserted that without integrated regional land use plans that address regional infrastructure regions are subject to the negative externalities inherent in localized planning that include air and water pollution, excessive infrastructure costs and geographically-based social inequities. These organizations argue that current methods of planning are ineffective, inefficient and inequitable. Moreover, their arguments contend that regional infrastructure planning could avoid many of the negative environmental and economic consequences inherent in localized planning activities.

Federal and state environmental and funding mandates: Federal and state legislation often mandate that urbanized areas perform infrastructure regional planning. For example, most federal grant monies for transportation, sewer and water infrastructure is conditioned upon urbanized areas performing some form of regional planning. The oldest and most pervasive of these mandates can be found in federal transportation funding. For example, the release of federal highway funds to states has long been conditioned on state compliance with federally mandated regional transportation planning initiatives. Federal legislation specifically requires that states designate a metropolitan planning organization (MPO) for each urbanized area with a population of 50,000 or greater to conduct regional transportation planning activities.

The \$217 billion Transportation Equity Act for the 21st Century (TEA-21) requires that the selection of transportation projects involving federal participation must be in conformance with the metropolitan transportation improvement plan (TIP) for that area, but shall be carried out “by the State in cooperation with” the MPO. This provision vests the state with the authority to actually select which projects will be implemented. On the environmental side, TEA-21, in concert with the Clean Air Act requires a regional program for improving air quality in metropolitan areas through local, state, and federal coordination in transportation infrastructure planning. These requirements include mandates that metropolitan transportation plans are in conformity with state implementation plans (SIPs).

States also may require sub-state regions to conduct regional planning initiatives. Ten states prepare comprehensive state water plans that focus on regional water needs. For example, the Texas water plan is divided into 16 distinct regions. The purpose of the regional plans includes the management, protection and improvement of the state’s water resources.

^{lxxii} *Ibid*

Environmental protection: The protection of natural resources such as air and water quality is often at the forefront of arguments for regional infrastructure planning. There is a presumption that regional planning of infrastructure would reduce negative impacts on the environment created by the limitations inherent in localized planning schemes. However the empirical evidence in the literature to support this assertion is at best mixed.^{lxxiii} Our cases studies suggest, however that, at least in the case of the Minneapolis-St. Paul region, regional planning for sewer treatment substantially improved the region’s surface water quality which had become polluted due to inadequate regional treatment facilities.

Reduction in capital, operations and maintenance expense: Much of the regional planning literature argues that low-density regional land development is costly and inefficient. Studies have consistently found that the capital costs for providing linear infrastructure (e.g., water and sewer) are more expensive in low-density development. More recently, studies of ten Cleveland and Chicago wastewater collection systems also suggest that operations and maintenance expense of conveyance systems is also affected by low-density development. Using this cross-sectional data, advocates for regional planning suggest that regional planning could reduce these costs by promoting denser development patterns.

In summary, the rationale for regional infrastructure planning varies by infrastructure system. Nevertheless, ultimately the rationale for regional infrastructure planning is largely economic. Critical for many regions are federal funds conditioned on regional planning of transportation. Without adequate planning of individualized transportation infrastructure such as interstate highways, costs would substantially escalate and become prohibitive. Regional planning for other non-transportation systems tends to be region specific. For example, arid regions are more likely to regionally plan water provision, while temperate regions are not.

6.1.2 Which Infrastructure Systems Are Most Appropriately Planned For On A Regional Basis?

To assess infrastructure most appropriate planned on a regional basis, the research considered the legal, economic and technical implications of local and regional planning forms on the four case study regions as well as the scholarly literature on the subject. The literature suggests, and our case studies confirm, that there are benefits to the regional planning of technical systems. These benefits include reduction in life cycle costs and improved system quality. However, the extent of the benefits is highly dependent on the service provided, the size of the area served, and the unique climate and geology of the region. In particular, transportation systems, potable water provision and sewerage treatment and distribution have physical attributes that tend to make them subject to favorable economies of scale and therefore candidates for regional planning activities.

^{lxxiii} For comprehensive summaries of the literature, see Charles Lave, editor, *Urban Transit: The Challenge to Public Transportation* (San Francisco: Pacific Institute for Public Policy Research, 1985); Don Pickrell in “Transportation and Land Use,” in Gomez-Ibanez, Tye and Winston and Gomez-Ibanez, Tye and Winston generally.

- **Transportation systems:** Transportation infrastructure is the infrastructure system most logically planned on a regional basis. First of all, federal legislation effectively mandates regional transportation infrastructure system planning notwithstanding any economic or technical considerations. Secondly, transportation infrastructure is “integrated” in the region by the fact that it provides access to other transportation systems. Mobility is not necessarily localized. Moreover, transportation systems have economies of scale that are substantially larger than that of other systems.
- **Wet utilities:** Typically, wet utilities such as potable water treatment and distribution, sewerage treatment and distribution and flood control also have certain legal, technical and economic attributes that suggest in certain instances that they should be planned on a regional basis. Although not to the extent of transportation, the planning of regional infrastructure is often mandated by condition of a specific federal grant and/or federal or state environmental statute. In at least ten states, water provision must be planned on a statewide or regional basis.

In certain circumstances, regional planning is an economic and technical necessity in certain arid regions. For example, certain arid southwestern regions, such as Los Angeles, must import potable water from great distances. The acquisition and storage costs of the region’s potable water may technically and/or economically require regional planning. Conversely, in temperate northern regions, such as Minneapolis-St. Paul, with ample high quality ground and surface water, regional planning of potable water provision may prove costly and unnecessary. External costs and impacts vary according to how a system is organized. In many areas stormwater and treated sewage is not reused and flows directly into rivers and oceans. The impact of water use on other people and the environment in these systems is very different to those where water is reused.

However, the technical and economic arguments for the regional planning of either water provision and other wet utilities in the 40 states not covered by state statute are largely determined by regional variations in population size, treatment and disposal technologies and methods, and climate and/or geography. Regional planning of each wet utility would need to be evaluated on a case-by-case basis.

It is important to remember that developers as well as government employees conduct regional planning. For example, throughout the nation developers have proven that they can create large-scale “master-planned communities”. Robert Nelson and others have proposed that land markets (developed and undeveloped land) be free while government planners focusing on only infrastructure planning.^{lxxiv} In so doing, government planners would establish the preconditions for land markets, thereby providing increased certainty. Under this scenario government planners would focus only on trunk-line infrastructure plans and establish technical service standards. Developers would do the remaining planning, effectively liberalizing land markets through an optimization of labor.

^{lxxiv} Nelson, Robert H., *Zoning and Property Rights: An Analysis of the American System of Land-Use Regulation*, Cambridge: MIT Press (1980); Holcombe, Randall and Sam Staley, eds., *Market Strategies for Land Use Planning for the 21st Century*, Westport, Conn.: Greenwood Press (2001)

In summary, advocates of regional planning initiatives most often point to the economic benefits of planning and implementing technical systems on a region-wide basis. Nevertheless, these economies of scale vary by the service provided and the geography and climate of the region being served. Systems that are scientific in nature (technical systems) and that benefit from economies of scale are generally best planned on a regional basis. These systems include transportation and wet utilities. Wet utilities such as potable water, sewerage, and flood control are sometimes appropriately planned on a regional basis.

6.1.3 Which Infrastructure Systems Are Most Appropriately Financed On A Regional Basis?

Local capital investments in infrastructure require diverse source of funding: federal and state grants, revenues from local budgets, contributions from future and present users, private capital in the form of loans and other arrangements. The financing method selected is highly dependent on individual state tax systems, local and state bonding authority, and other localized considerations. Moreover, the empirical data on regional financing of infrastructure is limited for several reasons including: (1) the scarcity of regional authorities with revenue generation authority beyond user charges and development impact fees; and (2) the vast differences in state, regional and local financial reporting mechanisms.

Federal and state grants are generally required to finance infrastructure projects with significant capital requirements. Additionally, the wider the community indirectly benefiting from the infrastructure development, the more the likely it will be financed at a federal or state level. Nevertheless, the tenets of equity hold that those who benefit from the investment should finance those infrastructure projects that substantially benefit regions.

Due to their substantive capital requirements, many infrastructure projects of a regional nature are initially financed by some combination of user charges, loans and federal or state grant. For example, state revolving funds (SRFs) are often used in combination with user charges for financing wet utilities treatment facilities. State revolving funds produce accumulated capital for financing regional projects by claiming repayment under favorable conditions. Usually these funds supplement state and federal grant schemes as they influence the technical character of regional infrastructure projects. Serious arguments are made against these arrangements because they have an impact on local government development behavior. They usually operate in a grant-giving regional fiscal environment, so a grant-seeking attitude dominates their capital investments. In cooperation with service providers they are motivated to propose large projects with the aim of acquiring large grants.

Self-generated revenues such as user charges and benefit assessment taxes are critical elements for financing infrastructure systems. In principle these revenues provide the balance between benefits received from the capital investment and the costs of the capital investment. In practice, most user charges fail to address the capital needs of the provider. Local taxes on benefiting property in the form of special districts are also commonly used to raise capital for infrastructure.

There are several arguments against betterment levies (taxes) and special districts as the main source of infrastructure finance. Most importantly, the earmarking of regional or local government funds threatens the unity of local and regional budgets. The danger occurs when almost all funds are earmarked as in Nevada, leading to inflexibility and over-investment in certain service areas. Without control over sector spending and/or the lack of sunset legislation, fragmented revenues and expenditures can endanger the balance of local budgets.

Private funding of regional infrastructure through infrastructure development fees, other development exactions and dedications, and public-private partnerships is becoming the funding source of choice for many developing communities. This is the result of several factors to include government liquidity issues, political acceptability and government leverage.

The amount of infrastructure funding also plays an important factor in determining how to finance infrastructure. The regional variation in infrastructure spending can be seen in a comparison of the regional infrastructure spending as a percentage of personal income. For example, according to data from the National Association of State Budget Officers and the Bureau of Economic Analysis, the South Atlantic states of Florida, Georgia, South Carolina, North Carolina, Virginia, West Virginia, Maryland, and Delaware spent over twice as much (1.3% of personal income) as that of the Pacific states (California, Washington, Oregon, Hawaii, and Alaska) (0.64%) did in the 1990s.

Therefore, in summary, determining which infrastructure systems are most appropriately financed on a regional basis requires an examination of the region's financial needs, federal and state support structures, legal constraints, political imperatives, the region's ability to finance infrastructure, and the region's ability to determine those benefiting from the cost of capital infrastructure.

The arguments in support of regionally financing transportation system infrastructure remain the most convincing. It benefits from the highest economies of scale, its benefits are often difficult to measure, and it benefits a wider community than does water provision or other wet utilities and is more highly subsidized and coordinated at the federal level than other infrastructure. Conversely, with the notable exception of wet utilizes in the arid southwest, with the exception of water treatment, wet utilities typically do not have the economies of scale requirements of transportation. Moreover, the physical characteristics of wet utilities are easily measurable through metering.

6.1.4 Which Infrastructure Systems Are Most Essential To Address In Order To Achieve Growth Management Objectives?

Growth management objectives vary significantly by region reflecting a variety of historical, geophysical, political and economic phenomena. However, there are certain growth management objectives that have appeared in many communities under the heading of "smart growth." According to the Urban Land Institute, "smart growth" is growth that is economically sound, environmentally friendly and supportive of community livability—growth that enhances our quality of life. Implicitly "smart growth" involves an

optimization of some form. The quantity to be optimized depends on the specific regions objectives and the perspective of the individual viewing the objective. For example, in evaluating a new transportation corridor, the regional transportation planner may seek to minimize traffic congestion while the property developer may seek to optimize the net present value of her investment.

Measures commonly used to quantify the success or failure of “smart growth” objectives include increasing population densities, decreased air and water pollution (or increased compliance with federal and/or state environmental standards), reduced traffic congestion and improved jobs/housing ratios. Although national standards have been suggested for all of these objectives, they should be adapted to regional conditions. For example, the Minneapolis-St. Paul region appears to have poor population densities when measured by such indicators as dwelling units per square mile. This is due, in part, to the region’s vast array of wetlands.

The three major objectives of “smart growth” include: (1) environmental protection; (2) economic vitality; and (3) quality of life. These objectives implicate the following infrastructure requirements as essential to growth management.

- **Transportation:** Transportation systems are the major catalyzing agent for regional structures because it is necessarily interjurisdictional and requires funding that typically no single political jurisdiction could provide. Transportation systems (roads, highways, signalization and mass transit) are essential to virtually every state and regional growth management set of objectives for a multitude of reasons. First, transportation systems are implicated in most if not all environmental protection objectives. Mobile sources (e.g., automobiles and trucks) are the largest contributors to air pollution in most communities. Additionally, they are often also the largest contributors to water pollution.
- **Potable Water:** The provision of potable water is often implicated by growth management objectives. The quality and/or quantity may be essential depending on the regions’ climate and geology.
- **Sewerage and Wastewater:** Like potable water, sewerage and wastewater treatment are most often implicated by growth management objectives. Moreover, the construction of wastewater treatment facilities and services are the major driver of population growth in many regions.
- **Flood Control and Drainage:** Although not as essential as either sewerage or potable water in many areas, flood control and drainage are typically essential to regions subject to extremes in rainfall.
- **Education:** It is impossible to have sustained economic vitality without adequate educational infrastructure from K-12 to post-secondary facilities. Discussions of educational infrastructure needs are beyond the scope of this report, however, it

important to emphasize its importance in meeting the growth management objectives concerning quality of life and economic vitality.

In summary, transportation systems are essential to meeting the growth management objectives of every region. Although wet utility systems are slightly less important and may not be essential in every region, they are implicated in most regions in the United States.

6.1.5 Which Infrastructure Systems Are Most Dependent On Either State Or Federal Funding?

Transportation, wet utilities and education are the three infrastructure systems most dependent on state and federal funding. Educational infrastructure is beyond the scope of this report and is not covered. Additionally, the impact of state funding is highly dependent on the individual state's tax and legal structure. Therefore, this report focused on the federal aspects of infrastructure funding.

- **Transportation:** Roads, highways, and mass transit systems have long been dependent on federal subsidies. The federal government began to provide substantial transportation funds to states with the Highway Act of 1916. The Act essentially subsidized state highway building by providing small amounts of federal funding to projects that had already been planned by the states. This changed dramatically in 1956 with the construction of the national highway system when the federal government assumed responsibility of 90% of the cost of construction of the interstate highway system. Decisions on how to spend these federal funds were largely left to state governments. This policy changed in 1991 when the Intermodal Surface Transportation Efficiency Act (ISTEA) established how federal funds were to be spent.

ISTEA required transportation projects to meet numerous environmental, economic, and social standards prior to funding. The Transportation Equity Act for the 21st Century (TEA-21) replaced ISTEA in 1997. TEA-21 authorized \$217 billion in transportation spending for the period of 1997-2003, making TEA-21 the largest public works program ever passed by Congress. Perhaps, most importantly, highway and transit programs are now guaranteed a minimum amount of funding for the first time. This is significant because ISTEA was never funded to its full extent. Under ISTEA and previous legislation, highway funds were taken from the Highway Trust Fund (HTF), which collected receipt from gasoline taxes. However, prior to TEA-21, transportation spending was not tied to HTF receipts so certain projects remained under-funded.

- **Wet Utilities:** Financing of wet utilities infrastructure includes sources such as property taxes, user fees, borrowing, development impact fees, and special assessments. Also many systems have been financed in part by federal grants. The infrastructure funds in the EPA budget for FY2002 includes \$2.1 billion in grants to states for water infrastructure, including \$850 million in the clean water SRF, \$823 million in the drinking water SRF and \$450 million for a new program to address

infrastructure needs related to combined sewer overflows. States manage the disbursement of these funds to sub-state organizations. When these grants are conditional, they may distort local decision-making because they provide financial assistance not available for other services.

In summary, if user charges and property taxes are considered as regional financing structures, technical systems are generally financed on a level greater than that of the local community (e.g., regional or state). The financing of transportation, water and wastewater systems, generally, includes substantial federal and state matching funds.

6.1.6 What Alternatives Are Available For Financing Infrastructure Systems That Are Most Appropriately Planned And Financed On A Regional Basis?

Financing alternatives vary considerably by state. There are numerous methods in current use today. An overview of the more important and innovative options has been presented herein in Sections 3 and 4. Financing structures are highly state specific—what may be appropriate in one state may not be legal in another. The following funding considerations are generally applicable on a regional basis, however, it is generally thought that appropriately designed user fees are the preferred method for funding regional infrastructure system since they most appropriately address marginal costs.

- **Subsidies:** Federal highway funds that are matched by the region and/or state funds are a mainstay of transportation system infrastructure financing. Additionally, local option sales taxes have become a major source of transportation infrastructure dollars in many regions. As discussed earlier, grants and other subsidies are not a preferred method of financing technical systems. In particular, over the long-term water and wastewater utilities should become self-sufficient. Wet utilities should be financially supported through the rates they charge customers.

Federal financial assistance is appropriate only when customers cannot afford the rates required to cover capital and operations and maintenance costs. In these cases where federal assistance is needed, federal subsidies should exist only so that customers pay as much of the full cost as they can absorb. The current subsidization process of capital by impact fees and taxes is wasteful and inefficient. Grants should be used sparingly to avoid wide scale dependence on government capital subsidies. Nevertheless, because of the size of the capital investment required to meet federal environmental standards, the federal government may need to assist states in compliance in the short-run through expansion of the existing State Revolving Fund programs.

- **User Charges:** It is appropriate to charge users directly for water and sewer services because they possess attributes of a private good and pricing these services at marginal cost is in the best interest of society and is the most equitable method. Marginal costing utilizing a two-part rate structure is the preferred method of pricing water and sewer services. The two-part tariff combines a fixed monthly charge designed to cover administrative, capital and maintenance costs, with a volumetric

charge applied to all consumption. Specific individualized connection fees should be ascertained on a case-by-case basis. Charges in the two-part tariff rate structure provide an opportunity to set efficient prices based on a volumetric charge that approximates marginal cost.

- ***Benefit Capture Methods:*** Transportation systems also should use user-pricing mechanisms wherever practical. However, transportation systems can also employ benefit capture mechanisms such as property taxes. Property taxes are generally viewed as equitable, efficient, stable, and easy to administer and understand. Special assessment districts are also commonly used to fund public infrastructure such as roads and utilities.

In addition to the three major methods identified above, there are other innovative methods that deserve examination on a case-by-case basis. These include privatization and private-public partnerships.

6.1.7 Which Of These Financing Mechanisms Is The Most Equitable?

Equity or fairness is most often defined in two ways: benefits received or ability-to-pay. Under the benefits-received principle, the distribution of taxes, user charges or development impact fees should correspond to the distribution of benefits. In certain cases, this relationship can be achieved through effective user fees that function as market prices in the private markets. In other cases, a benefit capture method such as a property tax may adequately secure this linkage.

The benefits received principle cannot always be applied. For example, it is difficult to apply where the beneficiaries cannot be identified and non-users cannot be excluded or where the service is largely a collective. In these situations, the ability-to-pay principle should be applied. Under this principle, taxes are fair if their burden is distributed in accordance with the ability of taxpayers to pay.

Infrastructure may be financed from a variety of sources, including own-source revenues, reserves, debt, development charges and special assessments. Each method may or may not be equitable for a specific population. Consideration must be given to the collective approach being taken to finance infrastructure within each region before determining whether a specific mechanism is equitable. Most importantly, even those mechanisms that are inherently fairer than others can become inequitable if improperly designed and/or implemented.

- ***User Charges:*** In most cases, user charges based on marginal costs represent the most equitable form of financing infrastructure. For example, user charges from wet utilities and transit tolls are used for funding both operating and capital expenditures. These rates can be developed to cover infrastructure capital costs of water and sewer systems. Paying for infrastructure from direct water and sewage billings is preferable to using property tax because there is a relationship between use and payment.

- **Property Taxes:** Well-designed property tax systems can also be equitable. The property tax is the main source of revenue for municipalities in the United States, although it is not used much for wet utilities facilities, except in limited regions, for drainage. It is levied on residential, commercial and industrial properties. Typically, the base of the property tax is the assessed value of the real property. The property tax rate is applied to the assessed value of the property to determine the taxes due. The amount levied for property taxes is not related to the use of transportation or wet utilizes. Because property values are not necessarily related to transportation and/or wet utilities except for fire suppression. Property taxes are primarily used for municipal operating expenses or financing the debt costs of capital expenditures. Property taxes are most appropriate for funding operating expenses since capital projects largely benefit future generations.

Local improvement charges or special assessments are charges on property to pay for additional improvements in facilities, such as construction of sidewalks that specifically benefit those properties. The charges are typically based on such measures as size of lot or frontage. The advantage of using this “benefit capture” method of apportioning costs is that it reflects the benefits received by the respective property owners. However, it is often difficult to isolate the impact of specific infrastructure from other influences on property values.

- **Development Impact Fees:** In theory, development impact fees are levied for the construction of infrastructure necessary for development. These growth-related costs have traditionally included both “off-site” hard costs such as roads, signalization, water and sewerage systems and soft costs such as libraries, recreational facilities and schools. The rationale for charging developers for off-site growth related costs is that “growth should pay for itself” and not be a burden on existing taxpayers. Development impact fees have the potential to be efficient if they are charges on development-by-development basis. However, if development impact fees are based on average costs, the results will be to under-price them in certain locations, while over-pricing them in others. For example, to be efficient developments located close to existing services should pay less than those further away

At their best, development impact fees can promote efficient land use decisions by eliminating cross subsidization that arises because of public funding on municipal services and infrastructure. However, if poorly designed, development impact fees can retard economic growth and distort land use decisions so that property will be developed in ways that reduce the long term well being of the region as a whole. The most important principle is that development impact fees be based on marginal costs associated with providing the infrastructure that new development demands. This is rarely done in a direct method. For example, in the Las Vegas region, regional transportation impact fees are based on flat county rate, currently established at 0.50 dollars per square foot for commercial development and 500 dollars per dwelling unit for residential development. However, most large development projects also include conditions for additional transportation infrastructure. This practice can further distort land use decisions.

Most fiscal impact studies done throughout the United States have concluded that commercial development is substantially more likely to pay its own way than is residential. Therefore, to be equitable, development impact fees would most likely be set at a lower rate than for industrial and office property than for residential development. Nevertheless, most development impact fees have higher rates for industrial and office property development than for residential development. These facts appear to substantiate economist William Fischel suggestion that owners of undeveloped land are particularly prone to excessive exactions on the part of local governments for two reasons. Such landowners (1) lack the ability to move their property to another jurisdiction and (2) are unlikely, because of the make-up of local governments to have a fair “voice” in the political process^{lxxv}

One of the differences between the levying development impact fees and property taxes (debt) relates to who borrows the money. In the case of the property tax, the jurisdiction borrows the funds; in the case of the fee, the developer and subsequent property owners borrow the funds. In most cases and within debt restrictions, the municipality can borrow funds more cheaply than the developer.

6.1.8 Does Regional Planning Of Infrastructure Necessitate Regional Governance?

Regional planning of infrastructure typically necessitates regional cooperation but not regional governance “structures”. Many American communities have had regional forms of cooperation for over fifty years. Few have formal regional governance structures. Most urban areas have been extremely successful in accomplishing regional governance through minimally intrusive devices such as inter-local agreements.

Federal transportation funding of roads and mass transit mandates that every large metropolitan area have a metropolitan planning organization that undertakes transportation planning. This mandate does not, however, translate into a broad commitment to regional land-use planning. Most localities have resisted regional planning in land use beyond transportation.

Many regions that have single purpose regional infrastructure bodies for water, wastewater and flood control often plan and implement regionally, but do not possess a traditional form of regional governance beyond that either devolved by the state or created by the regions’ local jurisdictions. These single purpose structures have generally worked well because they provide goods that are more private than public in nature.

^{lxxv} Fischel, William, “What do Economists Know About Growth Controls? A Research Review” in *Understanding Growth Management: Critical Issues and Research Agenda*, ed., David L.J. Brower, David A. Godschalk and Douglas R. Porter. Washington D.C.: The Urban Land Institute (1989).

6.1.9 Does The Provision Of Regional Infrastructure Necessitate Regional Financing Mechanisms?

Although regional infrastructure provision does not necessitate regional financing, most regions already finance regional infrastructure partially through the regional financing methods. For example, of the 27 most populous regions within the United States, nine regions have a general regional tax for a bundle of services and 18 assign specific taxes to specific functions.^{lxxvi} However, only two regions (Minneapolis-St. Paul and Dayton, Ohio) have tax-sharing arrangements that involve the sharing of property tax revenues in a manner designed to reduce fiscal inequities that are the result of uneven patterns of public investment.

The most common form of regional finance involves the cross border sharing and delivery of services. Virtually every large region in the United States, except Houston, shares services over an area larger than the legal boundary of the central city. The most common of which is transportation.

Transportation, water, wastewater treatment and large civic recreational centers are the most likely entities to enjoy regional financial structures because most citizens perceive them as a necessity or benefit they can enjoy, with little threat of loss due to lack of competition. But beyond these goods, there is little perceived need for formalized regional revenue streams in the United States.

6.1.10 Does Regional Financing for Infrastructure Necessitate Regional Governance?

Despite the aspirations of the regionalists, the consolidated metropolitan governance is an historic anomaly that is not likely to be repeated within the United States in the near future. The new regionalists argue that parochialism fosters a narrow conception of self-interest that blinds citizens to the potential benefits of regional governance.

Nevertheless, certain government officials, planning organizations and scholars argue that as we begin the 21st century, that the local political boundaries that currently dominate the debate about land-use decisions should be replaced by regional boundaries as more reflective of today's economic and political landscape. Very few communities have been swayed by these arguments. There are many reasons for this. Some argue that competition among governments produces better outcomes for individuals. Others note that the most important reason is that the statutory requirements often make it extremely difficult, if not impractical to accomplish. For example, statutory requirements in many states prescribe specific governance structures for public finance.

Development of regional governance and fiscal powers face two additional interrelated problems. First, the existing local fiscal systems are constructed by state law and organized

^{lxxvi} These calculations were derived from a tax and fee analysis conducted by the author. The major driver of these regional financing mechanisms is the local option sales tax and regional transportation taxes permitted by statute. For further information see infra attached charts D-3, D-4, D-6.

on specific political boundaries of each jurisdiction. The current finance system in most states is composed on only two elements: state-controlled and local (city and county)-controlled revenues. Counties often have the status as agents of the state in terms of revenue collection and disbursement. Cities typically have statutorily prescribed limitations on the variety and level of revenues that are subject to their control.

Our analysis of the revenue-raising statutes (we did not evaluate the case law) and the actual financing structures currently in place within all fifty states suggests that there is no common denominator that would necessitate additional levels of regional governance. At first blush, an evaluation of local financial systems seems to suggest that in the vast majority of the state-local fiscal systems present a barrier to full consideration of the regional consequences of local actions. However, empirical data suggests that this is not the case. This is not because individual jurisdictions are acting altruistically. Rather it appears to be an acknowledgement that the long-term viability of the region is incumbent on the member jurisdictions. Although very few jurisdictions have embarked on total integration, most communities have undertaken at least one form of inter-local agreement.

These agreements, although not as elegant as formalized regional structures appear to be satisfactory to most jurisdictions because they provide a negotiated resolution to regionalized issues on a case-by-case basis. More importantly, they suggest that the current method is, in most cases, sufficient to provide the regional governance needed to resolve infrastructure-financing issues.

6.2 POLICY CONCLUSIONS

In describing intergovernmental central-local relations in Great Britain, John Griffith noted that any “generalization evokes shouts of protest. Every example can be shown in some way to be unrepresentative and ill-chosen.”^{lxxvii} These relationships are characterized as formal, informal, official, personal, political, functional, tragical-comical-historical-pastoral.^{lxxviii} William Barnes of the National League of Cities has suggested that this is also the case in the United States: “there is no model of state-local relations in the USA. It all depends on the state.”^{lxxix}

Given the above caveats, it still remains the case that finding current policy solutions to the challenges of growth management and regional governance requires that policymakers clearly define the role of regional structures and capacities in the provision of infrastructure. The research conducted herein leads to the following observations and conclusions related to regional infrastructure development policies.

^{lxxvii} Griffith, John, *Central Departments and Local Authorities*, London: George Allen and Unwin, 1966.

^{lxxviii} *Ibid*

^{lxxix} Barnes, William. cited in Gilbert and Stevenson 1993.

6.2.1 General Conclusions

Proper pricing of transportation and wet utilities has greater potential to save money and improve the environment than proposed and instituted growth management techniques. Numerous activities have been undertaken by state and municipal governments to “manage growth”. Many of these initiatives are directly implicated in the financing of infrastructure. The research indicates that many of these efforts would not be required if market pricing techniques were employed in both transportation and wet utilities.

Development impact fees and user charges that are based on average costs will result in the underpricing and overpricing of infrastructure. The overwhelming majority of development impact fees and wet utility rate charges are based on “average costs”. Development charges that are the same amount per unit regardless of where the unit is located will not reflect the true costs of development on the jurisdiction and will lead to inefficient development decisions. Who bears the burden of the development charges depends on whether the charge is uniform within the commercial and residential markets, the demand and supply for new properties, and if the developer can “establish” the amount of the charge prior to undertaking the development.

Most independent studies suggest that commercial and industrial property uses pay more than their “fair share” of infrastructure capital costs. Cost of Community Services (COCS) studies, our empirical analysis, and an overview of empirical data from the four case study regions confirm that industrial and office property development pays more than their fair share of infrastructure costs than does residential development in the areas studied. This is inequitable and inefficient. This situation is created by four inter-related facts: (1) commercial properties are generally taxed at higher effective rates than residential properties under the assumption that commercial properties have a greater ability to pay; (2) commercial properties are more likely to pay higher impact fees and wet utility rates due to methods employed to calculate the fees in most regions; (3) commercial property developers are more likely to incur the additional financing and risk costs associated with either “adequate public facilities requirements”, concurrency; or “conditioning” of larger parcels of land which results in higher hidden costs in such areas as contribution of rights of way; and (4) commercial properties are too often “taxed” with community fees for public services that have only a minimal nexus to industrial and property development. In effect most industrial and office developers effectively trade certainty of building permits for excessive costs.

Private sector capital is not a universal remedy for funding technical infrastructure. The difficulties in establishing private-public partnerships are a result of the disparity in the allocation of risk. The structure of private capital financing and terms of lending depend primarily on the risk and cash profiles of the project. Therefore, to be successful, innovative financing mechanisms must be designed specifically to address the risks needs of the private sector.

Conditional matching federal grants for wet utilities infrastructure undermine accountability and distort municipal decision-making. Theoretical and empirical literature suggests that federal grants conditioned on matching funds stimulate regional spending on infrastructure because of price and income effects. Federal grants for infrastructure take two forms: unconditional transfers and conditional matching grants. Per capita unconditional grants only provide additional funds to jurisdictions (the income effect). However, matching grants lower the price of services being provided relative to other services provided by the jurisdiction (price effect). This generally results in greater regional spending. Nevertheless, this type of funding distorts regional infrastructure decisions.

The Supreme Court decisions in Nollan and Dolan have resulted in greater constraints on the land use practices of highly built out urban communities with little available vacant land and less developed communities. Communities with significant unfunded infrastructure needs may face the greatest temptation to impose “excessive” impact fees upon developers, particularly if they have not sufficiently engaged in comprehensive long-range planning and lack the ability to spread the costs of development among developers. Although less developed communities may also attempt to impose excessive impact fees on developers, they are likely to act with greater restraint because of the competitive pressures from neighboring jurisdictions. Jurisdictions near build out with significant unfunded infrastructure requirements may more predictably attempt to extract excessive amounts from developers. Other communities, particularly those with large amounts of developable land who are instituting mechanisms to spread public costs of development across all new development are more likely to provide ample protection to developer interests and indeed often undercharge developers for the public costs of their projects create.

6.2.2 Transportation Systems

Regional transportation planning frameworks already exist in every urbanized community. Federal legislation has formalized the regional transportation planning process in every urbanized area with a population of more than 50,000 residents. Federal legislation requires a Metropolitan Planning Organization (MPO) be designated by agreement of the Governor of the state and the local government officials. MPO boundaries are determined by agreement between the MPO and the Governor, but must encompass at least the existing area and contiguous area anticipated to be urbanized within a 20-year forecast period.

Despite over 30 years of regional transportation planning, it is impossible to accurately measure the success or failure of MPOs in the regional transportation planning. Regional transportation planning for infrastructure is a complex process involving a variety of federal, state and local actors. Moreover, the ability of the MPO to facilitate regional

transportation planning depends on a variety of objective and subjective factors to include technical competence and leadership as well as funding mechanisms.

Currently, the bulk of regional transportation funds for infrastructure are still controlled by the states, not regional governance bodies. A review of state transportation funding data, and federal ISTEA and TEA-21 data suggest that the bulk of regional transportation funds for infrastructure are controlled by the states. Allocation methods employed by states to disperse federal and state funds vary greatly. For example, Colorado allocates based engineering regions that are not necessarily coterminous with MPOs, while the state of Texas uses a more equitable distribution method based on population, vehicle miles traveled and lane miles.

6.2.3 Wet Utilities

Marginal costing techniques (meters) and two-part tariffs are the best method of financing water and sewer facilities in most growing communities. In theory, pricing at marginal cost generates the greatest net gain to society. Recognizing that this may be difficult for certain providers, it should become the preferred method throughout the nation. Failure of public service providers to charge the full cost of service will most likely lead to open-ended direct federal subsidies of water services and/or continued developer-funded capital improvements. Average cost pricing is still the norm in most wet utilities. Average cost pricing tends to “misinform” consumers of the impact their use has on the supply of wet utility costs. Linking wet utility demand to the cost of investments via volumetric rates is critical. User charges that are correctly set promote economic efficiency by providing information to public sector suppliers about pricing and by ensuring that residents value the service provided and do not over-consume the service. Economic regulation is a weak substitute for competition in potable water provision and should only be used where competitive alternatives are unavailable.

Economies of scale in wet utilities are substantially different for arid and non-arid regions. Economies of scale are reductions in per unit cost arising from opportunities to use resources more efficiently as the scale of an activity increases. In the case of wet utilities, these efficiencies most often occur in water treatment facilities (e.g., chlorination plants, reverse osmosis facilities). However, wet utilities are highly dependent on local factors, for example, whether the main water sources are predominately surface or groundwater. Furthermore, in many arid southwestern communities the sourcing, conveyance and storage of potable water may be the single largest infrastructure concern.

APPENDIX A – CASE STUDIES

Four case studies were conducted to examine how four cities – Atlanta, Georgia; Las Vegas, Nevada; Portland, Oregon; and Minneapolis-St. Paul, Minnesota – have addressed regional infrastructure development. In total, an examination of these four uniquely diverse cities provides very good examples of how and why economic, political, geographic, and legal concerns affect the development and implementation of regional infrastructure programs.

A.1 ATLANTA, GEORGIA

A.1.1 Overview

The Atlanta metropolitan area spreads across the Piedmont region of Georgia, from the foothills of the Appalachian Mountains to the developing suburbs 50 miles south of downtown Atlanta. The Chattahoochee River, which bisects the Atlanta region, provides 70% of the region's drinking water. With no large bodies of water or steep mountain ranges nearby, there are no natural boundaries to the region's growth.

The number of residents living in the 10-county, 64-city Atlanta region has increased by over 600,000 people in the last ten years. In 1990, 2.6 million lived in the region. Today, the area's population is over 3.2 million people. The region covers a landmass of nearly 3,000 square miles and contains approximately 41 percent of the state's population. Development in the Atlanta region now consumes about 50 acres of space per day. At 1,366 persons per square mile, Atlanta is considered the least dense of the fifty largest metropolitan areas.

As Atlanta Regional Commission (ARC) director Harry West has stated, metropolitan Atlanta can be best thought of as 11 large cities that both contain and are surrounded by dozens of smaller cities. The central city, Atlanta, accounts for less than 12% of the region's population. Currently, with the minor exception of mass transit, all technical infrastructure systems such as roads, water, wastewater, and sewerage are operated on a local level utilizing inter-governmental agreements to satisfy inter-governmental activities.

Recently, the Atlanta region has been beset by numerous high visibility regional problems. For example, in July 1999, the City of Atlanta, the State of Georgia, and the United States government reached a settlement to resolve water pollution violations resulting from the city's sanitary sewer system that dates back to 1880. As part of the settlement, the region was required to make substantial investments in sewerage systems. To date, all consent decree deadlines associated with the federally mandated combined sewer overflow program have been met.

A.1.2 Regional Government Structures

Georgia is a strict home rule state in that the Georgia Constitution directly authorizes home rule. Localities falling under this classification are sovereign powers within the borders of the sovereign state, possessing a certain degree of immunity from state interference. The Georgia Constitution grants distinctive status to counties and cities. Georgia's constitution, unlike those of most other states, grants zoning authority directly to both counties and municipalities. This affords Georgia localities a great deal of autonomy in the exercise of their zoning power, power that may be overcome only by "general laws establishing procedures for the exercise of [zoning] power." This language is more restrictive upon the state legislature than the general law preemption found in other state grants of zoning power.

Nevertheless, it appears that the Georgia legislature has the ability to exercise some degree of control over the zoning decisions of localities, if only procedurally. Such control indicates that the state has not abdicated total zoning responsibility to local governments through the constitution's grant of power. In some sense, Georgia's home rule localities are delegates of state police power. Therefore, a court would not abuse its discretion if it found that the constitution mandates that these localities acknowledge the needs of the state when zoning for the general welfare as a delegate of state authority.

A.1.3 The Atlanta Regional Commission (ARC)

ARC and its predecessor agencies have coordinated the planning efforts in the region since 1947, when the first publicly supported multi-county planning agency in the United States was created. Originally, ARC was known as the Metropolitan Planning Commission (MPC). It served two counties and the City of Atlanta.

Presently, ARC serves as the regional planning and intergovernmental coordination agency for the 10-county, 64-city region. ARC is a public non-profit organization that relies on its members to implement regionally adopted plans and programs. Its functions include transportation planning, data gathering and analysis, senior services, community services, economic development, environmental planning, governmental services, job training, land use and public facilities planning.

State legislation mandates local government's membership in ARC as well as the dues paying structure of that membership. The ARC Policy Board consists of 39 members as follows:

- The Mayor of Atlanta;
- One Mayor from Each County Except Fulton Chosen by a Caucus of the Mayors;
- One Mayor Elected by a Caucus of Mayors within the Northern Half of Fulton County and One Mayor Elected by a Caucus of Mayors From the Southern Half of Fulton County;
- Each County Commission Chairperson in the Region;
- One Member of Atlanta City Council, chosen by the Council;

- Fifteen Private Individuals, one from each of the 15 Multi-Jurisdictional Districts of Approximately Equal Population, Elected by the 23 Public Officials; and
- One Member of the Board of the Georgia Department of Community Affairs.

In general, a majority vote by those members present at a meeting is required to adopt or reject a motion. The vote of each member is equal to any other member.

ARC has authority over developments of regional impact and local projects in environmentally sensitive areas. However, ARC's decisions on such projects are far from law. ARC reviewed 46 projects in the six years from 1989-1995; only 9 were denied ARC approval. Three of those denials were over-ridden by local governments.

ARC is funded through a number of local, state, and federal government sources. Georgia law mandates an annual local funding formula: for each county that contains no portion of the City of Atlanta, 80 cents per capita plus \$2,000; for residents within the City of Atlanta, the per capita cost is shared by the City and the counties in which it is located. There are approximately 130 full time staff members. The ARC budget for 2000 was \$45 million.

A.1.4 Metropolitan Atlanta Rapid Transit Authority (MARTA)

MARTA provides the day-to-day operations of the region's bus and rail system. Although conceived as a truly regional entity, MARTA serves only two counties, Fulton and DeKalb. As originally planned, MARTA was to provide transit to the seven-county region; however, five counties consistently chose not to contribute sales tax revenues in order to join the service, although representatives from Clayton and Gwinnett sit on the MARTA board. There are also smaller transit agencies providing transit services to particular counties within the region. ARC does the overall long range planning of the region's transit element.

A.1.5 Georgia Regional Transportation Authority (GRTA)

GRTA is in its second year of existence. Created by the Georgia General Assembly in 1999 at the request of Governor Roy Barnes, its mission is "to provide citizens of Georgia with transportation choices, improved air quality, and better land use in order to enhance their quality of life and promote growth that can be sustained by future generations."

There are 15 members of the GRTA Board. These members also sit on the Governor's Development Council, and in that capacity they are responsible for assuring that local governments meet state requirements for land use planning. Voting is by simple majority. GRTA is transitioning from a temporary staff to a regular staff of approximately 25 individuals.

The Georgia General Assembly attempted to induce regional cooperation through the enactment of the Georgia Regional Transportation Authority Act (GRTA) in 1999. This Act created an authority to facilitate the development of mass transportation in Georgia, providing a combination of persuasive and coercive authority to advance their goals.

GRTA’s jurisdiction extends to counties that are both within an EPA non-attainment area under the Clean Air Act as of December 31, 1998 and designated by the Act’s board of directors as having “excess levels of ozone, carbon monoxide, or particulate (PM-10) matter.” In addition, any counties that are contiguous to these counties also fall within the GRTA’s jurisdiction. Jurisdiction over these counties is not automatic. GRTA has discretion in deciding whether to place a county within its jurisdiction. Thus it is possible for a locality to escape the administration of GRTA through negotiations.

Even localities that do fall under GRTA’s jurisdiction may escape the enforcement of regional planning proposals. As indicated by the statute, the purpose of GRTA is not to create and operate a regional mass transportation system. The statute provides that:

“the funding, planning, design, construction, contracting, leasing, and other related facilities for the authority shall be made available to county and local governments for the purpose of planning, designing, constructing, operating, and maintaining land public transportation systems...for the purpose of designing and implementing designated metropolitan planning organizations’ land transportation plans and transportation improvement programs, on such terms and conditions as may be agreed to between the authority and such county or local governments.”

This provision makes it clear that the Authority exists to render assistance to localities, and this assistance is to be rendered only upon conditions amenable to the locality receiving the assistance. However, despite this rather restrictive definition of the Authority, the powers granted to the Authority may allow it more influence. A local government that refuses to provide services authorized by a resolution of the Authority becomes ineligible for certain state grants. Moreover, failure of a local government to pay amounts owed to the Authority will cause the state to withhold any funds that it administers except for educational funds.

While the withholding of funds could be a powerful incentive to local governments, Georgia’s statutory law weakens this incentive. Grants related to the broad categories of “the physical and mental health, education, and police protection” of a locality’s residents may not be withheld for failure to follow the Authority’s directives. Even where grants are not sought for these activities, the Authority may restore a locality’s eligibility where the local government demonstrates that “it is taking or shall take appropriate action to cooperate with the Authority.” Once again, the statute allows for a locality to mediate regional cooperation through negotiation.

Enforcement of Georgia’s growth strategies program lies with the Department of Community Affairs, which has unused authority to withhold small amounts of the local share of some taxes. As of the Department’s most recent report, 99% of Georgia’s 693 local governments had met the requirements of the Georgia Planning Act.

A.1.6 Georgia’s Tax Structure

Georgia’s State and local governments receive about 20 percent of their revenues from the federal government, 25 percent from user charges of various kinds, and the remainder is

split about evenly between sales, income, and property taxes. Compared to the rest of the nation, Georgia relies more heavily on sales taxes. State and local taxes equal approximately 11.1% of personal income in 1999.

A.1.7 Infrastructure Funding

Georgia funds regional infrastructure through a variety of methods that include general revenue bonds (debt), sales taxes, property taxes and impact fees. There are numerous methods employed in Georgia to finance regional infrastructure improvements. This section will cover the major funding sources.

A.1.8 Special Purpose Local Option Sales Taxes

Georgia is one of 46 states using a general sales tax, and raises 17 percent of its tax revenue from this source. The state tax in Georgia is 4 percent and counties may add up to an additional 3 percent. The Georgia statutes authorize the imposition of a 1% special-purpose local option sales tax (SPLOST) to finance general revenues, 1% for education, and 1% for specified projects for a time period not to exceed five years. As of 1998 124 of Georgia's 159 counties had a special-purpose sales tax. The sales tax cannot be activated until it has been both adopted by a local ordinance or resolution and approved by a referendum of voters. SPLOST revenue may be used to fund "a capital outlay project or projects" for the benefit of county residents.

Local sales taxes play a central role in transportation, utility and school finance in Georgia. For example, the largest tax to win approval in recent years was in Gwinnett County, where in late 2000, voters approved an extension of that county's capital projects sales tax. Of the \$750 million to be raised, 43% will be used for transportation projects. The widespread adoption of special-purpose sales taxes across Georgia is noteworthy as voter approval of transportation sales taxes as high as one percent is unusual nationwide.

Special purpose local option sales taxes may be used to obtain up to \$1 million in interim financing from the Georgia Environmental Facilities Authority (GEFA) for use in water and wastewater facilities construction. Construction loan program interest is 4%. GEFA and the Environmental Protection Division (EPD) of Georgia have supplied over \$900 million in low interest loans for water service infrastructure in the last 15 years.

A.1.9 Impact Fees

The Georgia Development Impact Fee Act (Act) defines an impact fee as "a payment of money imposed upon development as a condition of development approval to pay for a proportionate share of the cost of system improvements needed to serve new growth. The Act provides that impact fees can be made only for system improvements that create additional service available to serve new growth. System improvements are defined as "capital improvements that are public facilities and are designed to provide service to the community at large." In contrast to "project improvements," system improvements "provide more than incidental service or facilities capacity to persons other than the users or

occupants of a particular project.” The Act does not prohibit regulations that require a developer to provide site improvements necessary for the development’s occupants, but such primarily on-site improvements are not considered impact fees.

The Act provides that any impact fees imposed shall not exceed a proportionate share of system improvements costs and shall be imposed on the basis of geographically defined services areas. For each service area a jurisdiction must designate a “set of public facilities to provide service to the development within the area.” The Act requires that impact fees be calculated on the basis of levels of service for public facilities contained in the municipal or county comprehensive plan. Impact fees cannot be charged in the absence of a comprehensive plan containing capital improvement elements. The fees are calculated on the basis of the level of services, applicable to both existing development and new growth, specified in such a plan for public facilities. The Act also mandates that impact fees be calculated on actual costs or reasonable cost estimates. Furthermore the fees must account for the credits of current revenue streams such as SPLOST.

The Act also requires that prior to adopting an impact fee ordinance, an advisory committee per formed to comment on the ordinance. The Development Fee Advisory Committee shall consist of membership of at least 40% comprised of representatives of the development, real estate, or building industries. The committee advises a governing body as it considers the adoption of an impact fee ordinance.

No widespread adoption of comprehensive impact fee ordinances has occurred in Georgia. Cherokee County was the first jurisdiction to adopt an impact fee ordinance to cover library facilities, fire protection facilities, sheriff’s department patrol services, a public safety facility, parks and recreation facilities and transportation facilities. An overview and fee schedule is included in the Appendix.

A.1.10 Tax Increment Financing

Local governments may use proceeds from tax allocation bonds to finance costs incurred in redevelopment areas under the state’s Redevelopment Powers Law (Law). Tax allocation bonds finance redevelopment in a tax allocation district, which is defined as a “contiguous geographic area within a redevelopment area...defined as and created by resolution of the local legislative body.” By adoption of a resolution, the local legislative body also establishes the geographical boundary lines of the district. The debt service on the tax allocation bonds is paid from the tax allocation increments—the tax proceeds attributable to any increase in the assessed value of the property in the tax allocation district after improvement. Increases in the property assessment in the district generate additional ad valorem property taxes that are placed in a special fund for the payment of the redevelopment costs or bond principal and interest. Not every infrastructure project can be financed through this program; however, where applicable, the Law provides an important source of funding.

A.1.11 Assessments

While a tax levy creates a duty to support government collectively, an assessment is an enforceable obligation upon a portion of the community that receives a special benefit or enhancement in value as a result of an improvement made with assessment proceeds. Assessments may be levied against benefited properties to defray the cost of new facilities. For example, a jurisdiction extending its water system might levy a water assessment upon property owners whose buildings become connected to the system.

Georgia law distinguishes an assessment for the provision of services from an assessment to cover the construction costs of a new facility. The latter assessments—one-time costs incurred to provide permanent public improvements—may be assessed against property owners benefited by the improvement. Georgia statutes provide for independent authorization to finance new street, water, storm water, gas and sewer mains and connections through assessments against abutting properties.

Fees and assessments may be invalidated as taxes should they be levied to generate revenue for general purposes. In determining whether a charge is a fee or an assessment, as distinguished from a tax, courts turn to the intent of the charge to determine whether the charge was to generate revenue to be used for the public or governmental purposes or whether it serves as a payment for services rendered. Assessments may be imposed only for services provided, and the property owner must receive a benefit not realized by all property owners within the local governmental body.

In 1999, a storm water utility charge imposed by the City of Atlanta for funding the maintenance of the city's storm water infrastructure and improving control of the storm water runoff through additional capital projects was invalidated because it failed to constitute payment for a service rendered. The fee was imposed on all of the city's non-governmental property owners who were assessed on the basis of property size and development intensity factor, which depended on the property's use. The court viewed the fee as a tax imposed primarily to raise revenue. It stated that authorization of storm water utility fees should be construed narrowly because fees escape constitutional limitations placed on taxation and public spending.

A.1.12 Special Assessment Districts

The Georgia Constitution authorizes the creation of special districts and the levy of fees, assessments, and taxes within such districts to provide "local government services" and further authorizes the construction and maintenance of facilities for this purpose. Counties, municipalities, and other Georgia political subdivisions may contract indebtedness on behalf of special districts.

A.1.13 Community Improvement Districts

The Georgia Constitution also provides for creation of community improvement districts (CIDs) that are authorized to provide governmental services. The creation of a CID

requires: (1) the adoption of a resolution by the local government in which the CID is located; and (2) written consent to the CID by (a) a majority of the real property owners within the jurisdiction, and (b) the owners of the real property within the CID whose properties constitute at least 75% of the value of all real property within the CID.

Only real property used non-residentially may be taxed or assessed for government services and facilities provided within the district. Services furnished by the CID must be those needed due to the intensity of development within the CID, exclusive of the services provided for the county or city as a whole.

In 1999, commercial property owners formed the Buckhead CID to increase access to transit and reduce traffic congestion in the central Buckhead commercial district of Atlanta. To date, the Buckhead CID has allocated \$1.4 million for capital and operating expenses. The CID has applied for \$17 million in federal and state funding to begin the Peachtree Corridor Project. The Buckhead CID and the City of Atlanta will provide an additional \$7.5 million in local funds.

A.1.14 Special Services Assessments and Regulatory Fees

Assessments for services in Georgia appear to be most common for sewer services and solid waste disposal. Ad valorem property taxation normally finances the provision of park and open spaces. State legislation authorizes school districts, counties and other municipal corporations to prescribe, revise, and collect rates, fees, tolls, or charges for services, facilities, or commodities furnished or made available by an undertaking for users within or outside of its territorial boundaries. Undertakings include properties used in connection with obtaining or using a water supply, as well as parks.

A.2 SOUTHERN NEVADA (LAS VEGAS)

A.2.1 Geography

Southern Nevada's natural landscape is typified by north-south mountain ranges separated by broad alluvial valleys. The Spring Range and the Black and Sheep Mountain Range physically separate the Las Vegas Valley from the rest of Clark County. Most of the valley's watershed drains into the Colorado River. The Las Vegas Valley experiences the arid climate typical of the southern Mojave Desert, of which it is a part. Mean annual rainfall is only 4.6 inches at low elevations.

Southern Nevada is the fastest growing region in the United States. The region's population grew from 405,000 in 1977 to over 1.45 million in 2000. By the year 2020 the region's population is expected to be in excess of 2.8 million. The community did not grow substantially until after the building of the Hoover Dam in the mid-1930s and the expansion of gaming after World War II. Compared to many regions in the United States, technical infrastructure is relatively new as most of it was built after 1970.

Unlike governments in most other metropolitan areas, Clark County's government functions as both a large urbanized city and as a county. This anomaly is the result of the fact that the "Las Vegas Strip" lies outside of the City of Las Vegas. The strip's early casinos and hotels specifically avoided paying higher city taxes by precluding annexation into Las Vegas. This strategy has resulted in the unique phenomena of the majority of the region's property tax base residing in unincorporated Clark County.

The United States Bureau of Land Management (BLM) manages over 87% of the lands within the State of Nevada. Within Clark County this figure rises to over 95%. BLM's control of the majority of the region's land mass, coupled with the valley's geography (i.e., "bowl-like" configuration and desert climate), have led to a relatively high-density community development pattern by southwestern standards. Contrary to public perception, the region is building out with a density twice that of other major cities in the west and is denser than planned regions such as Portland. This density and topography have also contributed to increased pressures on air quality and water service conservation.

A.2.2 Regional Structures

Nevada has one of the most centralized governance structures in the United States. Yet at the same time, it is one of the simplest and most efficient. The region's governmental efficiency is due largely to the centralization of technical systems; limited governmental powers; and variations in local policies for the provision of social welfare services and land use.

The region has only one county—Clark County, and five cities—Las Vegas, North Las

Vegas, Henderson, Boulder City and Mesquite. The region has numerous regional entities to include its convention authority (Las Vegas Visitors and Convention Center Authority (LVVCCA)); aviation (Clark County Aviation); water services (Southern Nevada Water Authority (SNWA), and the Clark County Regional Flood Control District); transportation (Regional Transportation Authority (RTC)); Air Quality (Clark County Air Quality Board); public schools and (Clark County School District (CCSD)). Each of these entities is managed independently and has a Board of Directors that generally consists of locally elected representatives from the covered jurisdictions. Additionally, there are other quasi-regional governments, most notably the Las Vegas Metropolitan Police Department (LVMP), that serve a majority, but not the entire region (i.e., the City of Las Vegas and unincorporated Clark County).

In the 1999 legislative session, the Nevada State Legislature mandated the creation of a Regional Planning Coalition (RPC) for the metropolitan Las Vegas Valley. The stated goal of the body is to implement a strategy that maximizes the benefits of growth while mitigating its negative impacts. The legislation as written is highly non-directive; no standards, guidelines, or restrictions were mandated for the RPC prior to its creation. The RPC also lacks staffing, funding, and powers of enforcement as it is now modeled. The lattermost of those issues—the organization’s inability to offer incentives or impose sanctions—in actuality makes any compliance with its agenda wholly voluntary. In addition, the same ambiguities that provide flexibility to the people creating the RPC offer little guidance as to what specific performance might be expected of the organization by the Nevada Legislature. As of this writing, the RPC’s only stated responsibilities, to develop a conformity process and produce a regional plan by March 2001, have been completed.

The Regional Plan contains seven elements as called for in the authorizing legislation:

- Conservation, Open Space, and Natural Resources,
- Population Forecasting,
- Land Use,
- Transportation,
- Public Facilities,
- Air Quality, and
- Infill Development.

Importantly, these elements overlap with and address related issues including water quality and affordable housing.

The planning policies addressed in the plan are segmented as follows:

- *Regional Initiatives.* These are major new regional efforts to be undertaken by the Valley’s five local governments and school district.
- *Development Standards.* Consistent multi-jurisdictional development review standards to be adopted by each jurisdiction (e.g., construction standards of public infrastructure.)

- *Developing Cooperation with the Existing Regional Entities.* These include specific initiatives between the five local governments and other regional entities such as implementation of the strategy to restore the Las Vegas Wash.

In terms of the specific regional planning organization mandated for the metropolitan Las Vegas Valley, the RPC must focus on two legislative items as having special significance: establishing conformity, and defining projects of regional significance. No specific standards were supplied in the legislation to help delineate these terms. While ‘conformity’ is required, the legislation offers no rules or guidelines with regard to its establishment; nor is there any notion as to whether “regional significance” addresses the size of a project, the location of a project, or the impact that project might have on the community.

The RPC has minimal supplemental funding from the regional jurisdictions and no permanent staff. Funds will be budgeted to retain independent consultants to undertake plan reviews and other discrete assignments as necessary.

A.2.3 Water Services

Water: In 1991, the Southern Nevada Water Authority (SNWA) was established in recognition of the importance of addressing water issues regionally. The members of the SNWA include The Cities of Henderson, North Las Vegas, Boulder City, the Las Valley Water District, the Big Bend Water District, and the Clark County Sanitation District. The primary purpose of this organization is to provide for the present and future water needs of the valley.

Water that comes from the ground and nearby Lake Mead is critical to sustaining life in Las Vegas. Lake Mead, formed by the building of the Hoover Dam, is the single most important supply of water to southern Nevada. The groundwater in the Las Vegas Valley is also of great importance; however, it is being removed from the ground at rates faster than it can naturally recharge. Also, while too little water can be a problem in the desert, so can too much water. Flooding has been a problem in Las Vegas for many years. In order to solve the valley’s flooding problems, a flood control district was established in the 1980s.

SNWA’s existing water system for pumping, treating, and delivering Colorado River water from Lake Mead was first placed into operation in 1971. Since then, the region has experienced explosive growth and development. In 1994, SNWA embarked on the development of a major water system service upgrade and expansion. This will double the capacity of water flowing from Lake Mead to the region. Financing for this comes from a one-quarter of one percent (0.25 percent) increase in the region’s sales tax rate approved in 1998 and impact fees in the form of increased regional connection fees.

Nearly \$3.1 billion worth of water and wastewater infrastructure is being coordinated by the SNWA. Financing for this infrastructure includes residential and commercial capital connection fees (based on meter size) (57% of total); 0.25% local sales tax option (28% of total); a monthly commodity charge (5-cents per 1,000 gallons used) (10% of total); a

reliability charge of .25% residents and 2.5% non-residential consumption (5% of total); and the remainder from funds received from the Southern Nevada Public Lands Management Act.

Lake Mead and the Colorado River system provide water to numerous states (e.g. Nevada, California, and Arizona) and Mexico. Historically, the SNWA has been limited to pumping 300,000 acre-feet per year (AFY) from Lake Mead. However, SNWA actually pumps more than this because of a concept known as return flow credits. Return flow credits are given for any water returned to Lake Mead. The primary mechanism for returning water to the Colorado River is through wastewater treatment facility discharge that flows into Lake Mead via the Las Vegas Wash. The Clark County Sanitation District, City of Henderson Sanitation District, and the City of Las Vegas Sanitation District all discharge treated wastewater into Las Vegas Wash. In 2000, approximately 160,000 acre-feet of water were returned to the Colorado River via treated wastewater for return flow credits.

Flood Control: Because of its arid environment, Las Vegas has a landscape that is unable to absorb precipitation. Most of the precipitation runs off and cannot soak into the ground; a circumstance that has led to a long history of annual flooding that has been exacerbated by human inhabitation. After the floods of 1984, a referendum was passed to create the Regional Flood Control District, in order to provide a regional solution to the flooding problem. The District uses a master-plan method for flood control.

Financing for the flood control district comes from a one-quarter of one percent (0.25 percent) of the sales tax passed in 1986. In 1991, \$80 million in bonds were sold to fund critical flood control projects. Most of the funding goes to capital projects such as detention basins.

Wastewater: The region is served by three major wastewater operations: the Clark County Sanitation District, the City of Las Vegas Sanitation District, and the City of Henderson Sanitation District. Each of these operations, though independent, cooperates with the SNWA in terms of long-term planning. Each unit has its own set of charges for connection within their respective jurisdictions. For example, the City of Las Vegas uses a sewer connection charge of \$1,200 per equivalent residential unit (ERU) and a charge per fixture. Monthly rates are based on metered usage and type of business (e.g., commercial laundry).

Wastewater is also reused (sold) for non-drinking water purposes such as landscape irrigation and power plant cooling water. The Clark County Sanitation District and the Cities of Las Vegas and Henderson Water Districts supply over 18,000 AFY of treated wastewater to power plants and golf courses.

A.2.4 Transportation

Various regional and local agencies are responsible for the planning, design, construction, and operations and maintenance of transportation facilities in the Las Vegas Valley. The Clark County Regional Transportation Commission (RTC) is the designated Metropolitan Planning Organization (MPO) for the urbanized area of Las Vegas, Nevada,

Transportation Management Area (TMA). The RTC is a regional government unit formed by the local units of Clark County, the cities of Henderson, Las Vegas, North Las Vegas, Boulder City, and Mesquite. As the designated MPO, the RTC is responsible for planning and funding various improvements throughout the TMA. RTC, through a subsidized private contract with ATC/Vancom, currently provides bus and paratransit services in the Las Vegas Valley. The Citizen Area Transit (CAT) system has been in operation since 1992.

Traditionally, the bulk of the funding to pay for transportation investments come from broadly based sources—gas taxes, sales taxes, general fund contributions, and vehicle registration fees. The state of Nevada collects approximately \$275 million per year in gasoline taxes (state and county gas taxes) and approximately \$335 million in the state motor vehicle fund (county taxes, licenses, and fees and vehicle registration fees) (Nevada DOT 1998). Regionally, as part of the Master transportation Plan Fair Share Tax Program, additional funds are collected for local projects.

These revenue sources include: a 3-cent per gallon jet fuel tax to support airport access road development; a Development Tax at \$500 per single family home and 50-cent per square foot of commercial construction, and a 1-cent per \$1 Motor Vehicle Privilege Tax for the financing of the regional beltway; a 1.2% hotel room tax to finance the transportation needs of the resort corridors; a one-quarter of one percent (0.25 percent) of the sales tax increase for mass transit; and a 5-cent per gallon gas tax to finance regional and neighborhood streets. There are also jurisdictional fees for signalization mitigation that average 0.25-cent per square foot for office development and 0.15-cent per gross square foot for industrial development

A.2.5 Public Facilities Needs Assessment (PFNA)

In addition to the taxes and fees described above, developers must also contribute a variety of impact fees and assessments depending upon the ordinances and policies of the local jurisdiction. Recently, Clark County developed a unified approach to their development exaction process under the banner Public Facilities Needs Assessment (PFNA).

The argument for the PFNA was that recent BLM land sales had created areas for new development that were beyond the current urban growth area, and that would necessitate additional public facilities that should be financed directly with additional impact fees.

Prior to PFNA implementation, each project was required to enter into a development agreement to establish guidelines and mechanisms for providing and completing public infrastructure. These development agreements were individually negotiated, having different points of emphasis regarding infrastructure needs. The development agreements varied considerably in terms of fee structures and cost estimates.

In response to the varied approaches, the County changed its development code to incorporate PFNA as part of the major projects review process with the objectives of applying a standardized methodology in the implementation of development agreements and impact fee charges as well as developing a mechanism for all developments within the

area to contribute, regardless of size, on a fairer share basis towards the public infrastructure needs.

Upon completion of a land use study, a projected public infrastructure needs assessment and cost model were completed. Cost units were assessed within the PFNA area for parks, public safety (fire and police), and transportation (roads, traffic signalization, and system improvements (including railroad crossings, overpasses and interchanges)). The cost units are to pay for direct capital outlay costs only.

As stated earlier, the cost units in relation to the PFNA area are in addition to any fees otherwise required by Clark County development procedures and processes. Costs collected under the auspices of the PFNA may be used only to make improvements in the area. Annual reviews are to be made of the PFNA, for at least the first three years, to examine the sufficiency of the funding. Cost unit equivalents may be increased or decreased from year to year, and are limited to 5% increases and 10% decreases. Funds are segregated by the category for which they are collected. Payments are made at the time each building permit is issued

The commercial use classifications include retail, office, industrial and hotel/motel. The cost unit varies, depending upon the approved use. Office and industrial units are calculated using a per gross square floor area measure. Unlike residential development, neither commercial use is allocated costs for parks. Credits are not allowed except as specifically provided in the development agreement. Any such credits must also be used only within the PFNA area.

The PFNA has had difficulties in its initial implementation. This due to several factors including overestimation of infrastructure needs, duplication of infrastructure funding from other sources (e.g., Nevada Department of Transportation), and no adequate provision of a credit transfer system.

A.2.6 Nevada's Tax System

Clark County Property Taxes: Clark County has 63 tax districts. The tax rates for these districts are based upon the amount of monies budgeted to them for the necessary maintenance and improvement of their facilities and services. The tax monies collected for the districts must pay for schools, roads, police, and fire protection along with other services. The region's personal property tax burden is ranked 32nd out of 51 metropolitan areas.

Only three states have industrial and office property tax rates lower than Nevada. The ad valorem property tax is limited by Nevada's Constitution to a total of \$5 for each \$100 of assessed valuation for the state and all local governments. The statewide assessment level is 35% as fixed by statute. Some capital improvements made by business to meet State and Federal environmental standards are not taxed. Also, property that is exempt includes business inventory and consumable supplies.

Personal and Business Income Tax: Nevada has no personal or business income tax. The Nevada Constitution prohibits a state income tax. However, Nevada does have an assortment of business fees and other user charges that are not covered in this report.

Gaming Tax: Nevada does have a number of other taxes. The Gaming tax is the most important. In the fiscal year ended June 1999, the Nevada gaming industry paid in excess of \$630 million in taxes and license fees. About \$56 million of that went to support school and county infrastructure.

Sales Tax: Nevada, like Florida and Hawaii utilize a state sales tax to export a large segment of their tax burden to tourists. Nevada's total sales tax revenue in 1998 was approximately \$1.8 billion—of which tourists paid 35%. The sales tax is largely earmarked for specific activities and/or enterprises. For example, a large portion of the sales tax is already allocated to mass transit, flood control, and water services.

A.2.7 Impact Fees

The Nevada legislature has authorized local entities to enact certain categories of impact fees. The recently passed Assembly Bill 458 (2001) specially authorizes their use in drainage projects, fire station projects, park projects, police station projects, sanitary sewer projects, stormwater projects, street projects (including traffic signals), or water projects.

A.2.8 Southern Nevada Public Lands Act

Like many western states, much of the public lands of the state of Nevada are managed by the BLM. Most importantly, BLM has control over large segments of the urbanized region. Under the innovative Southern Nevada Public Lands Act (SNPLA), a majority of the funds received from the sale of BLM managed lands is used for the SNWA, the region's public schools and preservation of environmentally sensitive lands.

A.3 TWIN CITIES, MINNESOTA

A.3.1 Geography

As is the case with most states outside of the 13 original colonies the basic form of local government in Minnesota is the *township*. The Twin Cities, Minneapolis and St. Paul, are former townships that have combined with others to incorporate as cities. The metropolitan region associated with Minneapolis-St. Paul covers seven counties. Within this region, the cities themselves account for only one-quarter of the population. The Twin Cities is one of only two places in the US where there is a form of metropolitan government, the other being Portland, Oregon.

The two river valleys of the Minnesota and Mississippi run through the metro region and a third, the St. Croix, borders it to the east. Together with the lakes and wetlands, these rivers occupy large areas, so development has to work around these natural restraints. This inevitably lowers the net density of such development.

An explosion in suburban development began in the early 1950s and has continued unabated for nearly half a century. The two once relatively compact cities are now part of a growing seven-county metropolitan area. Two-thirds of the region's 2.5 million residents live in suburban areas. Because of its generally flat terrain and lack of natural boundaries, the metropolitan area has stretched out in all directions.

A.3.2 The Minneapolis-St. Paul Metropolitan Council

The Metropolitan Council of the Twin Cities (Metro Council) was created in 1967 to govern transportation, land use, sewage and water planning for Minneapolis, St. Paul, and 187 other municipalities in the central Minnesota region. This authority developed over several years as the Metro Council evolved from an entity with little responsibility and limited funding to an organization with specific powers and a year 2000 budget of \$333 million.

The Metropolitan Council was established by the Minnesota legislature. It replaced a largely ineffective body called the Metropolitan Planning Commission. The mission of the Metro Council is to "provide leadership in the effective planning of regional growth and redevelopment, and in the delivery of quality regional services." Its jurisdiction covers seven counties in the Twin Cities area. Yet the council is not a level of government in its own right: its taxing powers are set by the legislature, and its responsibilities are primarily those of co-ordination and provision of certain regional infrastructure services. The governor appoints the chair of the Metro Council.

The Metropolitan Land Planning Act requires that all local governments within the seven-county area prepare comprehensive plans. Among other things, these must include a land-use plan and a public facilities plan. They must address transportation, sewerage, parks and

open space. The Act places the Metro Council at the top of a hierarchy for regional planning. Its policies provide the basic framework within which local government comprehensive plans should be developed. The Metro Land Planning Act ties zoning in with comprehensive plans, which means that local zoning ordinances must be consistent with such plans. This is an important difference between the Twin Cities and most other regions, which allow zoning to be applied without reference to any plan or explicit policy.

The Metro Council has the task of reviewing and commenting on local government plans. It can require a local authority to modify a comprehensive plan (or part of one) if the plan represents a substantial departure from metropolitan policies and/or “metropolitan system plans.” The latter are effectively infrastructure plans for metro-region services. These services cover sewage, transportation and regional recreational open space and their corresponding capital budgets.

More importantly, the Metro Authority can also require changes to plans or development proposals that adversely affect other metro policies, if the project directly impacts an infrastructure system (such as transportation or open space), or if the project is deemed to be “of regional significance.” These effects can be indirect and potentially cumulative. This includes economic, reinvestment, community, environment and growth “strategies” and, within these strategies areas, “policies” and “action steps.”

In addition to its regional planning functions, the Metro Council has direct or indirect control or influence over public transport, highways, airports, parks, water supply and regional sewage collection. It is currently directly responsible for public transit, metropolitan sewerage (bulk collector pipes and treatment systems), and regional parks and recreation. It also administers an active affordable housing program. These infrastructure services are an important means by which the Council implements its policies. Originally, regional infrastructure providers were separate agencies, but gradually some of them have become a part of the Metro Council.

The Metro Council has three divisions: the Community Development Division, the Environmental Services Division, and the Transportation Division. These divisions will be discussed below.

The Community Development Division (CDD) conducts planning for regional growth and redevelopment. It identifies and analyzes regional issues and assists in the coordination of planning among local governments. It also is responsible for assisted housing and acts as the region’s redevelopment authority. The CDD is organized into two entities: Research, Analysis and Policy Development; and Housing, Development and Implementation. The CCD provides planning assistance and grant and loan programs to assist local governments in preparing comprehensive plans. The CDD also is responsible for the construction of a regional two-way digital public safety radio system.

The Environmental Services Division (ESD) collects and treats wastewater at its nine regional treatment plants. It also develops plans to preserve and manage the region’s water resources. The ESD conducts region-wide surface and groundwater planning and non-

point source pollution abatement. ESD also conducts industrial wastewater management, as well as air and water quality monitoring and reporting for the region.

The Transportation Division is organized into two entities: Transportation and Transit Development (TTD), and Metro Transit. TTD is responsible for regional transportation planning, including aviation, highway and transit systems and transit development. The Transit Development unit includes Metro Mobility/ADA, community-based, non-Metro Transit regular routes, and systems provided by local governments that choose to levy their own transit property tax. Metro Transit, the principal provider in the Twin Cities area, is one of the nation's largest urban transit systems. The system is made up of 109 routes served by 888 buses and has its own police department.

The council does not set hard-edged policies. Essentially, its policy approach is to go with, but influence the market. This means, barring changes, Minneapolis will continue to spread and grow. To evaluate its policies one has to look not at whether urban growth has been stopped in its tracks, but what influences the Metro authority has had and whether, on balance, these appear to be positive.

The Metropolitan Council has attempted to support and influence local jurisdictions through a multi-pronged focus:

1. **An integrated regional and local planning framework to guide future land use and development decisions.** The regional blueprint provides the overall umbrella for local planning and development. Within this, all local communities must adopt new comprehensive plans outlining how population, housing and job growth will be accommodated through 2020 in ways that meet the objectives of the blueprint.
2. **Supportive regional infrastructure** (transit, high ways, wastewater treatment and recreation/open space.) The emphasis here has shifted from capacity to the ability of the systems collectively to shape development and private investment activity inside the urban area. Two new initiatives show changes in this area:
 - **Development planning for the region's first LRT line.** This is now under way. The line is designed to connect downtown Minneapolis with the airport and the Mall of America; buses are, however, the backbone of the transit system and a major expansion of service is planned with a doubling in daily ridership by 2020.
 - **Shifting wastewater hookups costs to a different, area-based charging system.** Hookup fees for higher density housing would be less than for lower-density housing and bigger lots with low densities would be charged more.

A.3.3 Wet Utilities

The region has a mix of water sources that reflect its many aquifers and riparian systems. The Minneapolis Water Works obtains all of its water from the Mississippi, while the St. Paul

Regional Water Utility obtains 70% of its water from the river, and the remainder from four high capacity groundwater wells, the Rice Creek Chain of Lakes and tributaries to Vadnais Lake. Together, in 2001 the two cities are the primary water supply for one-third of the region's populace.

Groundwater is the primary source of water to municipal systems supplying over one-half (53.4%) of the region's water, excluding St. Paul. About 15% of the population relies on private groundwater wells to obtain water. Disposal of wastewater was the major reason for the formation of the Metropolitan Council in 1967 and the passage of the Metropolitan Land Planning Act in 1976. Studies in the 1960s indicated that sewage disposal systems were operating at maximum capacity and could not accommodate growth.

The Metropolitan Council Environmental Services (MCES), a division of the Metro Council, is responsible for the planning and development of the region's sewer operation (CSO) system. MCES administers the sewerage costs for the metropolitan region through the Industrial Rate System (IRS). MCES is almost wholly supported by fee revenue that includes both wholesale-type fees and retail-type fees. Wholesale-type fees are charged to municipalities who then charge their customers (includes residential, commercial and industrial customers). MCES's Municipal Wastewater Rate for sewer service treatment is a wholesale-type fee. Retail-type fees are fees charged directly to the customer (end user). IRS fees, which are assessed to permitted industrial users, are examples of retail-type fees.

The Metropolitan Council Administrative Policy #3-2-4 regarding Industrial Charges states:

“Metropolitan Council Environmental Services (MCES) shall develop and implement industrial charges as elements of an equitable user charge system to ensure that each recipient of waste treatment services is assessed its proportionate share of the cost of providing that service. The system shall be reviewed and updated annually. Fees may be assessed for the following services:

- Administration of the permit system (permit fee)
- Treatment of discharges exceeding base concentrations of suspended solids, chemical oxygen demand and other parameters that may be added (strength charge)
- Treatment of wastes that are not connected to the public sewer system (e.g., hauled waste) which would include a volume and strength component (load charge)
- Treatment of wastes that are discharged under a variance from the Waste Discharge Rules or wastes that are discharged through temporary connections to the system (add-on service charge).”

All MCES sewer service rates and charges are part of a price-based system with a utility-like basis, which reflect the cost of providing the service and the volume of use. Rates are set in advance, and billing of both wholesale and retail fees are based on actual use of the system.

A service availability charge (SAC) is a onetime fee imposed by MCES for new connections or increased volume discharged to the region's wastewater system. The SAC fee is similar to connection fees used by many wastewater utilities. One SAC unit equals 274 gallons of maximum potential daily wastewater flow volume. A freestanding single-family residence is charged one SAC unit. Commercial and industrial users pay a pro-rated SAC fee, based on estimated volume of wastewater generation. Industrial users also pay industrial strength fees based on concentrations of pollutants.

Individual municipalities and special districts manage most local water services facilities. Extensions to other jurisdictions are provided through interlocal agreements and annexation.

A.3.4 Wet Utilities Funding

Water treatment and wastewater treatment systems are financed through local monies and state and federal grant and loan programs. Federal funding first became available in 1957 through the U.S. Public Health Service. Between 1967 and 1994, more than \$1.2 billion in state and federal funds were granted to Minnesota communities for wastewater treatment projects. Federal grant monies funded approximately 90% of the metropolitan region's water service system. While grants for wastewater treatment plant construction were common in the 1970s and 1980s, state financed loans are now the predominant source of funding.

Traditionally, water supply systems received minimal amounts of money in federal grants. However, municipal water suppliers are now seeking grant dollars to respond to federal water quality mandates.

Minnesota funds municipal water and wastewater infrastructure through 13 separate funding programs, only five of which are available for water systems. The State Revolving Fund is a key source of funds for wastewater treatment facilities. The Wastewater Infrastructure Fund supplements loans with grants for low-income communities.

Potable water supply systems for the most part are operated and maintained by the local jurisdictions. This is due to the relatively low cost of acquisition of water locally and the ample "profits" to be derived by the local jurisdictions for potable water provision.

State grants keep the wet utility systems affordable. The amount of grant funding needed depends on how much individual ratepayers are expected to pay. One condition of SRF funding is the project's impact on the monthly bill of the median income family. For example, approximately \$40 million in grants are needed per biennium to keep sanitary sewer services within 1.1% of median household income over \$20 per month for the communities currently proposed to receive funding the SRF. However, only \$6 million per biennium would be required, if the state were to raise the threshold level to 2 % of median income or \$35 per month.

A.3.5 Tax Structure

Minnesota collected \$16.5 billion in state and local taxes in 1998. Over 70% was collected at the state level; local governments collected the remainder, primarily from property taxes. Minnesota is a high tax state, utilizing sales, income and property taxes to fund infrastructure. Currently, the state does not earmark particular levies such as school district levies for bonded debt. Minnesota's multi-tiered property tax is one of the highest in the United States and is unusually complex. However, after much debate, Minnesota recently enacted a net 10.3% reduction in commercial/property taxes.

The Metropolitan Council levies property taxes across its seven county service area for transit services, purchasing transportation and utility rights-of-way, and general obligations. Minnesota authorizes certain cities and counties to levy sales taxes for specific public improvements, subject to voter approval. Minnesota also imposes a severance tax on gravel, sand, and stone in certain counties.

A.3.6 Transportation Finance

The state's primary transportation funding mechanism is the Highway User Tax Distribution Fund. It was established in the 1950s to finance the increasing investment in transportation infrastructure. It allocates gas taxes and vehicle registration fees to state, county and local roads using a formula set by the state's Constitution.

Local option taxes have been used sparingly. The public must vote on these taxes through special legislative acts targeted to specific geographies. Minnesota does not have a local option gas tax. Counties and townships do not generally adopt dedicated property taxes for transportation purposes. All, except two, (Hennepin County (Minneapolis) and Ramsey County (St. Paul)) fund road and bridge projects through the issuance of debt. Hennepin and Ramsey Counties fund road projects from their respective general revenues.

Many different types of special districts also utilize property taxes, most notably the Metropolitan Council, transit agencies, railroad authorities, the airport commission, and port authority.

The Major Transportation Projects Commission (Commission) of the Minnesota Department of Transportation (MNDOT) recently recommended to the Governor that the state transfer the funding of transportation from the Highway Trust Fund to the state's general fund.

According to testimony presented to the Commission in 2001, available funding for highway transportation infrastructure within the metro region is less than one-third of the amount needed. The Commission has recommended that a new source of revenue such as a sales tax on motor fuel should be earmarked for highway funding.

Currently, local jurisdictions have a virtual veto power over every transportation improvement that touches their jurisdiction. This power was intended to encourage local

interests, but has resulted into a system of allowing local units of government to hold major projects hostage.

A.3.7 Regional Tax Base Sharing

A long-standing policy is that 40 percent of all local commercial and industrial property tax revenues are put into a common pool and then distributed on the basis of a population and property tax value formula. This means that the 187 local communities have less incentive to engage in a competitive battle for commercial and industrial development (and its attractive revenues).

The 1971 fiscal disparities act, officially known as the Charles R. Weaver Revenue Distribution Act, was designed to lessen differences in the tax base among Twin Cities' area communities. It allows all communities in the seven county region to share part of any commercial-industrial (C-I) tax-base growth anywhere in the region. The basic approach is as follows:

Communities contribute 40% of their C-I tax base growth since 1971 to a regional pool (Excluded from the base is the airport, property in tax-increment finance districts established prior to August 1, 1979, and property of Sunfish Lake, which is ineligible to participate because it excludes C-I development). Each community then receives back a portion of the pool based on its relative shares of per capita and tax base.

There is a one-year lag in C-I property values and property rates used to figure tax-base sharing. For taxes payable in 2001, the amount of the tax-base shared is based on rates and values from tax-year 2000. Taxes generated by the property-tax pool are collected through an area-wide tax paid on the shared portion of each C-I property. The funds are then distributed to cities, counties, and school districts according to the amount of shared tax base of each unit of government.

A.3.8 Development Impact Fees

The Minnesota State Legislature has not enacted legislation authorizing the use of impact fees. The state judiciary's decision in *Country Joe versus The City of Eagan* effectively stopped the collection of road impact fees in Eagan and several other cities. The court in *Country Joe* found Eagan's road access charge to be a tax rather than a fee.

A.4 PORTLAND, OREGON

A.4.1 Geography

Portland, Oregon, is situated in the Pacific Northwest of the United States, within a coastal plain rich in forests and agricultural resources. Behind Portland is the Cascade Range, which forms a barrier between the coast and the drier basins further inland. The Cascades are penetrated by the Columbia Gorge, which was and still is a major access route through to the interior. Dominating the range near Portland is Mt. Hood, a large extinct volcano located to the south of the Columbia Gorge. Opposite Mt. Hood, on the northern side of the Gorge, is Mt. Adams.

Portland was established on the Willamette River, very near its confluence with the Columbia River. Today, urban Portland reaches the banks of the Columbia. The city was established as a port and is located at the highest point on the Willamette that is reachable by large ocean-going ships.

Today, Portland has 1.7 million people. The wider Portland metropolitan area covers four counties, one of which includes the city of Vancouver in the state of Washington, across the Columbia River. Within the three Oregon counties are 24 towns and cities that have power and authority to administer a range of urban and community services. Because of the three-county makeup (within Oregon), and the fact that there are numerous cities spread among the three counties, it was decided to create an elected metropolitan authority to administer urban growth management and planning for the Oregon part of the metropolitan area.

A.4.2 Regional Structures

Addressing the broad range of urban issues within Clackamas, Multnomah, and Washington counties is the Metro Council; the nation's only elected regional government. There are also councils of government in Oregon. These include such multi-jurisdictional and multi-purpose organizations as the Idaho-Oregon Planning & Development Association, the Rogue Valley Council of Governments, and the North Coast Senior Services.

A.4.3 Metro

Portland is the most famous comprehensively planned western American region. Formed in 1979, the Metropolitan Service District of Portland, administered by the Metro Council (Metro), is made up of 24 cities and 3 counties covering approximately 460 square miles in northwest Oregon. Metro controls a variety of urban activities to include comprehensive planning, land use, solid waste planning and management, regional zoo operations, local parks and green space planning and development, transportation planning, and assorted technical services for local governments. Metro is effectively a single-purpose authority created to undertake the planning requirements across the coherent metropolitan area of

Portland. It does this by developing plans and priorities for a wide range of matters covering land-use planning, transportation, waste management and regional parks and green spaces. These plans are, in turn, incorporated in and developed further by the 24 local authorities. The Metro Council has no formal influence on Vancouver, Washington even though Vancouver is effectively part of metropolitan Portland.

Unlike other regional governments such as Minneapolis, Portland Metro does not itself run the sewerage or water systems or indeed the transit system. These are run by separate agencies. However, the regulatory framework requires them to both relate to and help implement the comprehensive plans and the metro region plans. Applying full marginal economic costs to infrastructure services does not appear to be used as a means of controlling growth. Metro asserts that developers pay the direct costs of connections to water and sewerage, but other system costs are averaged across the whole region.

Metro administers the Urban Growth Boundary (UGB) as well as operating a convention center, a civic stadium, the regional performing arts center, and the Expo Center. Metro is also responsible for natural disaster planning for the region. It is the nation's only directly elected, home-rule chartered regional government, with seven members elected from districts of roughly equal population, and an Executive Officer that is elected at large from the entire region.

Metro's use of the urban growth boundary to control development has been controversial. The boundary's legislative purpose was to protect agriculture and forestry, not to provide urban dwellers with scenic views. Certain developers have argued that the boundary ensures more predictable patterns of development, lowers speculative land prices, and provides consistent infrastructure. Others argue that it simply subsidizes core businesses at the detriment of peripheral constituents. Metro is responsible for regional land-use and transportation planning, as well as for any issues that are considered metropolitan in scope. It has more authority than any other regional entity in the country.

Resources to meet Metro's obligations are derived from two primary funding sources: beginning fund balances and current revenues. Beginning fund balances are amounts carried forward from previous fiscal years, including voter-approved bonds, reserves for specific purposes and monies used for cash flow. In total, 79% of Metro's beginning fund balance is restricted to specific purposes. Metro's beginning fund balance constitutes 34% of its total resources.

Current revenues are those earned from Metro operations or from taxes levied in the fiscal year. The principal sources of current revenues are user fees and charges from individuals and enterprises that pay to use Metro facilities and/or services. Current revenues account for 66% of Metro's total resources. Metro's enterprise activities provide 34% of fee-generated revenues. Intergovernmental revenues received from the state and local jurisdictions at 21% provide the next largest amount of revenue. Regional property tax revenues account for 10% of Metro's current revenues, grants 6% and excise taxes 3%.

Enterprise revenues contributed approximately \$90 million in 2000. Metro's largest enterprise activity is solid waste disposal that generated \$51 million. The MERC facilities (Oregon Convention Center, Portland Center for the Performing Arts, Portland Exposition Center and the Civic Stadium) provided over \$20 million in 2000.

There are approximately 693 full time staff positions for Metro. Nearly two-thirds of Metro employees work for three departments: the Oregon Zoo, Regional Environmental Management, and the Metropolitan Exposition-Recreation Commission. The Regional Parks Department is supported by a \$135.6 million bond measure approved in 1995. This bond measure provides for the acquisition of 6,000 acres of open space in the region.

A.4.4 Portland's Water System

The Portland Water Bureau manages Portland's water system, which consists of Bull Run Lake; Dam 1 and Dam 2 on the Bull Run River and their reservoirs; three 26 mile long conduits which bring water to Portland by gravity flow; an underground reservoir at Powell Butte, five in-town open reservoirs; 72 standpipes and water tanks; and 108 pumps. The Portland Water Bureau maintains eight river crossing lines on the Willamette River that bisects Portland and runs north. Additionally, the City of Portland owns hydroelectric plants at Dam 1 and Dam 2 and at Mt. Tabor.

An intergovernmental agreement (IGA) recently established the Regional Water Providers Consortium (Water Consortium) to implement the *Regional Water Supply Plan for Portland Metropolitan Area*. Members include more than 20 municipalities, water districts and the region's planning and land use agency, Metro.

Water providers belonging to the Water Consortium retain full authority to operate and upgrade their systems and infrastructure. The Water Consortium coordinates water supply planning and implementation in the region. The Water Consortium is a collaborative, voluntary organization.

A.4.5 Sewerage and Stormwater

The Bureau of Environmental Services of the City of Portland manages stormwater and municipal sewer facilities. Portland's wastewater treatment system includes two wastewater treatment plants, 2,250 miles of sewer pipe, 90 pump stations, 130 miles of drainage ditches, 8,200 sumps, and 60,000 street-drain inlets. Portland has a combined sewer system. When it rains, sewer pipes fill up with both stormwater runoff and sewage. The overflow goes directly into the Willamette River. The city is in the 10th year of a multi-faceted program to eliminate combined sewer overflows by 2011. Over the next 11 years, the Bureau of Environmental Services will build the pump stations and install the large pipes to carry combined sewer overflows to the treatment plants. This program will result in increased fees for ratepayers.

A.4.6 Oregon's Tax System

A basic understanding of Oregon's state and local finance is required to assess the costs of public infrastructure. The recent shift in Oregon's tax system to increased reliance on income taxes has increased the sensitivity of funding to changing economic conditions. In response to declining property tax revenue, many local governments have turned to fees in general, and in particular, system development charges and exactions on new development to fund off-site infrastructure. The long-term effects of this shift are uncertain. If great differentials between jurisdictions evolve over time, the distribution of regional growth may shift dramatically.

The two largest sources of tax revenue in Oregon are income and property taxes, which together account for approximately 75% of total state and local tax revenue. Personal and corporate income taxes have grown rapidly in the last decade because of increased population, per-capita income, national corporate profits, and the share of corporate profits allocated to Oregon. The electronics industry, located largely in the Portland area, is the largest payer of corporate income taxes in the state.

The current system of taxes has been mandated as a result of Ballot Measures 5 and 50. The changes from these two measures have radically changed the tax system and infrastructure financing mechanisms in Oregon.

For example, before Measure 5, the total amount of tax revenue to be raised (the tax base) was divided by total assessed value in the taxing district to calculate a tax rate. A tax base could not increase more than 6% per year without voter approval. Under that system, local voters determined the level of property tax revenue to counties, cities, and school districts. Property tax revenue was the largest source of school district funding, accounting for over half of all school district revenue.

Ballot Measure 5, passed by voters in 1990, limits the property tax rate to \$10 per \$1000 assessed value (i.e., 1% of assessed value) for non-school taxes, and limits the tax rate limit for schools to \$5 per \$1000. These limits were added to the Oregon Constitution. Local voters cannot increase them, but local voters can approve taxes beyond the limits to fund capital improvements. Measure 5 requires the State to replace lost property tax revenue to schools, effectively creating a state-funded school system.

Ballot Measure 50, approved by voters in 1997, limits the property tax rate and growth of property values. Measure 50 rolled back the assessed value of property to 1995-96 levels less 10%, and limited growth of the assessed value to 3% per year. Under this system, the property tax rate in Oregon is no longer applied to the actual market value of property, but rather to a lesser-assessed value. There are exemptions for new construction, re-zoning, and subdivisions.

In addition to limiting the assessed value of property, Measure 50 required a 17% cut in tax levies, and permanently froze the resulting tax rate. Levies for bonds are exempt from this cut. The combination of fixed permanent tax rate and the 3% limit on assessed value

growth effectively limits property tax revenue growth to no more than 3% per year plus increases for new development, either from new construction within a jurisdiction, or an expansion of its boundaries (e.g., annexation). Voters can approve levies beyond the permanent rate, but only at general elections or an election with 50% voter turnout. Operating levies beyond the permanent rate are limited to five years, and capital levies to ten years. Bond levies are exempt from the time limits of Measure 50, but must be approved by voters in a general election or in an election with at least 50% voter turnout.

A.4.7 Water Utilities

There is a great divergence of water service providers in the Portland region. For example, in Clackamas County there are 20 separate entities, 16 provide potable water service, and 4 are responsible for wastewater management and surface water management. All of the water utilities operate more or less independently within the topography of the Clackamas and Willamette watersheds. Many of the water service providers are “special-purpose” agencies, while others are departments within “general purpose” governments. In short, the numerous water service providers in the Portland region do not plan or operate as an integrated system.

Sewerage and water infrastructure and operating and maintenance expense are funded by a combination of intergovernmental subsidies, user fees and system development charges. Many of the water service providers utilize connection fees and other system development charges to fund capital projects. An examination of the City of Portland’s sewer rate structure is illustrative. New sewer rates took effect July 1, 2001. Table A-1 highlights the current rate structure.

Special Service Districts

Special districts are financed through property taxes or fees for services, or some combination thereof. A governing body elected by the voters directs all the districts, of which there are over 1,000. State statutes provide for 28 different types of districts, including water control, transportation, water supply, special road, highway lighting and sanitary districts and authorities.

A.4.8 Oregon’s Funding for Transportation Infrastructure

A major funding source for Oregon transportation projects comes from the Federal Highway Trust Fund and Transit Formula Funds. The State receives an amount from the federal government, equivalent to about 55% of the amount of the three-tiered tax structure levied by the State, to be used by the State for highway and transit projects following the guidelines of the Transportation Equity Act for the 21st Century (TEA-21). This is not discussed further because it is a revenue source the collection of which is not under control of the State of Oregon.

Oregon is unusual in the breadth of different tax instruments it has authorized to fund transportation projects, particularly for public transit. However, despite a relatively liberal legal framework for the adoption of local option taxes, the state has not seen a major

shift toward their widespread use. Voters seem willing to accept small transportation taxes, but tend to reject the larger taxes that would be able to fund major new infrastructure projects. Instead, there has been a shift toward local issuance of general revenue bonds.

Table A-1, City of Portland Sewer Rate Structure

2001/2002 Residential Sewer Rates:	
Sewer Volume Charge	\$4.01 per unit*
Sewer Account Service	\$2.24 per month
Stormwater	\$10.97 per month**
2001/2002 Commercial Sewer Rates:	
Sewer Volume Charges	\$4.242/unit per month*
Sewer Account Service	\$ 7.17 per month
Stormwater	\$5.00 per 1,000 sq ft per month
Sanitary System Development Charge:	
Per Equivalent Dwelling Unit	\$2,139
Line and Branch Charges:	
Line Charge per Square Foot	\$0.597
Branch Charge per Branch used	\$1,672
Stormwater System Development Charge:	
Single or two-family home	\$453
Commercial and Multiple Family Dwelling of Five or More Units:	
Rate per 1,000 Sq. Ft./Impervious Area	\$102.
Rate per Linear foot of Frontage	\$2.77
Rate per daily vehicle trip	\$1.10

* Price is based on volume in units of 100 cubic feet (748 gallons)

** Price is based on an average 2,400 square foot of hard surface area

The region's transportation system is funded through a combination of federal, state, regional and local sources. Federal funds are given to this region with differing requirements on how they must be spent. The state generates funds through a series of user fees that are constitutionally limited to road use, including a gasoline tax, taxes on heavy trucks, vehicle registration fees and drivers license fees. Tri-Met collects regional transit funds through a business payroll tax and fares. Local sources include county gasoline taxes, dedicated property tax levies and other development-related fees.

The Portland region's transportation system is supported by several government entities. These include Multnomah County that operates and maintains the 5 Willamette bridges, the Oregon Department of Transportation (ODOT) that maintains the freeways (I-5, I-405, I-205, I-84), 4 Willamette bridges, and state highway routes. Tri-Met operates and maintains the mass transit services that include the bus system and the light rail system.

Counties, transportation districts, and Metro have the power to levy motor vehicle registration fees to fund various transportation projects, subject to voter approval. Voters in several counties considered adopting these fees in 1997, but all rejected the proposal.

Compared with other state-automobile related taxes, Oregon ranks among the lowest in the nation. The average gasoline and automobile taxes paid in 1999 in Oregon were \$162.60 per year. In comparison, Washington residents paid \$564.00, Nevada residents paid \$455.10, Idaho residents paid \$316.80, and California residents paid \$466.20 per year.

Oregon does not have a state sales tax or a local option sales tax. However, unlike local governments in most other states, Oregon counties and cities have the power to devise their own non-property tax and other local revenue structures without specific state enabling legislation. As a result, Oregon cities and counties levy a wide variety of local taxes.

Within the Portland region, Multnomah County levies a 3-cent per gallon gas tax and Washington County levies a 1-cent per gallon gas tax. Both counties share these revenues with the cities within their boundaries. These revenues may be used for maintenance or road expansion.

Hotel and motel taxes are another minor source of revenue for transportation finance. Of the many jurisdictions that impose the tax, just four (Lake Oswego, Lincoln County, Umatilla County, and Union County) dedicate the revenue to transportation projects. Together these taxes raise nearly \$1 million annually.

In Oregon, counties and several types of county-established road districts may adopt property taxes for the construction and maintenance of county roads and bridges. In all, Oregon has 123 road districts, of which 86 receive revenues from dedicated local property taxes.

A.4.9 Special Districts - Local Improvement Districts (LIDs)

Local Improvement Districts (LIDs) are commonly used for public improvements including transportation projects. Transit districts may use property taxes to fund their operations or repay debt. Currently, six transit districts (Basin, Hood River, Lincoln County, Rogue Valley, Salem, and the Portland region's Tri-County Metropolitan Transit District ["Tri-Met"] covering parts of Clackamas, Multnomah, and Washington counties) use the revenue from the property tax to repay debt from the construction of its West Side Light Rail project. Together, transit property taxes generate \$19.4 million annually (about \$6 per capita averaged statewide).

A.4.10 Impact Fees

Transportation System Development Charges

System development charges (SDCs) are one-time fees assessed to new development and changes in use. The fees cover the cost of transportation facilities that are projected to serve the new development and the people who occupy the new development. There are as many variations on system development charges in the region as there are localities. For example, the City of Portland has identified 51 different land use categories while Washington County uses approximately 250.

The SDC rate for each mode of transportation is calculated using the following formula: (1) the amount of money the City needs to collect over the next 10 years to build the additional capacity in the city’s transportation system to accommodate growth-related trips; (2) the projected amount of growth in households and employment over the next 10 years. The number of trips the land use generates is multiplied by nationally compiled averages.

Table A-2, City of Portland Transportation System Development Charges

Land Uses	Unit	SDC per Unit
Commercial- Services:		
Drive-in Bank	Sq ft/GFA	\$14.79
Walk-in Bank	Sq ft/GFA	\$11.64
Day Care	Student	\$159
Library	Sq ft/GFA	\$3.61
Post Office	Sq ft/GFA	\$8.00
Hotel/Motel	Room	\$1,479
Service Station	VFP	\$4,989
Movie Theatre	Screen	\$15,077
Commercial-Administrative Office:		
Up to 9,999 sq ft	sq ft/GFA	\$3.98
10,000-49,999 sq ft	sq ft/GFA	\$3.22
50,000-99,999 sq ft	sq ft/GFA	\$2.53
100,000-199,999 sq ft	sq ft/GFA	\$2.16
200,000-299,999 sq ft	sq ft/GFA	\$1.90
Over 300,000 sq ft	sq ft/GFA	\$1.62
Medical Office/Clinic	sq ft/GFA	\$5.06
Industrial:		
Light Industrial/	sq ft/GFA	\$1.36
Manufacturing	sq ft/GFA	\$1.36
Industrial Park	sq ft/GFA	\$1.36
Warehousing	sq ft/GFA	\$0.97
Truck Terminal	Acre	\$15,985
Residential:		
Single Family (1-3 units)	Dwelling	\$1,433.00
Multi-Family (4+)	Dwelling	\$1,030.00

GFA: Gross Floor Area
VFP: Vehicle Fueling Position

The City of Portland requires SDCs for new development and changes to existing buildings that create more than 15% new transportation trips than the previous base. Any building permit issued by the City of Portland that is subject to transportation SDC for Washington County or Clackamas County is exempt from payment of the Portland transportation SDC. Exemptions are available for government and approved affordable housing projects.

SDC costs may be reduced by creating transit-oriented development (TOD). For example,

certain areas of the central city qualify for partial exemptions of between 45% and 65% of the fee. Also in other areas, projects may qualify for reductions if they are located on or near a bus line or light rail line and meet minimum density requirements. An alternative calculation process is available to applicants who disagree with the SDC rate, Credit or Exemption for a particular development or class of exemptions.

SDC credits are available if developers participate in constructing certain types of street improvements or reduce trips by more than 15%. For example, if the developer builds all or any portion of an improvement that is included in the SDC list of 36 capital projects, or the two-year funded list of citywide CIP capital projects, the developer will be entitled to a dollar-for-dollar credit against any future SDC. The developer will also be eligible for an SDC credit if they build an improvement to an arterial or collector street required as a condition of a development permit, provided there is measurable capacity beyond that which is necessary to serve the development. SDC Credit Transfers are issued by the City and can be transferred to other parcels or persons. They are good for up to 10 years.

City of Portland Proposed Street User Fee

The City of Portland is considering the implementation of a street user fee similar to that of several other Oregon cities. The proposed fee to take effect in 2002 would attempt to replace Portland's share of the state gas tax revenue that has been falling behind inflation. The proposed monthly fees in Portland include the following charges: Downtown Office Tower--\$1290/month; Large Hospital--\$1395/month; and Big-Box Retail (40K sq ft)--\$229/month.

The street user fee structure proposed for Portland utilizes a model that estimates the average number of vehicle trips generated based upon how a property is used and its size. If approved the fee would begin in January 2002. Over a five-year period about \$60 million would be raised to more than offset the \$19 million estimated reduction in gasoline taxes.

APPENDIX B - LITERATURE REVIEW

B.1 BACKGROUND

Different studies of costs of growth measure different aspects of those costs, in different units, over different levels of geography and time periods. Without clear statements of definitions and assumptions, the debate about costs of growth is primarily rhetorical, and the evaluation of policies primarily political. The objective of this report is to provide a technical basis for the debate about growth by describing the technical issues as clearly and fairly as possible.

When interpreting the literature on the fiscal impacts of development on governments, it is important to consider several qualifications and assumptions. For example, most analysis considers only the direct costs of public facilities and services for residential development. In so doing, these studies often make the implicit assumption that those facilities and services are of a quality that is the same as the current technology and that there is no large spillover effect.

However, that assumption is not correct. The pricing of roads, the operation of combustion engines, and highway congestion all generate spillover social costs. Many cities have sewage treatment systems that fail in the rainy season. If, to accommodate growth, we build and price facilities no better than we have in the past, then there will be some additional costs of growth on society (though in that example, current development also contributes to those costs).

Additionally, prior to 1980, most fiscal impact analyses focused on operating expenses and ignored construction costs (Altshuler and Gomez-Ibanez 1993, p. 79). Many more recent analyses of costs have gone the other direction, estimating construction costs but not operation costs.

Using financing costs to estimate costs of growth may or may not be an appropriate measure of the true economic costs of the resources that growth requires. On the one hand, when capital improvements are financed, their cost may be reported as an annual payment, which can then be added to annual operating costs to get a rough approximation of an annual equivalent cost of the service. On the other hand, when some facilities are financed over a period not equal to their expected lives, when some facilities are financed and others are not, or when facilities are partially financed while other payments come from transfers from other local or state revenue sources, financial costs may bear little relation to the real economic costs.

A basic understanding of state and local finance is necessary to any assessment of the costs of public policies and services, and of who pays them. Here are three examples of the

important relationships between the tax system and growth:

1. All cities and counties do not offer the same package of services. Differences result from many factors, which include the historic pattern of growth; prior investments in and directions for services; and the preferences of property owners for type, level and cost of service (which is in part a function of their socioeconomic and demographic characteristics). Federal and state mandates have increased requirements for local facilities and services, while a phase-out of revenue sharing has reduced payments for others. There is ample evidence that many state agencies and local governments, faced with requirements for more services, inflation, and budget limitations, make ends meet by deferring maintenance (in essence, borrowing from the future). Whether mandated or locally chosen, different standards for level of service can easily change costs by a factor of two or more (Frank 1989, p. 11)
2. Jurisdiction size also influences costs. Larger cities typically provide more services. To some extent, that results from different regulatory standards, and from the need for a critical mass of demand to allow certain services to take advantage of economies of scale that lower the per capita costs. Increasing per capita expenditures may also be a result of the effects of the amount and density of population (i.e., congestion). The larger the jurisdiction the smaller the impacts of a new householder (that might have higher marginal costs) on average service costs of all households, the more likely the excess capacity will exist and mean decreasing marginal costs for growth, and the more likely that external benefits and costs will be internalized
3. There is a lot of uncertainty about the estimates of the amount and composition of population, its demand for services, costs, and all the other factors that go into calculating what a fair charge for the direct costs of public facilities should be. Some of the uncertainty is inherent (we can never be sure of the future until it's the past); while some of it is introduced by bad techniques and data.

B.2 REVIEW

There have been numerous studies conducted over the last thirty years that inform us on the costs of development. Frank (1989) provides an initial summary of the best studies on the fiscal impacts dating back to 1955. More recent summaries of fiscal impact analysis can be found in Burchell (1997) and Burchell and Listokin (1995). Other significant work on development impact fees come from Nelson (1988) and Altshuler and Gomez-Ibanez (1993). The effect of property tax on development can be examined in Ladd (1998).

Frank's (1989, 39-41) conclusion from his review of cost studies is that when all on-site and off-site capital costs for streets, sewers, water systems, storm drainage, and schools are counted they amount to about \$35,000 (\$1987, which would be about \$55,000 in 2001) per dwelling unit for a low-density residential pattern. That estimate depends heavily on the assumed location of the dwelling units from central facilities and on the density of the

development.

Frank shows different reasonable assumptions that cause costs to be from about 50% to 250% of that base estimate. Service standards have big effects: capital costs for schools and streets across jurisdictions vary by a factor of two. He notes that costs can be reduced even further if standards are reduced, but that such reductions are usually only acceptable with less density, which means that distance-related costs (roads and pipes) will increase and at least partially offset the saving (assuming water and sewer hook-ups to a central system). His conclusion is that “in most communities, costs beyond the neighborhood level are not fully passed on to the consumer as part of buying a house.

Frank also notes an obvious point that is critical to any estimate of the costs of growth: marginal costs vary substantially because of big differences in unused capacity. If cost estimates are based on having growth connect to existing infrastructure that has excess capacity, those estimates will be lower. Frank found that if only marginal costs are considered, scattered, infill development has the smallest short-run impact on cost because it takes advantage of unused capacity.

The work of Frank and others since Frank is identified and briefly summarized in Burchell et al. (1998), which is primarily based on his previous summary (Burchell 1995). Burchell’s work in New Jersey is a state-level analysis of the relative costs of alternative development patterns. He looks at roads, water, sewer, and schools, but his reference to the study does not include sufficient documentation to determine exactly which components of those costs are being measured. His results are not reported in his summaries as a cost per dwelling unit. Burchell also cites a study by Duncan (1989) but does not provide enough detail to determine which aspects of capital costs that study is measuring. Despite these problems, Burchell summarizes from three studies to argue that certain service costs are less expensive under compact development than under traditional development. He estimated “compact” costs as a percent of “sprawl” costs to be about 75% for local roads, 80% for utilities, and 95% for schools.

Ladd (1998) has done substantial work on government cost and growth, and has done a review of that literature. While most other work on costs makes estimates based on the assumed characteristics of subdivisions, her work is done at a metropolitan scale. She finds a U-shaped relationship between the rate of population growth and growth in local government per capita spending. On average, for a few hundred metropolitan areas, spending declines at low rates of population growth (less than 1% per year) and then rises at an increasing rate after the annual population growth rate reaches about 3.8%. Among the reasons: in fast-growing counties, state governments do not maintain their share of state-local spending; fast-growing counties have larger capital expenditures.

With respect to density, Ladd finds that it has the same U-shaped impact on spending as she found for growth, and that greater density is associated with higher public sector costs. Higher density requires more public expenditure to deal with what Ladd refers to as “the harshness of the environment.” For example, the costs of pollution control are greater when people are closer together: the pollution impacts more people.

A study in Oregon (ECONorthwest 1995) found similar results and that housing construction of neo-traditional type costs about the same on a square-foot basis. That study also supports the conclusions of other studies: that infrastructure costs depend more on the location of the development than its design because of significantly different impacts on off-site costs. Many analysts agree with Kain (1967, quoted in Frank (1989, 23)) that the cost of community facilities “depends primarily on the shape and size of the region being served rather than on density.”

The conclusion that distance from central facilities leads to greater off-site costs has been used by many planners to argue that leap-frog development is inefficient. From an economic perspective, however, greater off-site costs are not necessarily bad. Peiser’s empirical work (1989) suggests that over time discontinuous development patterns actually promote higher density. He examined lot sizes over time along major arterial roadways in Dallas, TX; Montgomery County, MD; and Fairfax County, VA). He found higher densities (i.e., smaller lot sizes) in later in-fill development than in the original development.

B.3 COST OF COMMUNITY SERVICES (COCS) STUDIES

The studies above focus on subsets of municipal costs incurred to accommodate growth. Most do not focus on the allocation of these costs between sectors of the economy. The term “costs of community services” (COCS) generally refers to the growing body of literature that focuses on how various types of land use affect government taxation and spending. In general, this body of literature concerns itself with the fiscal impact analysis in the determination of whether various forms of land use contribute or detract from local coffers. Since the 1980s, numerous COCS studies have been conducted.

COCS studies provide a one-time view of public costs and public revenues attributable to different land uses. Typically, land uses are grouped into three categories, residential, commercial/industrial and agricultural/open space—with the costs and revenues for each category expressed as a ratio. Over 1 means that the public costs for that category exceed its property tax revenues. A summary of the results of numerous studies conducted by the Farmland Trust is included in Appendix D.

COCS studies consistently indicate that residential land uses are a net drain on public revenues, whereas the other two categories have a net positive effect. The average COCS ratio for residential land is between 1.15 and 1.50; for commercial/industrial land, between 0.35 and 0.65; and for farmland/open space between 0.30 and 0.50.

Some variation among communities does occur. For example, communities with higher proportions of expensive housing owned by childless households will lower the COCS ratio for residential land use. Additionally, in communities where population growth rates are less than 2 percent per annum public costs escalate much less rapidly than in communities with growth rates of greater than 2 percent.

Initially, critics of the COCS studies argued that it was difficult to generalize from these studies. This criticism has diminished since the so many studies have been conducted nationally and the results appear consistent and unambiguous. An additional criticism of these studies is that their scope is too restrictive by failing to include the negative multiplier effects of new populations. However, as many have pointed out, neither the negative nor the corresponding positive multiplier effects have been taken into account as they offset each other and are not within the temporal span of the analysis.

Another criticism of the COCS method is that they utilize the “cost theory of taxation” and do not consider how growth, even with increased taxation, increases the values of properties. Conversely, the “benefit theory of taxation” argues that as new taxes pay for better infrastructure, property values increase. Such considerations warrant further investigation.

Nevertheless, two conclusions are constant from the COCS analysis. First, residential development invariably leads to increasing per capita demand for infrastructure. As a result, increases in either local tax rates or impact fees to fund additional services tend to follow growth. Second is that farmland and commercial/industrial properties tend to subsidize residential needs for infrastructure.

Doutzer (1998) attempts to sort out what the developer pays and what households subsequently pay through user charges and property tax. He looks at the full range of capital costs and municipal services growth requires for cities in Texas. His conclusion is that new subdivisions, because they are higher than average value, will pay more than the average amount into the general fund for general fund services like police and fire protection, parks and recreation, libraries, and municipal courts. The amount of debt that can be supported by revenues from the new subdivisions (e.g., development fees, ongoing user charges) exceeds the amount of capital improvements cities have provided to these areas. Despite uncertainties and limitations (e.g., he looked at water, sewer, storm and streets, but not schools, which were not municipality provided) the findings make it clear that growth already pays a lot of its direct costs on public facilities.

ECONorthwest (1995) developed cost estimates for on-site public facility construction costs (local streets, sidewalks, water, sewer, electrical, and lighting) for two prototypical subdivisions, one using traditional and the other using non-traditional methods. Attempts were made to control for type, number, and quality of units, and expected demographic mix. The results were consistent with subsequent national studies showing no absolute cost savings for on-site public infrastructure (streets; water, sewer, and gas pipe; and electrical conduit) for neo-traditional development.

Most if not all of those on-site costs are paid as part of the development process. The ECONorthwest study also concluded, consistent with other national studies cited above, that “off-site public costs are primarily affected by the overall pattern of development [especially the location of the development relative to central facilities] and public infrastructure capacity” (ECONorthwest 1995).

The W & H Pacific (1998) study looked at only the off-site (regional) costs of constructing and operating wastewater, stormwater, drinking water, and transportation facilities to serve 49 urban reserve areas (URA) in the Portland Metropolitan area. The study was empirically based, looking at the topography of each URA and its proximity to existing facilities. By including the present value of annual operation and maintenance costs (O & M), the study gets at an estimate of life-cycle costs. Transportation costs did include new arterials and collectors estimated to be needed to link to the regional highway system, but did not include any improvements to the existing regional highway system to accommodate more growth beyond those envisioned in the regional transportation plan, regional transit improvements or costs, or new signalization. W & H Pacific estimated total signalization costs and allocated them to dwelling units to calculate an average cost per new dwelling unit of \$865.

The estimated total off-site costs per dwelling unit varied significantly from one URA to another, but most were in the range of \$15,000 to \$40,000. Some costs were exceptionally high because the servicing costs were high and the estimated growth of dwelling units in a URA was low.

B.4 GROWTH SUBSIDIES

Although opinions vary, the evidence reviewed leads one to conclude it is probably the case that for on-site public facilities new residential development directly pays on the order of 50% to 90% of the capital costs (largely through developer provided infrastructure, hookup fees, SDCs and other impact fees, special assessments, exactions, and property taxes).

The exact percentage will vary by jurisdiction, depending on things like the total type and level of service, the details of the cost-recovery structures the service provides, and how one chooses to treat future property tax payments and users fees, some of which may be paying down financed capital costs. If a jurisdiction in a smaller region (which will have a less complex regional transportation system) also provides most public facilities through enterprise funds and special districts, then its recovery rate will be toward the higher end. Even where these conditions do not apply, 50% still seems like a reasonable lower bound because (1) probably at least 30% (and maybe as much as 40%) of the capital costs for public facilities are on-site costs, which are uniformly paid by development, and (2) all jurisdictions have some combination of SDCs, special assessments, and exactions to pick up some of the off-site costs. For operation and maintenance, it appears that new development, with its higher values, pays more than its fair share of O & M.

The conventional wisdom continues to be that office and industrial property growth is fiscally beneficial to a jurisdiction: that it typically contributes more to revenues than it requires in costs of service. Burchell's work (1998) describes a fiscal impact hierarchy, in which most residential categories are negative or break-even, retail is break-even, and all other business categories are fiscally positive (at a municipal and regional level).

**APPENDIX C – INFRASTRUCTURE IMPACT FEE
MODELS**

Table C-1, Las Vegas Valley Impact Fee Model – Water

DESCRIPTION:

This fee covers connections, meter and over sizing, to serve new development plus application and inspection fees.

<u>BURDEN NEXUS:</u>	<u>TYPE NEXUS:</u>	<u>Land (sq ft)</u>	<u>RSF</u>	<u>COST NEXUS:</u>
Title 13.12.025	Flex Office	173,100	45,000	\$0.557/RSF
	2-Story Office	281,200	90,000	\$0.611/RSF
	Warehouse	333,000	150,000	\$0.255/RSF
	Residential SF	11,773	N/A	\$3,460
	Residential MF	1,998		\$1,500

<u>IMPACT FEE ESTIMATING EQUATIONS:</u>			<u>SF</u>	<u>SF</u>	<u>MF</u>	<u>MF</u>
<u>Land Use</u>	<u>Estimation Formula</u>	<u>IOP TIF (calc.)</u>	<u>\$/RDUs on Equiv. Land</u>	<u># RDUs on Equiv. Land</u>	<u>\$/RDUs on Equiv. Land</u>	<u># RDUs on Equiv. Land</u>
Flex Office	\$0.557/RSF	\$25,065	\$50,872	14.7	\$179,857	86.6
2-Story Office	\$0.611/RSF	\$54,990	\$82,642	36.2	\$292,177	140.7
Warehouse	\$0.255/RSF	\$38,250	\$97,866	42.8	\$346,000	166.7
Residential SF	\$3460/RDU	\$3,460	\$3,460	1.0	N/A	N/A
Residential MF	\$1500/RDU	\$1,500	\$1,500	1.0	\$1,500	1.0

NOTES:

Developers incur a Regional Connection Charge when they initiate a new water service. The charge is based on size of service (meter size), Residential unit density or land use.

Single Family (SF) Regional Connection fee is \$3,460 and Multi-Family, master metered Regional Connection fee is \$1,500.

This model assumes Residential land in Las Vegas is 88% Single Family and 12% Multi-Family, based on the January 2001 PFNA study.

- RSF Rentable Square Feet
- TIF Total Impact Fee
- RDU Residential Dwelling Unit

Table C-2, Las Vegas Valley Impact Fee Model – Sewer

DESCRIPTION:

Sewer impact fees per RDU or RSF include sanitary sewer costs recovered by Clark County NV.

<u>BURDEN NEXUS:</u>	<u>TYPE NEXUS:</u>	<u>Land (sq ft)</u>	<u>RSF</u>	<u>COST NEXUS:</u>
See Resolution	Flex Office	173,100	45,000	Fee= \$0.544/RSF
	2-Story Office	281,200	90,000	Fee=\$0.272/RSF
	Warehouse	333,000	150,000	Fee= \$0.086/RSF
	Residential SF	11,773	N/A	Fee= \$1250/RDU

IMPACT FEE ESTIMATING EQUATIONS:

<u>Land Use</u>	<u>Estimation Formula</u>	<u>IOP TIF (calc.)</u>	<u>\$/RDUs on Equiv. Land</u>	<u># RDUs on Equiv. Land</u>	<u>Variable</u>	<u>Description</u>
Flex Office	Fee= \$0.544/RSF	\$24,480	\$18,378	14.7	RSF	Rentable Square Feet
2-Story Office	Fee=\$0.272/RSF	\$24,480	\$29,856	23.9	TIF	Total Impact Fee
Warehouse	Fee= \$0.086/RSF	\$12,900	\$35,356	28.3		
Residential	Fee= \$1250/RDU	\$1,250	\$1,250	1.0	RDU	Residential Dwelling Unit

NOTES:

City of Las Vegas Sewer Impact fee \$1200/RDU, City of North Las Vegas Sewer Impact fee \$1300/RDU, therefore \$1250 avg. used.

Table C-3, Las Vegas Valley Impact Fee Model – Streets

DESCRIPTION:

This fee covers pro rata capital cost of roadways needed to serve new development

<u>BURDEN NEXUS:</u>	<u>TYPE NEXUS:</u>	<u>Land (sq ft)</u>	<u>RSF</u>	<u>COST NEXUS:</u>
	Flex Office	173,100	45,000	Fee= \$0.500/RSF
	2-Story Office	281,200	90,000	Fee= \$0.500/RSF
	Warehouse	333,000	150,000	Fee= \$0.500/RSF
Transportation Tax Act	Residential SF	11,773	N/A	Fee= \$500/RDU

IMPACT FEE ESTIMATING EQUATIONS:

<u>Land Use</u>	<u>Estimation Formula</u>	<u>IOP TIF (calc.)</u>	<u>\$/RDUs on Equiv. Land</u>	<u># RDUs on Equiv. Land</u>	<u>Variable</u>	<u>Description</u>	<u>Source</u>
Flex Office	TIF= \$0.500/RSF	\$22,500	\$7,351	14.7	RSF	Rentable Square Feet	
2-Story Office	TIF= \$0.500/RSF	\$45,000	\$11,942	23.9	TIF	Total Impact Fee	
Warehouse	TIF= \$0.500/RSF	\$75,000	\$14,142	28.3			
Residential	TIF= \$500/RDU	\$500	\$500	1.0	RDU	Residential Dwelling Unit	Transportation Tax Act

NOTES:

Residential Land Estimate used to compare impact fees based on land area developed.

RDUs on Equiv. Land - This is the result of the formula Industrial Property Land Area/Residential Dwelling Unit Land Area * Fee (IPLA/RDULA*\$500)

Table C-4, Portland, Oregon Impact Fee Model – Water

DESCRIPTION:

This fee covers water connection fee for new development

<u>BURDEN NEXUS:</u>	<u>TYPE NEXUS:</u>	<u>Land Area</u> (sq ft)	<u>Floor Area</u> (sq ft)	<u>COST NEXUS:</u>	
Title 17.36.020	Flex Office	173,100	45,000	Fee= \$24,481	1 EDU = 2,250 sq/ft
Title 17.36.020	2-Story Office	281,200	90,000	Fee= \$24,481	1 EDU = 2,250 sq/ft
Title 17.36.020	Warehouse	333,000	150,000	Fee = \$19,871	1 EDU = 9 employees
Title 17.36.020	Residential SF	11,773	N/A	Fee= \$3,571/"3/4 Meter	1 EDU = 1 SF RDU

IMPACT FEE ESTIMATING EQUATIONS:

<u>Land Use</u>	<u>Estimation Formula</u>	<u># EDUs</u>	<u>IOP</u> <u>TIF (calc.)</u>	<u>\$/EDUs on</u> <u>Equiv. Land</u>	<u># EDUs on</u> <u>Equiv. Land</u>
Flex Office	Fee= \$19,781	20	\$19,781	\$52,504	14.7
2-Story Office	Fee= \$24,481	40	\$24,481	\$85,293	23.9
Warehouse	Fee= \$19,781	2	\$19,871	\$101,005	28.3
Residential	Fee= \$3,571/"3/4 Meter	1	\$3,571	\$3,571	1.0

NOTES:

Water connection fee in Portland not considered System Development Charge for reimbursement of development impact on facilities.

- EDU Equivalent Dwelling Unit
- TIF Total Impact Fee
- RDU Residential Dwelling Unit
- SF Single Family

Table C-5, Portland, Oregon Impact Fee Model – Sewer

DESCRIPTION:

System Development charge to recover an equitable share of facilities cost from new development.

<u>BURDEN NEXUS:</u>	<u>TYPE NEXUS:</u>	<u>Land Area (sq ft)</u>	<u>Floor Area</u>	<u>COST NEXUS:</u>	<u>Assumptions</u>
Title 17.36.020	Flex Office	173,100	45,000	Fee= \$2,139/EDU	1 EDU = 2,250 sq/ft
Title 17.36.020	2-Story Office	281,200	90,000	Fee= \$2,139/EDU	1 EDU = 2,250 sq/ft
Title 17.36.020	Warehouse	333,000	150,000	Fee= \$2,139/EDU	1 EDU = 9 employees
Title 17.36.020	Residential SF	11,773	N/A	Fee= \$2,139/EDU	1 EDU = 1 SF RDU

IMPACT FEE ESTIMATING EQUATIONS:

<u>Land Use</u>	<u>Estimation Formula</u>	<u># EDUs</u>	<u>IOP TIF (calc.)</u>	<u>\$/EDUs on Equiv. Land</u>	<u># EDUs on Equiv. Land</u>
Flex Office	Fee= \$2,139/EDU	20	\$42,780	\$31,450	14.7
2-Story Office	Fee= \$2,139/EDU	40	\$85,560	\$51,090	23.9
Warehouse	Fee= \$2,139/EDU	2	\$4,278	\$60,501	28.3
Residential	Fee= \$2,139/EDU	1	\$2,139	\$2,139	1.0

NOTES:

System Development Charge for Sanitary Sewer based on residential equivalency and projected water use.

- EDU Equivalent Dwelling Unit
- TIF Total Impact Fee
- RDU Residential Dwelling Unit
- SF Single Family

Table C-6, Portland, Oregon Impact Fee Model – Streets

DESCRIPTION:

This fee covers pro rata capital cost of roadways needed to serve new development

<u>BURDEN NEXUS:</u>	<u>TYPE NEXUS:</u>	<u>Land (sq/ft)</u>	<u>GFA</u>	<u>COST NEXUS:</u>
Portland Office of Transportation	Flex Office	173,100	45,000	Fee= \$3.35/GFA
Portland Office of Transportation	2-Story Office	281,200	90,000	Fee= \$2.64/GFA
Portland Office of Transportation	Warehouse	333,000	150,000	Fee= \$1.01/GFA
Portland Office of Transportation	Residential SF	11,773	N/A	Fee= \$1,491.00/EDU

IMPACT FEE ESTIMATING EQUATIONS:

<u>Land Use</u>	<u>Estimation Formula</u>	<u>IOP TIF (calc.)</u>	<u>\$/EDUs on Equiv. Land</u>	<u># EDUs on Equiv. Land</u>
Flex Office	TIF = \$3.35/GFA	\$150,750	\$21,922	14.7
2-Story Office	TIF = \$2.64/GFA	\$237,600	\$35,612	23.9
Warehouse	TIF = \$1.01/GFA	\$151,500	\$42,173	28.3
Residential	TIF = \$1491/EDU	\$1,491	\$1,491	1.0

NOTES:

Residential Land Estimate used to compare impact fees based on land area developed.

RDU on Equiv. Land - This is the result of the formula Industrial Property Land Area/Residential Dwelling Unit Land Area * Fee (IPLA/RDULA*\$1491)

- GFA Gross Floor Area
- TIF Total Impact Fee
- RDU Residential Dwelling Unit
- EDU Equivalent Dwelling Unit

Table C-7, Infrastructure Comparison, Impact Fee Model – Water

LAS VEGAS IMPACT FEES

Land Use	Estimation Formula	IOP TIF (calc.)	SF \$/RDUs on Equiv. Land	SF # RDUs on Equiv. Land
Flex Office	\$0.557/RSF	\$ 25,065	\$ 51,313	14.7
2-Story Office	\$0.611/RSF	\$ 54,990	\$ 83,359	36.2
Warehouse	\$0.255/RSF	\$ 38,250	\$ 98,714	42.8
Residential SF	\$3460/RDU	\$ 3,460	\$ 3,460	1.0

PORTLAND IMPACT FEES

Land Use	Estimation Formula	Equivalent # EDUs	IOP TIF (calc.)	\$/EDUs on Equiv. Land	# EDUs on Equiv. Land
Flex Office	Fee= \$19,781	20	\$ 19,781	\$ 52,504	14.7
2-Story Office	Fee= \$24,481	40	\$ 24,481	\$ 85,293	23.9
Warehouse	Fee= \$19,781	2	\$ 19,871	\$ 101,005	28.3
Residential	Fee= \$3,571/"3/4 Meter	1	\$ 3,571	\$ 3,571	1.0

Table C-8, Infrastructure Comparison, Impact Fee Model – Sewer

LAS VEGAS IMPACT FEES

Land Use	Estimation Formula	<u>IOP</u> TIF (calc.)	<u>\$/RDUs on</u> Equiv. Land	<u># RDUs on</u> Equiv. Land
Flex Office	Fee= \$0.544/RSF	\$ 24,480	\$ 18,378	14.7
2-Story Office	Fee=\$0.272/RSF	\$ 24,480	\$ 29,856	23.9
Warehouse	Fee= \$0.086/RSF	\$ 12,900	\$ 35,356	28.3
Residential	Fee= \$1250/RDU	\$ 1,250	\$ 1,250	1.0

PORTLAND IMPACT FEES

Land Use	Estimation Formula	Equivalent # EDUs	<u>IOP</u> TIF (calc.)	<u>\$/EDUs on</u> Equiv. Land	<u># EDUs on</u> Equiv. Land
Flex Office	Fee= \$2,139/EDU	20	\$ 42,780	\$ 31,450	14.7
2-Story Office	Fee= \$2,139/EDU	40	\$ 85,560	\$ 51,090	23.9
Warehouse	Fee= \$2,139/EDU	2	\$ 4,278	\$ 60,501	28.3
Residential	Fee= \$2,139/EDU	1	\$ 2,139	\$ 2,139	1.0

Table C-9, Infrastructure Comparison, Impact Fee Model – Streets

LAS VEGAS IMPACT FEES

<u>Land Use</u>	<u>Estimation Formula</u>	<u>IOP TIF (calc.)</u>	<u>\$/RDUs on Equiv. Land</u>	<u># RDUs on Equiv. Land</u>
Flex Office	TIF= \$0.500/RSF	\$22,500	\$7,351	14.7
2-Story Office	TIF= \$0.500/RSF	\$45,000	\$11,942	23.9
Warehouse	TIF= \$0.500/RSF	\$75,000	\$14,142	28.3
Residential	TIF= \$500/RDU	\$500	\$500	1.0

PORTLAND IMPACT FEES

<u>Land Use</u>	<u>Estimation Formula</u>	<u>IOP TIF (calc.)</u>	<u>\$/EDUs on Equiv. Land</u>	<u># EDUs on Equiv. Land</u>
Flex Office	TIF = \$3.35/GFA	\$150,750	\$21,922.	14.7
2-Story Office	TIF = \$2.64/GFA	\$237,600	\$35,612	23.9
Warehouse	TIF = \$1.01/GFA	\$151,500	\$42,173	28.3
Residential	TIF = \$1491/EDU	\$1,491	\$1,491	1.0

APPENDIX D – REFERENCE DATA

**Table D-1, Summary of Cost of Community Services Studies,
Revenue-to-Expenditure Ratios in Dollars**

State/Town	Residential Including Farm Houses	Combined Commercial & Industrial	Farm/Forest Open Land	Source
Connecticut				
Bolton	1:1.05	1:0.23	1:0.50	Geisler, 1998
Durham	1:1.07	1:0.27	1:0.23	Southern New England Forest Consortium, 1995
Farmington	1:1.33	1:0.32	1:0.31	Southern New England Forest Consortium, 1995
Hebron	1:1.06	1:0.47	1:0.43	American Farmland Trust, 1986
Litchfield	1:1.11	1:0.34	1:0.34	Southern New England Forest Consortium, 1995
Pomfret	1:1.06	1:0.27	1:0.86	Southern New England Forest Consortium, 1995
Idaho				
Canyon County	1:1.08	1:0.79	1:0.54	Hartmans and Meyer, 1997
Cassia County	1:1.19	1:0.87	1:0.41	Hartmans and Meyer, 1997
Kentucky				
Lexington-Fayette Co.	1:1.64	1:0.22	1:0.93	American Farmland Trust, 1999
Maine				
Bethel	1:1.29	1:0.59	1:0.06	Good, Antioch New England Graduate School, 1994
Maryland				
Carroll County	1:1.15	1:0.48	1:0.45	Carroll County Dept. of Management & Budget, 1994
Cecil County	1:1.12	1:0.28	1:0.37	Cecil County Office of Economic Development, 1994
Frederick County	1:1.14	1:0.50	1:0.53	American Farmland Trust, 1997
Massachusetts				
Agawam	1:1.05	1:0.44	1:0.31	American Farmland Trust, 1992
Becket	1:1.02	1:0.83	1:0.72	Southern New England Forest Consortium, 1995
Deerfield	1:1.16	1:0.38	1:0.29	American Farmland Trust, 1992
Franklin	1:1.02	1:0.58	1:0.40	Southern New England Forest Consortium, 1995
Gill	1:1.15	1:0.43	1:0.38	American Farmland Trust, 1992
Leverett	1:1.15	1:0.29	1:0.25	Southern New England Forest Consortium, 1995
Southborough	1:1.03	1:0.26	1:0.45	Adams and Hines, 1997
Westford	1:1.15	1:0.53	1:0.39	Southern New England Forest Consortium, 1995
Williamstown	1:1.11	1:0.34	1:0.40	Hazier et al., 1992
Minnesota				
Farmington	1:1.02	1:0.79	1:0.77	American Farmland Trust, 1994
Lake Elmo	1:1.07	1:0.20	1:0.27	American Farmland Trust, 1994
Independence	1:1.03	1:0.19	1:0.47	American Farmland Trust, 1994
Montana				
Gallatin County	1:1.45	1:0.16	1:0.25	Haggerty, 1996
New Hampshire				
Deerfield	1:1.15	1:0.22	1:0.25	Haggerty, 1996

**Table D-1, Summary of Cost of Community Services Studies,
Revenue-to-Expenditure Ratios in Dollars (continued)**

State/Town	Residential Including Farm Houses	Combined Commercial & Industrial	Farm/Forest Open Land	Source
Dover	1:1.15	1:0.63	1:0.94	Kingsley et al., 1993
Exeter	1:1.07	1:0.40	1:0.82	Niebling, 1997
Fremont	1:1.04	1:0.94	1:0.36	Auger, 1994
Stratham	1:1.15	1:0.19	1:0.40	Auger, 1994
New Jersey				
Freehold Twnshp	1:1.51	1:0.17	1:0.33	American Farmland Trust, 1998
Holmdel Twnshp	1:1.38	1:0.21	1:0.66	American Farmland Trust, 1998
Middletown Twnshp	1:1.14	1:0.34	1:0.36	American Farmland Trust, 1998
Upper Freehold Twnshp	1:1.18	1:0.20	1:0.35	American Farmland Trust, 1998
Wall Twnshp	1:1.28	1:0.30	1:0.54	American Farmland Trust, 1998
New York				
Amenia	1:1.23	1:0.25	1:0.17	Bucknall, 1989
Beekman	1:1.12	1:0.18	1:0.48	American Farmland Trust, 1989
Dix	1:1.51	1:0.27	1:0.31	Schuyler County League of Woman Voters, 1993
Farmington	1:1.22	1:0.27	1:0.72	Kinsman et al, 1991
Fiskkill	1:1.23	1:0.31	1:0.74	Bucknall, 1989
Hector	1:1.23	1:0.15	1:0.28	Schuyler County League of Woman Voters, 1993
Kinderhook	1:1.05	1:0.21	1:0.17	Concerned Citizens of Kinderhook, 1996
Montour	1:1.50	1:0.28	1:0.29	Schuyler County League of Woman Voters, 1992
Northeast	1:1.36	1:0.29	1:0.21	American Farmland Trust, 1989
Reading	1:1.88	1:0.26	1:0.32	Schuyler County League of Woman Voters, 1992
Read Hook	1:1.11	1:0.20	1:0.22	Bucknall, 1989
Ohio				
Madison Village	1:1.67	1:0.20	1:0.38	AFT and Lake County Ohio SWCD, 1993
Madison Twnshp	1:1.40	1:0.25	1:0.30	AFT and Lake County Ohio SWCD, 1993
Pennsylvania				
Allegheny Twnshp	1:1.06	1:0.14	1:0.13	Kelsey, 1997
Bedminster Twnshp	1:1.12	1:0.05	1:0.04	Kelsey, 1997
Bethel Twnshp	1:1.08	1:0.17	1:0.06	Kelsey, 1992
Bingham Twnshp	1:1.56	1:0.16	1:0.15	Kelsey, 1994
Buckingham Twnshp	1:1.04	1:0.15	1:0.08	Kelsey, 1998
Carroll Twnshp	1:1.03	1:0.06	1:0.02	Kelsey, 1992
Maiden Creek Twnshp	1:1.28	1:0.09	1:0.04	Kelsey, 1998

**Table D-1, Summary of Cost of Community Services Studies,
Revenue-to-Expenditure Ratios in Dollars (continued)**

State/Town	Residential Including Farm Houses	Combined Commercial & Industrial	Farm/Forest Open Land	Source
Pennsylvania				
Richmond Twنش	1:1.24	1:0.09	1:0.04	Kelsey, 1998
Stewardson Twn	1:2.11	1:0.23	1:0.31	Kelsey, 1994
Straban Twنشp	1:1.10	1:0.16	1:0.06	Kelsey, 1992
Sweden Twنشp	1:1.38	1:0.07	1:0.08	Kelsey, 1994
Rhode Island				
Hopkinton	1:1.08	1:0.31	1:0.31	Southern New England Forest Consortium, 1995
Little Compton	1:1.05	1:0.56	1:0.37	Southern New England Forest Consortium, 1995
West Greenwich	1:1.46	1:0.40	1:0.46	Southern New England Forest Consortium, 1995
Utah				
Cache County	1:1.27	1:0.25	1:0.57	Snyder and Ferguson, 1994
Sevier County	1:1.11	1:0.31	1:0.99	Snyder and Ferguson, 1994
Utah County	1:1.23	1:0.26	1:0.82	Snyder and Ferguson, 1994
Virginia				
Clarke County	1:1.26	1:0.21	1:0.15	Piedmont Environmental Council, 1994
Northhampton County	1:1.13	1:0.97	1:0.23	American Farmland Trust, 1999
Washington				
Skagit County	1:1.25	1:0.30	1:0.51	American Farmland Trust, 1999
Wisconsin				
Dunn	1:1.05	1:0.29	1:0.18	Town of Dunn, 1994

Table D-2, State Individual Income Taxes, 2001

State	Tax Rates		Income Brackets			Personal Exemption --- Federal Tax			
	Low	High	# Brackets	Low	High	Single	Married	Child.	Ded.
Alabama	2.0	5.0	3	500(b)	3,000(b)	1,500	3,000	300	*
Alaska	No State Income Tax								
Arizona	2.87	5.04	5	10,000(b)	150,000(b)	2,100	4,200	2,300	
Arkansas	1.0	7.0(e)	6	2,999	25,000	20©	40(c)	20(c)	
California (a)	1.0	9.3	6	5,454(b)	35,792(b)	72©	142(c)	227(c)	
Colorado	4.63		1	Flat Rate		None			
Connecticut	3.0	4.5	2	10,000(b)	10,000(b)	12,000(f)	24,000(f)	0	
Delaware	2.2	5.95	7	5,000	60,000	110©	220(c)	110©	
Florida	No State Income Tax								
Georgia	1.0	6.0	6	750(g)	7,000(g)	2,700	5,400	2,700	
Hawaii (h)	1.5	8.5	8	2,000(b)	40,000(b)	1,040	2,080	1,040	
Idaho	2.0	8.2	8	1,000(l)	20,000(l)	2,900(d)	5,800(d)	2,900(d)	
Illinois	3.0		1	Flat Rate		2,000	4,000	2,000	
Indiana	3.4		1	Flat Rate		1,000	2,000	1,000	
Iowa	0.36	8.98	9	1,162	52,290	40(c)	80(c)	40(c)	*
Kansas	3.5	6.45	3	15,000(b)	30,000(b)	2,250	4,500	2,250	
Kentucky	2.0	6.0	5	3,000	8,000	20(c)	40(c)	20(c)	
Louisiana	2.0	6.0	3	10,000(b)	50,000(b)	4,500(j)	9,000(j)	1,000(j)	*
Maine (a) (k)	2.0	8.5	4	4,150(b)	16,500(b)	2,850	5,700	2,850	
Maryland (aa)	2.0	4.8	4	1,000	3,000	2,100	4,200	2,100	
Massachusetts	5.6		1	Flat Rate		4,400	8,800	1,000	
Michigan	4.2(l)		1	Flat Rate		2,800	5,600	2,800	
Minnesota (a)	5.35	7.85	3	17,710(m)	47,710(m)	2,900(d)	5,800(d)	2,900(d)	
Mississippi	3.0	5.0	3	5,000	10,000	6,000	12,000	1,500	
Missouri	1.5	6.0	10	1,000	9,000	2,100	4,200	2,100	* (u)
Montana (a)	2.0	11.0	10	2,100	73,000	1,610	3,220	1,610	*
Nebraska (a)	2.51	6.68	4	2,400(n)	26,500(n)	91(c)	182(c)	91(c)	
Nevada	No State Income Tax								
New Hampshire	State Income Tax is Limited to Dividends and Interest - Income Only.								
New Jersey	1.4	6.37	6	20,000(o)	75,000(o)	1,000	2,000	1,500	
New Mexico	1.7	8.2	7	5,500(p)	65,000(p)	2,900(d)	5,800(d)	2,900(d)	
New York	4.0	6.85	5	8,000(b)	20,000(b)	0	0	1,000	
North Carolina	6.0	7.75	3	12,750(q)	60,000(q)	2,500(q)	5,000(q)	2,500(q)	
North Dakota	2.67	12.0(r)	8	3,000	50,000	2,900(d)	5,800(d)	2,900(d)	* ©
Ohio	0.691	6.980(s)	9	5,000	200,000	1,050(s)	2,100(s)	1,050(s)	
Oklahoma	0.5	6.75(t)	8	1,000	10,000	1,000	2,000	1,000	* (t)
Oregon (a)	5.0	9.0	3	2,350(b)	5,850(b)	132 ©	264©	132©	* (u)
Pennsylvania	2.8		1	Flat Rate		None			
Rhode Island	25.5% Federal tax liability (v)								
South Carolina	2.5	7.0	6	2,310	11,550			(d)	
South Dakota	No State Income Tax - State Income Tax is Limited to Dividends and Interest								
Tennessee	Income Only								
Texas	No State Income Tax								
Utah	2.3	7.0	6	750(b)	3,750(b)	2,175(d)	4,350(d)	2,175(d)	* (w)
Vermont	24.0% Federal tax liability (x)								

Table D-2, State Individual Income Taxes, 2001(continued)

State	Tax Rates		Income Brackets			Personal Exemption --- Federal Tax			
	Low	High	# Brackets	Low	High	Single	Married	Child.	Ded.
Virginia	2	5.75	4	3,000	17,000	800	1,600	800	
Washington	No State Income Tax								
West Virginia	3	6.5	5	10,000	60,000	2,000	4,000	2,000	
Wisconsin	4.6	6.75(y)	4	1,500	112,500	700	1,400	400	
Wyoming	No State Income Tax								
Dist. Of Columbia	5	9.0(z)	3	10,000	30,000	1,370	2,740	1,370	

(Source: The Federal of Tax Administrators from various sources).

- (a) Seven states have statutory provision for automatic adjustment of tax brackets, personal exemption or standard deductions to the rate of inflation. Michigan, Nebraska and Ohio indexes the personal exemption amounts only.
- (b) For joint returns, the taxes are twice the tax imposed on half the income.
- (c) Tax credits.
- (d) These states allow personal exemption or standard deductions as provided in the IRC. Utah allows a personal exemption equal to three-fourths the federal exemptions.
- (e) A special tax table is available for low income taxpayers reducing their tax payments.
- (f) Combined personal exemptions and standard deduction. An additional tax credit is allowed ranging from 75% to 0% based on state adjusted gross income. Exemption amounts are phased out for higher income taxpayers until they are eliminated for households earning over \$52,500.
- (g) The tax brackets reported are for single individuals. For married households filing separately, the same rates apply to income brackets ranging from \$500 to \$5,000; and the income brackets range from \$1,000 to \$10,000 for joint filers.
- (h) For tax years beginning after 2001, the tax rates range from 1.4% to 8.25% for the same tax brackets.
- (i) For joint returns, the tax is twice the tax imposed on half the income. A \$10 filing tax is charge for each return and a \$15 credit is allowed for each exemption.
- (j) Combined personal exemption and standard deduction.
- (k) Income levels in each tax bracket will income for tax years 2002 and beyond.
- (l) Tax rate scheduled to decrease to 4.1% for tax year 2002.
- (m) The tax brackets reported are for single individual. For married couples filing jointly, the same rates apply for income under \$25,680 to over \$102,030.
- (n) The tax brackets reported are for single individual. For married couples filing jointly, the same rates apply for income under 4,000 to over \$46,750.
- (o) The tax brackets reported are for single individuals. For married couples filing jointly, the same rates apply for income under \$20,000 to over \$150,000.
- (p) the tax brackets reported are for single individuals. For married couples filing jointly, the same rates apply for income under \$8,000 to over \$100,000. Married households filing separately pay the tax imposed on half the income.
- (q) The tax brackets reported are for single individuals. For married taxpayers, the same rates apply to income brackets ranging from \$21,250 to \$100,000. Lower exemption amounts allowed for high income taxpayers.
- (r) Taxpayers have the option of paying 14% of the adjusted federal income tax liability, without a deduction of federal taxes. And additional \$300 personal exemption is allowed for joint returns or unmarried head of households.
- (s) Plus an additional \$20 per exemption tax credit. Rate reported are for tax year 2000, the 2001 rates will not be determined until July, 2001.
- (t) The rate range reported is for single persons not deducting federal income tax. For married persons filing jointly, the same rates apply to income brackets ranging form \$2,000 to \$21,000. Separate schedules, with rates ranging from 0.5% to 10%, apply to taxpayers deducting federal income taxes.
- (u) Deduction is limited to \$10,000 for joint returns and \$5,000 for individuals in Missouri and to \$3,000 in Oregon.
- (v) Tax rate scheduled to decrease to 25% of Federal tax liability for tax years 2002.
- (w) One half of the federal income taxes are deductible.
- (x) If Vermont tax liability for any taxable year exceeds the tax liability determinable under federal tax law in effect on December 31, 1999, the taxpayer will be entitled to a credit of 106% of the excess tax.
- (y) The tax brackets reported are for single individuals. For married taxpayers, the same rates apply to income brackets ranging from \$10,000 to \$150,000.
- (z) Tax rate decreases are schedules for tax years 2002 and 2003.
- (aa) The top tax rate is schedules to decline to 4.75% for tax years beginning after 2001.

**Table D-3, State and Local Governments
Revenue by State: 1996 (In millions of dollars)**

State	Total Revenue	From Federal Government	Taxes			Charges and misc.	Utility and liquor stores	Insurance trust revenue
			Total	Property	Sales/gross receipts			
Alabama	19,617	3,615	7,632	999	3,905	4,967	1,599	1,804
Alaska	10,002	1,121	2,301	680	239	4,910	223	1446
Arizona	20,787	3,163	10,163	3,114	4,541	3,547	2,042	1,873
Arkansas	11,396	2,271	4,851	754	2,320	2,197	427	1,651
California	200,998	31,217	86,215	22,779	20,856	38,066	12,506	32,994
Colorado	20,785	3,102	9,244	2,841	3,460	4,633	1,136	2,670
Connecticut	20,766	3,015	12,543	4,657	3,932	2,607	388	2,214
Delaware	4,432	677	2,046	299	246	1,239	136	333
D.C.	5,675	1,871	2,481	702	794	558	377	388
Florida	74,196	9,360	33,557	11,813	17,578	17,786	4,174	9,319
Georgia	38,006	5,805	17,309	4,793	6,822	8,169	2,282	4,441
Hawaii	7,821	1,342	3,842	613	1,992	1,458	175	1,004
Idaho	5,932	910	2,542	652	861	1,287	160	1,033
Illinois	63,909	9,332	32,660	12,510	10,969	10,937	2,239	8,741
Indiana	25,793	3,937	12,980	4,029	3,804	6,209	1,125	1,543
Iowa	14,320	2,303	6,983	2,384	2,243	3,429	565	1,041
Kansas	12,874	1,760	6,373	1,987	2,325	2,893	805	1,043
Kentucky	18,515	3,378	8,413	1,411	3,211	3,771	713	2,240
Louisiana	21,458	4,446	8,466	1,259	4,644	5,315	661	2,570
Maine	6,145	1,330	3,231	1,352	937	1,065	157	361
Maryland	25,843	3,666	14,321	3,975	3,765	4,774	570	2,702
Massachusetts	37,025	6,243	19,123	6,475	3,954	6,711	1,754	3,194
Michigan	52,580	8,184	24,828	7,098	8,380	10,860	1,637	7,071
Minnesota	30,794	3,846	14,569	4,116	4,611	6,508	1,216	4,656
Mississippi	12,516	2,790	5,143	1,208	2,658	2,740	571	1,271
Missouri	25,647	4,013	11,687	2,616	4,870	4,521	1,019	4,407
Montana	4,505	1,044	1,782	776	269	976	96	606
Nebraska	9,898	1,291	4,181	1,579	1,401	1,967	1,821	638
Nevada	9,124	914	4,266	879	2,778	1,829	310	1,806
New Hampshire	5,589	915	2,619	1,766	429	1,140	283	633
New Jersey	53,661	6,713	27,449	12,815	7,394	9,532	1,164	8,803
New Mexico	10,147	1,925	3,877	474	2,083	2,283	250	1,811
New York	154,432	24,889	72,495	23,262	19,402	24,712	5,538	26,798
North Carolina	35,885	5,800	16,486	3,458	6,115	7,578	2,658	3,363
North Dakota	3,439	703	1,441	412	598	797	64	434

Table D-3, State and Local Governments Revenue by State: 1996
(In millions of dollars) (continued)

State	Total Revenue	From Federal Government	Taxes			Charges and misc.	Utility and liquor stores	Insurance trust revenue
			Total	Property	Sales/gross receipts			
Ohio	64,538	9,567	27,961	7,967	8,621	10,789	2,072	14,149
Oklahoma	14,996	2,266	6,558	1,014	2,762	3,146	778	2,247
Oregon	22,126	3,926	7,238	2,332	740	4,855	816	5,291
Pennsylvania	64,439	10,574	30,280	8,689	9,037	11,680	2,466	9,439
Rhode Island	5,769	1,154	2,711	1,151	784	850	96	958
South Carolina	18,369	3,276	7,328	1,953	2,709	4,492	1,573	1,700
South Dakota	3,446	754	1,439	558	969	711	135	408
Tennessee	27,197	4,964	9,992	2,266	6,075	5,071	4,629	2,540
Texas	89,318	13,787	40,705	15,248	20,642	20,355	5,029	9,442
Utah	10,459	1,910	4,294	1,008	1,787	2,231	1,171	854
Vermont	3,189	765	1,518	680	406	586	144	176
Virginia	31,667	3,813	15,627	4,847	4,860	7,037	1,306	3,884
Washington	37,557	4,400	15,467	4,673	9,347	6,943	3,281	7,466
West Virginia	8,746	2,164	3,643	727	1,490	1,784	151	1,004
Wisconsin	33,829	3,896	15,205	5,438	4,205	5,283	729	8,717
Wyoming	3,478	3,058	1,165	435	443	1,110	106	314

Source: U.S. Census Bureau, <<http://www.census.gov/govs/www/esti96html>> (accessed 26 April 1999).

**Table D-4, Motor Fuel Excise Tax Rates
January 1, 2001**

State	Gasoline			Diesel Fuel			Gasohol			Notes
	Excise Tax	Add'l Tax	Total Tax	Excise Tax	Add'l Tax	Total Tax	Excise Tax	Add'l Tax	Total Tax	
Alabama	16.00	2.00	18.00	17.00	2.00	19.00	16.00	2.00	18.00	Inspection fee
Alaska	8.00		8.00	8.00		8.00	0.00		0.00	
Arizona	18.00		18.00	18.00		18.00	18.00		18.00	/3
Arkansas/8	20.50	0.20	20.70	22.50	0.20	22.70	20.50	0.20	20.70	Env. surcharge
California	18.00		18.00	18.00		18.00	18.00		18.00	Sales tax applicable
Colorado	22.00		22.00	20.50		20.50	22.00		22.00	
Connecticut	25.00		25.00	18.00		18.00	24.00		24.00	
Delaware	23.00		23.00	22.00		22.00	23.00		23.00	Plus 0.5% GRT /5
Florida/2	4.00	9.30	13.30	16.10	9.30	25.40	4.00	9.30	13.30	Sales tax added to excise /2
Georgia	7.50		7.50	7.50		7.50	7.50		7.50	Sales tax applicable (3%)
Hawaii/1	16.00		16.00	16.00		16.00	16.00		16.00	Sales tax applicable
Idaho	25.00	1.00	26.00	25.00	1.00	26.00	22.50	1.00	23.50	Clean water tax /7
Illinois/1	19.00	0.30	19.30	21.50		21.50	19.00		19.00	Sales tax applicable, env. fee /3
Indiana	15.00		15.00	16.00		16.00	15.00		15.00	Sales tax applicable /3
Iowa	20.00		20.00	22.50		22.50	19.00		19.00	
Kansas	20.00		20.00	22.00		22.00	20.00		20.00	/8 Env.
Kentucky	15.00	1.40	16.40	12.00	1.40	13.40	15.00	1.40	16.40	Fee /4 /3
Louisiana	20.00		20.00	20.00		20.00	20.00		20.00	
Maine	22.00		22.00	23.00		23.00	22.00		22.00	
Maryland	23.50		23.50	24.25		24.30	23.50		23.50	
Massachusetts	21.00		21.00	21.00		21.00	21.00		21.00	
Michigan	19.00		19.00	15.00		15.00	19.00		19.00	Sales tax applicable
Minnesota	20.00		20.00	20.00		20.00	20.00		20.00	
Mississippi	18.00	0.40	18.40	18.00	0.40	18.40	18.00	0.40	18.40	Env. fee
Missouri	17.00	0.05	17.05	17.00	0.05	17.05	15.00	0.05	15.05	Inspection fee
Montana	27.00		27.00	27.75		27.75	27.00		27.00	
Nebraska	23.9	0.9	24.8	23.9	0.9	24.8	23.9	0.9	24.8	Petroleum fee /5
Nevada /1	24.00		24.00	27.00		27.00	24.00		24.00	
New Hampshire	18.00	1.00	19.00	18.00	1.00	19.00	18.00	1.00	19.00	Oil discharge cleanup fee

**Table D-4, Motor Fuel Excise Tax Rates January 1,
2001 (continued)**

State	Gasoline			Diesel Fuel			Gasohol			Notes
	Excise Tax	Add'l Tax	Total Tax	Excise Tax	Add'l Tax	Total Tax	Excise Tax	Add'l Tax	Total Tax	
New Jersey	10.50	0.04	19.54	13.50	0.04	13.54	10.50	0.04	10.54	Products Tax Petroleum
New Mexico	17.00	1.00	18.00	18.00	1.00	19.00	17.00	1.00	18.00	Loading fee
New York	8.00		8.00	8.00		8.00	8.00		8.00	Sales tax applicable /3, /4
North Carolina	24.30	0.25	24.55	24.30	0.25	24.55	24.30	0.25	24.55	/4 Inspection tax
North Dakota	21.00		21.00	21.00		21.00	21.00		21.00	
Ohio	22.00		22.00	22.00		22.00	22.00		22.00	Plus 3 cents commercial
Oklahoma	16.00	1.00	17.00	13.00	1.00	14.00	16.00	1.00	17.00	Env. fee
Oregon /1	24.00		24.00	24.00		24.00	24.00		24.00	
Pennsylvania	12.00	13.90	25.90	12.00	18.80	30.80	12.00	13.90	25.90	Oil franchise tax
Rhode Island	28.00	1.00	29.00	28.00	1.00	29.00	28.00	1.00	29.00	
South Carolina	16.00		16.00	16.00	1.40	16.00	16.00		16.00	
South Dakota /1	22.00		22.00	22.00		22.00	20.00		20.00	
Tennessee /1	20.00	1.40	21.40	17.00		18.40	20.00	1.40	21.40	Petroleum Tax & Env. Fee
Texas	20.00		20.00	20.00		20.00	20.00		20.00	
Utah	14.50		24.50	24.50		24.50	24.50		24.50	
Vermont	19.00	1.00	20.00	25.00	1.00	26.00	19.00	1.00	20.00	Petroleum cleanup fee
Virginia /1	17.50		17.50	16.00		16.00	17.50		17.50	/6
Washington	23.00		23.00	23.00		23.00	23.00		23.00	0.5% privilege tax
West Virginia	20.50	5.15	25.65	20.50	5.15	25.65	20.50	5.15	25.65	Sales tax added to excise
Wisconsin /5	26.84		26.40	26.40		26.40	26.40		26.40	/5
Wyoming	13.00	1.00	14.00	13.00	1.00	14.00	13.00	1.00	14.00	LUST tax
D.C.	20.00		20.00	20.00		20.00	20.00		20.00	
Federal	18.30	0.10	18.40	18.40	0.10	24.40	13.00	0.10	13.10	/7 LUST tax

(Source: Compiled by FTA from various sources.)

Notes: The tax rates listed are fuel excise taxes collected by distributor/supplier/retailers in each state. Additional taxes may apply to motor carriers. For information of carrier taxes, see the IFTA, Inc.

/1 Tax rates do not include local option taxes. In AL, 1-3 cents; HI, 8 to 11.5 cent; IL, 5 cents in Chicago and 6 cents in Cook County (gasoline only); NV 1.75 to 7.75 cents; OR, 1 to 2 cents; SD and TN, one cent; and VA 2%.

/2 Local taxes for gasoline and gasohol vary from 5.5 cents to 17 cents plus a 2.07 cent per gallon pollution tax.

/3 Carriers pay an additional surcharge equal to AZ-8 cents, IL-6.3 cents (g) 6.0 cents (d), IN-11 cents, KY-2% (g) 4.7% (d), NY-22.21 (g) 23.21.

/4 Tax rate is based on the average wholesale price and is adjusted quarterly. The actual rates are: KY, 9% and NC, 17.5 cents + 7%.

/5 Portion of the rate is adjustable based on maintenance costs, sales volume, or cost of fuel to state government.

/6 Large trucks pay a higher tax, VA-additional 3.5 cents.

/7 Tax rate is reduced by the percentage of ethanol used in blending (reported rate assumes the max. 10% ethanol).

/8 The Arkansas gasoline & gasohol tax rate will increase 21.5 cents on July 1, 2001. Kansas tax will increase by 1.

Table D-5, Estimated Property Taxes and 50-State Rankings for Hypothetical Business Properties in 1998

	<u>Commercial Property</u>	<u>Industrial Property</u>
Land & Buildings	\$1,000,000	\$1,000,000
Fixtures	200,000	100,000
Inventories	0	400,000
Machinery & Equipment	0	500,000

State	Commercial Property		Industrial Property		State	Commercial Property		Industrial Property	
	Est. Tax	Rank	Est. Tax	Rank		Est. Tax	Rank	Est. Tax	Rank
Alabama	\$13,988	43	\$19,548	44	Montana	19,805	33	32,150	30
Alaska	21,284	30	36,220	23	Nebraska	27,156	22	36,769	22
Arizona	38,332	11	54,819	6	Nevada	12,214	47	16,426	47
Arkansas	13,445	44	23,669	37	New Hampshire	33,964	14	33,964	28
California	12,636	46	16,848	46	New Jersey	59,650	2	59,650	3
Colorado	24,282	26	32,945	29	New Mexico	14,513	41	19,938	42
Connecticut	38,820	9	48,441	10	New York	41,315	7	41,315	14
Delaware	11,344	48	11,344	49	North Carolina	15,060	39	20,080	41
Florida	34,145	13	45,240	12	North Dakota	21,953	29	21,953	39
Georgia	22,595	28	38,117	21	Ohio	19,654	34	35,878	24
Hawaii	8,137	50	8,137	50	Oklahoma	14,337	42	26,292	34
Idaho	20,674	31	27,922	33	Oregon	17,447	37	25,300	35
Illinois	72,210	1	68,410	1	Pennsylvania	40,817	8	40,814	16
Indiana	27,410	21	54,820	5	Rhode Island	47,250	4	51,472	8
Iowa	44,444	5	51,111	9	South Carolina	19,649	35	43,915	13
Kansas	30,340	18	41,071	15	South Dakota	23,698	27	23,698	36
Kentucky	14,891	40	19,564	43	Tennessee	26,562	23	34,170	27
Louisiana	26,531	24	46,258	11	Texas	32,913	16	55,283	4
Maine	29,072	19	38,896	18	Utah	16,750	38	22,596	38
Maryland	36,360	12	30,300	31	Vermont	29,059	20	38,778	19
Massachusetts	38,412	10	38,412	20	Virginia	19,488	36	20,388	40
Michigan	41,438	6	60,541	2	Washington	13,423	45	18,286	45
Minnesota	53,648	3	53,648	7	West Virginia	20,535	32	35,415	25
Mississippi	25,567	25	35,307	26	Wisconsin	33,073	15	30,219	32
Missouri	31,380	17	40,633	17	Wyoming	9,038	49	14,588	48

(Source: Minnesota Taxpayers Association)

Table D-6, Indicators of the Use of Local Option Highway Taxes, 1998

State	Pop Million s	System Extent		Non-federal highway revs.		Per capita revenues from dedicated local taxes			Percent of non-federal revenue from		
		Lane miles (1000s)	...per 1000 residents	\$ Millions	per capita	Local Fuel/Veh. Taxes	Property taxes	Other Local Taxes	Local Fuel/Veh. Taxes	Property Taxes	Other Local Taxes
Alabama	4.35	195.1	44.8	\$1,532	\$352	\$8.38	\$25.32	\$11.91	2.40%	7.20%	3.40%
Alaska	0.62	25.7	41.8	\$355	\$577	\$2.02	\$139.1	\$14.31	0.40%	24.10%	2.50%
Arizona	4.67	116.2	24.9	\$1,898	\$407		\$3.51	\$57.28		0.90%	14.10%
Arkansas	2.45	192.9	76	\$793	\$312		\$20.06	\$27.95		6.40%	8.90%
California	32.68	373.8	11.4	\$10,991	\$336		\$5.16	\$44.45		1.50%	13.20%
Colorado	3.97	176.6	44.5	\$1,961	\$494		\$21.57	\$76.90		4.40%	15.60%
Connecticut	3.27	44	13.4	\$1,049	\$321	\$5.69		43.69	1.80%		1.20%
Delaware	0.74	12.4	16.7	\$497	\$667		\$2.35	\$1.82		0.40%	0.30%
Florida	14.91	249.9	16.8	\$5,654	\$379	\$37.2	\$13.59	\$32.80	9.80%	3.60%	8.60%
Georgia	7.64	238.6	31.2	\$2,079	\$272	\$1.91	\$0.24	\$79.50	0.7	0.10%	29.20%
Hawaii	1.19	9.1	7.7	\$211	\$177	\$26.5		\$37.19	15.0%		21.00%
Idaho	1.23	94.5	76.7	\$491	\$399	\$0.61	\$40.31	\$18.95	0.20%	10.10%	4.80%
Illinois	12.07	288.3	23.9	\$3,688	\$306	\$200.	\$22.50	\$10.87	6.50%	7.40%	3.60%
Indiana	5.91	192.8	32.6	\$1,988	\$336	\$4.42	\$9.76	\$11.97	1.30%	2.90%	3.60%
Iowa	2.86	231.1	80.8	\$1,744	\$610		\$86.87	\$18.21		14.20%	3.00%
Kansas	2.64	272.5	103.3	\$1,353	\$513		\$34.99	\$10.64		6.80%	2.10%
Kentucky	3.93	152.6	38.8	\$1,382	\$351	\$0.89	\$0.49		0.30%	0.10%	
Louisiana	4.36	127.6	29.2	\$1,687	\$387	\$0.04	\$20.49	\$44.31	0%	5.30%	11.50%
Maine	1.25	46.3	37.1	\$498	\$399			\$0.69			0.20%
Maryland	5.13	66.4	12.9	\$1,619	\$316	\$0.63	\$4.49	\$4.79	0.20%	1.40%	1.50%
Massachusetts	6.14	74.4	12.1	\$2,379	\$387		\$84.15	\$4.57		21.70%	1.20%
Michigan	9.82	255.1	26	\$3,254	\$331		\$2.94	\$14.58		0.90%	4.40%
Minnesota	4.73	269.1	56.9	\$2,875	\$608		\$85.75	\$14.68		14.10%	2.40%
Mississippi	2.75	151.8	55.2	\$1,035	\$376	\$1.96	\$29.57	\$15.25	0.50%	7.90%	4.10%
Missouri	5.44	251.7	46.3	\$1,976	\$363	\$3.50	\$33.23	\$50.23	1.00%	9.10%	13.80%
Montana	0.88	142.6	162.2	\$296	\$336	\$11.8	\$23.36	\$18.06	3.50%	6.90%	5.40%
Nebraska	1.66	188.1	113.2	\$999	\$601	\$10.8	\$66.68	\$15.41	1.80%	11.10%	2.60%
Nevada	1.74	74.1	42.5	\$588	\$337	\$57.5	\$1.40	\$0.09	17.1%	0.40%	0%
New Hampshire	1.19	31.1	26.3	\$448	\$378	\$110.	\$35.49		29.1%	9.40%	
New Jersey	8.1	77.7	9.6	\$3,144	\$388			\$0.19			0%
New Mexico	1.73	124.8	72	\$464	\$268	\$2.09	\$2.93	\$2.38	0.80%	1.10%	0.90%
New York	18.16	238.5	13.1	\$7,934	\$437	\$0.97	\$34.11	\$21.70	0.20%	7.80%	5.00%
North Carolina	7.55	206.3	27.3	\$2,432	\$322	\$1.70	\$0.83	\$3.94	0.50%	0.30%	1.20%
North Dakota	0.64	175.3	274.9	\$299	\$469		\$76.48	\$6.81		16.30%	1.50%
Ohio	11.24	244.7	21.8	\$3,868	\$344		\$15.38	\$10.39		4.50%	3.00%
Oklahoma	3.34	232	69.5	\$1,794	\$537		\$3.52	\$17.43		0.70%	3.20%
Oregon	3.28	140.6	42.8	\$1,144	\$349	\$2.52	\$17.08	\$35.59	0.70%	4.90%	10.20%
Pennsylvania	12	248.5	20.7	\$4,188	\$349	\$2.55	\$21.57	\$23.39	0.70%	6.20%	6.70%
Rhode Island	0.99	12.9	13	\$255	\$258	\$12.2	\$0.25	\$0.76	4.80%	0.10%	0.30%
South Carolina	3.84	135.9	35.4	\$732	\$191		\$11.22	\$5.52		5.90%	2.90%
South Dakota	0.73	169	231.1	\$411	\$563	\$7.85	\$13.44	\$0.53	1.40%	2.40%	0.10%
Tennessee	5.43	181.5	33.4	\$1,373	\$253	\$4.87	\$0.11	\$0.11	1.90%	0%	0%
Texas	19.71	629.1	31.9	\$6,900	\$350	\$7.50	\$43.40	\$24.13	2.10%	12.40%	6.90%
Utah	2.1	86.4	41.1	\$993	\$473			\$1.69			0.40%
Vermont	0.59	29.3	49.6	\$213	\$361	\$106.	\$106.			29.60%	
Virginia	6.79	151.3	22.3	\$2,956	\$435	\$0.57	\$0.57	\$12.75	0%	0.10%	2.90%
Washington	5.69	165.8	29.2	\$2,561	\$450	\$58.7	\$58.70	\$35.19	1.10%	13.00%	7.80%
West Virginia	1.81	73.7	40.7	\$763	\$421	\$39.1	\$39.17	\$5.01		9.30%	1.20%
Wisconsin	5.22	230.6	44.2	\$2,586	\$495	\$57.0	\$57.07	\$37.87		11.50%	7.60%
Wyoming	0.48	59	123	\$191	\$398						

(Source: University of California 2001)

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