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Funding Options for Emerging Public Works Infrastructure Investments in Cuyahoga County

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July 2004

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Forward

This report is divided into two distinct and separate sections. The first section reviews and examines the anticipated needs of capital infrastructure agencies in Cuyahoga County, as well as their current sources of funding. The first section also identifies several of the larger capital projects that will require significant local funding commitments. The second section of this report reviews the application of specific innovative finance mechanisms that have been utilized to help fund needed public capital improvements, particularly with regard to highway, transit, water, and wastewater infrastructure.

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Executive Summary

Build Up Greater Cleveland estimates that over the 10-year forecast period from 2004-2013, $8.5 billion in public works infrastructure will be undertaken in Cuyahoga County alone. These capital improvement projects will include roads, bridges, transit, port, water and sewer facilities.

In recent years, the average annual level of public infrastructure investment in Cuyahoga County has been approximately $425 million. Conservative projections suggest that the annual average investment level from 2004-2013 will be roughly $500 million per year. This would account for $5 billion (59 percent) of the $8.5 billion forecast. Approximately 90 percent of this annual investment has typically paid for preservation and rehab projects, while nearly 10 percent has been used for capacity enhancement or smaller scale new projects. As such, this usually leaves only a relatively small amount of funding available for new large scale infrastructure projects.

Build Up Greater Cleveland's most recent five year Community Capital Investment Strategy (2001-2005) indicated that there was an annual shortfall of approximately $130 million between available funding and what was identified as "needs" by Cuyahoga County infrastructure agencies. Underscoring the scope of local capital infrastructure needs, this $130 million shortfall is not included in the $500 million annual forecast figure described above.

Cost estimates for major new transportation/transit infrastructure improvements in Cuyahoga County are expected to total approximately $2.5 billion over the next 10 years. The local share of these project costs is currently estimated to be nearly $500 million. Some of the anticipated sources of funding for these projects include recent increases in the state fuel tax, a recent increase in driver/vehicle license fees, and future federal transportation funding from the Highway Trust Fund. However, it is also worth mentioning that the cost for these capital projects will be in addition to the local preservation and rehabilitation projects that will also be undertaken during this ten-year period.

Data provided by local public infrastructure agencies indicates that capital improvement investments in the short term will also require substantial funding commitments. In the mass transit sector, the Greater Cleveland Regional Transit Authority has projected that capital improvements undertaken by the agency from 2004-2007 will total $434 million.

The extent of the short-term funding needed for capital infrastructure projects is also particularly evident within the wastewater and drinking water sectors. Examining the four-year period from 2004-2007, the projected capital expenditures for the

Northeast Ohio Regional Sewer District (NEORSD) total more than $600 million, while planned capital project expenditures for the City of Cleveland's Division of Water will exceed $318 million for the same period (2004-2007).

Nearly all of the water related capital infrastructure improvements in Cuyahoga County are ultimately funded from user fees. While some state programs (such as the Water Pollution Control Loan Fund) do provide some funding for needed capital improvements, the loans provided would eventually be repaid with user fees, since current federal or state grant assistance is very limited in this area. Current estimates indicate that approximately $1 billion in major water and sewer capital infrastructure improvements (over and above existing funding capacity) will be undertaken in Cuyahoga County over the next 10 years. Assuming that no federal or state assistance is provided, the total costs for these projects will have to be covered by consumers.

A large segment of this new level of investment is due to recent federal mandates issued from the U.S. EPA – mandated storm water management requirements that will force municipalities and infrastructure agencies to implement the capital improvements necessary for compliance. This will ultimately create the need for increases in local/regional sewer rates in order to fund the needed improvements.

Funding Mechanisms

Several of the funding mechanisms examined in this study have been used in Ohio to help fund and facilitate public infrastructure projects. Ohio was among the first states in the nation to participate in the State Infrastructure Bank (SIB) program and issue GARVEE bonds. While all of these innovative funding approaches have been utilized successfully in certain cases, there are limitations associated with each that can limit their feasibility in other cases. Regarding SIBs, constraining factors affecting the size and number of loans that can be generated have been documented, as well as the complexity of Federal requirements associated with the program. GARVEE bonds have proven useful in generating up-front capital for highway projects, but reserving future Federal Highway Aid apportionments for the necessary debt service is not viewed favorably by all highway officials.

The credit assistance programs offered through the **TIFIA program** (Transportation Infrastructure Finance and Innovation Act) have been used to help fund large surface transportation projects, but stipulations on funding costs have limited the number of projects which have utilized this approach. The TIFIA program was passed as part of the Transportation Equity Act for the 21st Century (TEA-21) in 1998 (note that TEA-21 expired on September 30, 2003 and new federal transportation legislation is currently being finalized between members of the House and Senate).

Tax increment financing (TIF) is a funding mechanism that has been used to help pay for several large development projects within the state of Ohio, including the Rock and Roll Hall of Fame and Museum in Cleveland and Nationwide Arena in Columbus. The potential use of TIF bonds to help finance capital infrastructure improvements is a funding alternative that could be explored, particularly in instances where infrastructure improvements can significantly enhance local property values. While there are some inherent risks involved in the utilization of TIF, the application of the TIF mechanism to address capital infrastructure funding needs (perhaps on a pilot basis) is worthy of consideration.

The use of **local option fuel taxes** to help fund road and highway needs has been limited to a relatively small number of states, and Ohio is not included among them. While local option fuel taxes can offer some viable potential benefits (such as reducing local dependency on state actions for road and highway funding), legislation to impose them could be met with strong opposition. Implementation of local option fuel taxes could also require substantial changes in tax administration.

Utilization of **user fees** and **variable tolls** is a practice that has been utilized to reduce congestion and generate revenue for highway projects in other parts of the country. In Ohio, the Ohio Turnpike is the only highway in the state that has ever charged drivers a fee for its use. Federal funds were recently awarded to the Ohio Department of Transportation and the Ohio Turnpike Commission to study the potential use of turnpike truck toll discounts as a way to alleviate arterial roadway congestion. Presently, there does not appear to be any substantial effort to adopt the use of tolls or user fees on other roads or highways within the state.

Regarding **system development charges** and **development impact fees**, Ohio has no formal laws that specifically address the authority of communities to assess such fees at the local level. However, a number of court rulings over the past 30 years have upheld “the constitutionality of utility-tap-in fees or recreational excise taxes imposed by municipalities under the auspice of home rule authority.”

The benefits of **life cycle costing analysis** were also explored as part of this review. While the concept of life cycle costing analysis is more of a best practice than a formal funding mechanism, its potential benefits to the design, construction and maintenance of public infrastructure is discussed within the context of this report. Various applications of this approach have been utilized in the transportation sector, and also the drinking water and wastewater sectors.

The Need for Greater Federal Support

Federal reauthorization of **TEA-21** will determine the scope, resources, and benefits that will be available to states in regard to transportation funds and programs. In particular, passage of new transportation legislation (especially since the expiration of TEA-21 on September 30, 2003 – which has now been temporarily extended several times, most recently through June 2004), has been cited by many as a critically needed initiative in the effort to adequately fund vital transportation needs. The gap between available funding resources and transportation infrastructure needs has been well-documented, and has been exacerbated by the budgetary and fiscal constraints that all states have had to cope with in recent years.

In addition to renewed funding commitments from the federal government, efforts to streamline innovative finance approaches to public infrastructure are also needed to broaden the potential use of funding mechanisms such as State Infrastructure Banks, and TIFIA loans and credit assistance programs. As part of the effort to promote alternative financing approaches to transportation projects, the Third National Conference on Transportation has suggested a tax code revision to encourage **"private activity bonds"** that could be utilized for surface transportation projects (similar to that allowed for other transportation modes). In essence, these bonds would enable surface transportation projects with significant private participation to access valuable tax-exempt financing.

Regarding drinking water and wastewater infrastructure, once again a strong argument for an expanded federal role in funding capital improvements has been made by a number of public officials and organizations. In particular, envisioned wastewater infrastructure projects in Cuyahoga County will require substantial funding commitments over the coming years. For example, the Northeast Ohio Regional Sewer District has concluded that capital program projections for its facilities will exceed $3 billion over the next 25 years.

The American Society of Civil Engineers (ASCE) has proposed several solutions to funding water and wastewater capital improvements, including the creation of a **water trust fund** to finance needed water and sewer projects. In addition, ASCE has also suggested increasing federal appropriations to the current State Revolving Loan Fund program within the Safe Drinking Water Act as a way to fund capital improvements in drinking water infrastructure, while additional funds under the Clean Water Act could be used to address wastewater needs.

Innovative Finance Mechanisms for Public Infrastructure

The review of innovative finance mechanisms provided in this report has yielded several noteworthy findings:

- **Some innovative finance mechanisms have already been utilized successfully to address infrastructure needs in Ohio, especially in regard to transportation infrastructure needs.** In particular, the State Infrastructure Bank (SIB) program has been used to help fund numerous highway projects in Ohio. Through Spring 2004, 60 loan agreements worth more than $208 million had been made in Ohio. In addition, efforts are now underway to leverage additional funds for the program through other sources. Additionally, Ohio was also the first state in the nation to leverage federal funds through Grant Anticipation Revenue Vehicles (GARVEEs), allowing the state to generate up-front capital for major highway projects. GARVEEs are state issued bonds or notes that are repayable with future federal aid.

- **In addition to innovative finance approaches that have been utilized both here and in other states, the State of Ohio has also developed other useful programs through entities such as the Ohio Public Works Commission (OPWC), which has provided valuable funding assistance for infrastructure needs to local communities throughout the state.** The OPWC was created to assist in financing local public infrastructure under the State Infrastructure Program, also known as Issue 2. Specific components of Issue 2 include the State Capital Improvements Program (SCIP), Revolving Loan Fund (RLF), and Small Government Capital Improvements Commission (SGCIC). These initiatives provide financial assistance to local communities for the improvement of their basic infrastructure systems. Types of aid include grants, loans, and financing assistance through local debt support and credit enhancement. Eligible projects include improvements to roads, bridges, culverts, water supply systems, wastewater systems, storm water collection systems, and solid waste disposal facilities.

- **While many of the innovative finance mechanisms examined in this report have provided states and local communities with valuable assistance in funding capital infrastructure projects, there still exists a need for an expanded federal role in helping local communities meet infrastructure needs, particularly in regard to water and wastewater infrastructure.** In a March 2003 House Subcommittee hearing on wastewater infrastructure needs, the General Counsel for the Northeast Ohio Regional Sewer District expressed deep concern over the enormous projected costs that communities within the District face as they try to meet storm water and sanitary sewer overflow control

requirements. Testimony included the assessment that rate hikes by themselves would be insufficient to cover the anticipated costs.

Some of the finance mechanisms reviewed here have not been utilized in Ohio due to the fact that they are not permitted, or authorized by law. Local governments and public infrastructure agencies must carefully consider the respective costs associated with various funding mechanisms for capital infrastructure needs, as well as the particular capital needs themselves when selecting the appropriate method(s) to fund such public improvements.

Introduction

The first objective of this report is to identify projected local capital infrastructure investments and the funding required for their completion (Section I). In particular, the estimated funding commitments for local, large-scale new infrastructure projects over the next 10 years is described in detail in Section I, along with the respective local share of the total costs for these projects. In Section II, the Capital Improvement Plans (CIPs) for six public agencies - Ohio Department of Transportation, Cuyahoga County Engineer, Northeast Ohio Regional Sewer District, City of Cleveland (Bridges), City of Cleveland (Division of Water), and the Greater Cleveland Regional Transit Authority were examined as part of this effort to document the capital improvement needs for Cuyahoga County over the upcoming four-year period (2004-2007). (NOTE: For purposes of uniformity, four-year CIP totals for 2004-2007 are reported for the respective public agencies that supplied capital improvement data for this study. The Appendix to this report includes all of the available CIP data that was provided by the afore-mentioned public infrastructure agencies).

The second objective of this report is to provide an updated review of relatively newer and innovative approaches that have been utilized to fund necessary public infrastructure improvement projects across the country (Section III). The funding mechanisms and strategies examined here have been used to help finance various capital improvements in road, bridge, transit, water and sewer projects. A review of the best practices literature pertaining to infrastructure finance was conducted as part of the process in assembling this report. In addition, an updated search on various topics related to innovations in public finance and various funding strategies for capital improvement projects was also conducted and incorporated into the report.

Section IV of this report examines some of the challenges that lie ahead in the efforts to adequately fund some of the local infrastructure needs. In addition, outlooks on federal and state funding for transportation infrastructure needs are also briefly discussed in this section.

This report does not include specific legal or technical information regarding how specific funding mechanisms can be or should be implemented. Implementation of specific programs or funding mechanisms would involve the need for further research and appropriate counsel from legal, technical, and financial experts.

The Appendix section of this report also briefly examines some of the policy recommendations from various groups and organizations that have called for renewed infrastructure funding commitments from the federal government, as well as suggestions for funding public capital improvements.

Methodology

Identifying Envisioned Scale of Local Infrastructure Investments

As a first step in this process, a summary of large-scale, new capital infrastructure projects and their projected funding requirements was assembled. In addition to this summary, a review of available Capital Improvement Plan (CIP) data was also conducted to examine envisioned local infrastructure investment levels in the near term. This review was based upon available CIP data supplied by several public infrastructure agencies in Cuyahoga County, as well as other sources such as the Jobs and Progress Plan outlined by the Ohio Department of Transportation, and the Municipal Water Resources Infrastructure Survey Report produced by Build Up Greater Cleveland in December, 2003. This information is presented in Section I of the report.

Identifying Mechanisms and Funding Sources for Infrastructure Projects: Federal/State Sources vs. Local Options

Section II of this report represents a best practices review of various approaches and funding strategies that have been used to help state and local governments fund needed infrastructure capital improvements. In this review of various funding tools and mechanisms that have been utilized to address capital infrastructure needs, descriptions of these respective sources were categorized into 1) Federal and State resources; and 2) Local funding options. This important distinction was made in an effort to better understand the respective benefits and limitations of each resource.

This portion of the report provides an extensive review of existing literature that was conducted, utilizing both print and on-line sources. News updates from trade associations, published articles from journals, and academic papers from conference proceedings supplied much of the information gathered during this process. Under the broad category of public infrastructure finance strategies, a concentrated search effort was focused on the areas of best practices, innovative finance mechanisms, and new or unique approaches to funding capital infrastructure projects. The funding strategies examined here are confined to those practices used to finance projects in the U.S.

Definition of Innovative Financing

From one perspective, a practical definition of innovative finance approaches might be any new, significant revenue sources now available to local governments for the purpose of financing infrastructure. Any particular programs or non-traditional infrastructure funding strategies currently labeled as pilot projects could also provide a sound definition of innovative financing.

Regarding transportation infrastructure, the Congressional Budget Office has broadly used the term “innovative finance mechanism” to refer to any funding sources other than traditional pay-as-you-go measures. However, most of the innovative measures that have been tried or considered still involve some form of debt financing, which many financial experts would most likely not consider to be an innovative approach.

For this report, our review of innovative finance approaches centered on those particular mechanisms, programs, and practices that have been utilized in recent years to help state and local governments address their infrastructure needs in the face of growing budget constraints and decreasing revenue sources. While some of these practices have been utilized here in Ohio, others have not. For some of these approaches that have not been used locally or elsewhere in the state (such as local option gas taxes), legislative changes to existing state law would be required before they could be implemented.

Section I: Projected Infrastructure Investment Levels and Funding Sources

Estimated Local Infrastructure Investments Over the Next 10 Years

Over the 10-year forecast period for 2004-2013, Build Up Greater Cleveland projects that capital infrastructure investments in Cuyahoga County alone will total approximately $8.5 billion. Included in this figure will be approximate totals of $4.5 billion in transportation projects and $4.0 billion in water-related projects. These public works projects will include improvements to roads, bridges, transit, port, water, and sewer infrastructure. Conservative projections assume that the county infrastructure agencies have the current capacity to support an average annual investment level over this 10-year period of $500 million, which would account for $5 billion (59%) of the $8.5 billion forecast.

Since the presently estimated funding capacity for these capital projects over this period is estimated to be approximately $5 billion ($500 million per year over a 10-year period), this leaves a funding shortfall of roughly $3.5 billion – the difference between the funding available and what is needed with regard to projected local capital infrastructure investment.

The currently projected shortfall of $3.5 billion will be driven primarily by a number of major new capital infrastructure projects that are scheduled to begin over the next 10 years. The following section describes in more detail these respective major capital projects and the estimated costs associated with each.

Major New Projects

A substantial portion of the upcoming large-scale local capital infrastructure investments envisioned over the next 10 years will require funding commitments outside of the estimated $5 billion funding capacity projected over this time. For all infrastructure sectors (transportation, transit, port, water, and sewer), current estimates indicate that approximately $3.5 billion in funding will be needed for these projects over this time, while the local share of this projected total is estimated to be approximately $1.5 billion.

Transportation

As Table 1 illustrates, major new transportation infrastructure improvements are expected to total approximately $2.5 billion over the next 10 years. The local share of these project costs is conservatively estimated to be nearly $500 million. Anticipated sources of funding for these projects include recent increases in the state fuel tax, a recent increase in driver/vehicle license fees, and future federal transportation funding from the Highway Trust Fund. It is worth mentioning that the cost for these capital projects will be in addition to the local preservation and rehabilitation projects that will be also be undertaken during this 10-year period. Current estimates indicate that approximately 90 percent of the local average annual infrastructure investment is for preservation and rehabilitation projects, while 10 percent is applied to capacity enhancement or smaller scale new projects.

Major New Projects – Transportation

Table 1

Specific Project	Funding Ratio	Estimated Total Cost	Estimated Local Cost
Transportation: Roads, Bridges & Transit			
Shoreway Reconfiguration (State Route 2 between Edgewater Park and Innerbelt Curve)	100% ODOT	$250 million	$0
Innerbelt Renewal - Related	100% ODOT	$900 million	$0
Innerbelt Renewal - Related (University Circle Access Blue & Flats Intermodal Connector)	80% ODOT / 20% Local	$300 million	$60 million
Cuyahoga River Valley Access Improvements (Not in Innerbelt Project)	50% ODOT / 50% Local	$100 million	$50 million
High Cost Local Bridges	80% ODOT / 20% Local	$150 million	$30 million
Extensions, replacements and capacity enhancements of major arteries	To Be Determined	$150 million	$30 million (minimum)
Cleveland-Hopkins International Airport Related (Road, Bridge & Transit)	To Be Determined	$150 million	To Be Determined
Cuyahoga River Valley Bulkheads	100% Local	$150 million	$150 million
Euclid Corridor Transportation Project	50% Federal / 50 % Local	$168 million	$84 million
New Transit Centers	50% Federal / 50% Local	$100 million	$50 million
Major Transit Capital Investments (non-routine)	80% Federal / 20% Local	$100 million	$20 million
Transportation Totals (Approximate)		$2.5 billion	$500 million (minimum)

In Cuyahoga County, the largest new transportation investment in terms of total cost is anticipated to be road projects related to the Innerbelt Renewal, which is estimated to be roughly $1.2 billion. The majority of the funding for this project will come from federal and state sources, while a relatively small portion of project costs will be funded locally. In addition, the Shoreway Reconfiguration project will account for an estimated $250 million in capital improvement expenditures over this time. Table 2 briefly outlines the primary sources of transportation funding at the federal, state, and local levels.

Transportation Funding Sources

Table 2

Sources of Federal Funds	Sources of State/Local Funds
• Federal gas tax distributions	• Issue 2 Funds • State gas tax distributions • Driver & vehicle license fees • GO bond funds (municipal) • General funds

In regard to major capital infrastructure improvements within the local transit sector, the Euclid Corridor Transportation Project represents the largest funding commitment, with an estimated total cost of approximately $200 million. In addition, other transit capital projects will also total an estimated $200 million. The local share of these projects costs is estimated to be 50 percent of the total – approximately $200 million.

Water and Sewer

Nearly all of the water related capital infrastructure improvements are ultimately funded from user fees. While some state programs (such as the Water Pollution Control Loan Fund) do provide some funding for needed capital improvements, the loans provided would eventually be repaid with user fees, since current federal or state grant assistance is very limited in this area.

Due to recent federal mandates issued from the U.S. EPA, storm water management requirements will force municipalities and infrastructure agencies to implement the capital improvements necessary for compliance. This will ultimately create the need for increases in local/regional sewer rates to subsidize the needed improvements. Table 3 describes some of the major new water related capital infrastructure improvements slated over the next 10 years. Current estimates indicate that these respective capital improvements will total approximately $1 billion. Assuming

that no federal or state assistance is provided, the total costs for these projects will have to be covered by the local user fees.

Major New Projects - Water & Sewer

Table 3

	Funding Ratio	Estimated Total Cost	Estimated Local Cost
Water:			
Cleveland Water Division (Expanded Program)	(Assume No Fed/State Funds)	$200 million	$200 million
Sewer:			
Regional Storm Water	(Assume No Fed/State Funds)	$300 million	$300 million
New Municipal Stormwater Sewer Projects	(Assume No Fed/State Funds)	$200 million	$200 million
NEORSD (Expanded CSO Program)	(Assume No Fed/State Funds)	$300 million	$300 million
Water & Sewer Totals *		**$1.0 billion**	**$1.0 billion**

*Totals do not include NEORSD, City of Cleveland Division of Water, and municipal projects identified in existing funding capacity estimate.

Tools/Mechanisms to Address Capital Infrastructure Funding Needs

Federal and State Funding Sources

Ohio Jobs and Progress Plan

Ohio Governor Bob Taft announced in August 2003 a comprehensive plan to establish a $5 billion 10-year construction program to address the pressing need to adequately fund transportation infrastructure needs in the State of Ohio - The Jobs and Progress Plan. Half of the funding for this initiative would come from $250 million that the State will collect annually through increases in the state fuel tax. The remainder of the funding would be supplied through various changes to existing federal laws that would increase Ohio's share of federal funding for highway projects.

Reauthorization of TEA-21

Since the expiration of TEA-21 in Fall 2003, several extensions of the old legislation have been signed into law by the President, while Congress has worked on the details of a new transportation bill. By April 2004, both houses of Congress had passed separate versions of a new transportation bill. The House version called for spending $275 billion over 2004-2009 for highway and transit projects, while the Senate version (passed in February) approved a larger amount - $318 billion. Despite threats of a veto from the White House (on the grounds that both versions of the bill were too costly), both houses of Congress appear to have enough votes to override a potential

presidential veto if necessary. Presently, a compromise transportation bill is being worked out between the House and Senate. During this process, several temporary "stop-gap" transportation funding measures have been passed while Congress works toward passing a new transportation bill.

GARVEE Bonds and Other Bond Finance Mechanisms

In certain situations, Grant Anticipation Revenue Vehicles (GARVEEs) can be used to address funding gaps for large infrastructure projects. GARVEEs are essentially bond issues that are repaid with future federal transportation funding. One advantage provided by GARVEEs is the benefit of accelerating construction on large projects, especially when the costs of delay outweigh the costs of financing. Ohio was the first state to leverage federal funds through the use of GARVEEs by utilizing four GARVEE bond issues from 1998-2002, totaling $325 million.

Tolls/Congestion Pricing

The use of tolls/congestion pricing could also be utilized to generate another source of funding for transportation infrastructure needs. Presently, the Ohio Turnpike is the only toll road in Ohio, with toll collections amounting to $180 million in 2003. The use of tolls/congestion price schedules has also been demonstrated as a way to alleviate overcrowded roadways in other major cities, such as the New York-New Jersey metro area. In addition to easing congested roadways during peak travel times, there is also evidence that tolls/congestion pricing can increase use of public transportation, car-pooling, and off-peak travel.

New Federal/State Water Related Trust Funds

With regard to water and wastewater infrastructure funding, a growing funding gap between current levels of investment and what is needed has been documented in many communities. The creation of federal and state trust funds to help address capital improvements to water and wastewater infrastructure are potential solutions that could help address these funding needs. The Water Infrastructure Network (WIN) and the American Society of Civil Engineers (ASCE) are two groups currently advocating for an expanded role of the federal government in providing critically needed funding for water and wastewater capital infrastructure needs. The ASCE has formally called for the creation of a water trust fund to finance the national shortfall in funding for water and wastewater infrastructure, additionally stating that these funds should not be diverted for non-water purposes.

New Grant Programs (For Water and Wastewater)

In addition to dedicated trust funds for water and wastewater infrastructure, there is also distinct need for new grant programs designed to help fund capital water and wastewater infrastructure improvements. Water and wastewater utilities in every major city have documented critically needed capital improvements to existing infrastructure – often involving repair or replacement of pipes and mains that are well beyond their intended life span.

An analysis from the U.S. General Accounting Office (GAO) found that from fiscal years 1991 through 2000, nine federal agencies made approximately $44 billion available for water and wastewater capital improvements. Most of this assistance (about $25 billion) was provided through the U.S. EPA, often in the form of grants to the states to capitalize the Drinking Water State Revolving Fund (DWSRF) and Clean Water State Revolving Fund (CWSRF). The DWSRF program provides project loan funds for publicly or privately-owned public water systems, while the CWSRF program provides the same type of funding for publicly-owned wastewater treatment facilities.

Despite the well-documented need for capital improvements to water related infrastructure, proposed funding levels for some of the currently existing programs (such as the U.S. EPA's Clean Water State Revolving Fund) have been reduced. In its fiscal 2004 budget request, the U.S. EPA requested $850 million for the Clean Water State Revolving Fund – a decrease from the previous level of $1.35 billion. Proposed funding for the Drinking Water State Revolving Fund remained unchanged, at $850 million for fiscal 2004.

Based upon the clear need for expanded federal assistance in funding water related capital infrastructure improvements, new federal grants and programs designed to address these needs should be developed.

Local Options/Recommendations for Addressing Infrastructure Funding Shortfall

The following policy options are presented as potential solutions to address the projected funding shortfall that is anticipated with regard to local capital infrastructure needs.

Expanded Issue II Funding

The State Capital Improvement Program (also known and referred to as Issue 2), was last renewed by Ohio voters in 1995. At that time, the program was renewed for a period of 10 years. The vote authorized the State of Ohio to sell bonds in the amount of $120 million per year for capital infrastructure projects over the specified 10 year period.

Once again, Ohio residents will soon be asked to vote upon renewal legislation for Issue 2. Since Issue 2 was first approved by voters in 1987 and subsequently again in 1995, the level of funding sought for this program has not changed. With the program once again up for public vote, changes that would renew the program at a higher funding level should be implemented to help address local capital infrastructure needs.

Expanded Use of TIFs

In the past, the City of Cleveland has used tax increment financing (TIF) to help fund large development projects such as the Rock and Roll Hall of Fame and Museum. The use of TIF financing has also been contemplated for other projects within the City of Cleveland, including the proposed redevelopment of lower Euclid Avenue. The possibility of using TIFs to help fund capital infrastructure needs, even if merely on a pilot basis, should also be considered.

Increased Water/Sewer Fees and Regional Stormwater Fees

A portion of the funding needed for capital water and sewer improvements could be generated through increases in user fees. Given the current lack of alternative funding sources for water and wastewater infrastructure needs, increases in user fees may be more of a necessity than an option. The adoption of regional stormwater fees (possibly through the creation of a stormwater utility) could generate much needed funding for local stormwater needs. In recent years, some larger cities have chosen to create stormwater utilities to levy storm sewer service charges to address the costs associated with local drainage needs. Benefits of this approach include generation of a dedicated source of funding that is easily projectable and not in competition from other city activities.

Local Option Gas Tax

A total of 15 states have now authorized the use of county or local level fuel taxes to support local road projects. In Florida, local option gas taxes have been implemented in all 67 counties within the state. In addition, a 1996 study projected that a 12-cent per gallon local option fuel tax could generate roughly $70 million per year for local governments within Cuyahoga County. Before such a tax could be enacted, however, public officials would likely have to make a strong case for its need, especially in lieu of the recent six-cent increase in the state fuel tax that has been authorized. The increase in the state fuel tax could double the revenue generated for local governments by 2007.

Development Impact Fees/System Development Charges

In recent years, a number of states have authorized the use of Development Impact Fees (DIF) and/or System Development Charges (SDC) as mechanisms to generate funding for capital improvements. A 1999 FHWA report states that DIFs in California had raised $178 million for a public toll road project. The State of Georgia also allows local governments to establish DIFs, while Oregon state law provides local governments with the authority to assess system development charges for transportation and water related infrastructure needs.

The State of Ohio has not specifically granted authorization to local governments to create development impact fees or system development charges for infrastructure funding purposes. However, a series of court rulings over the past three decades has generally upheld "the constitutionality of utility tap-in fees or recreational excise taxes imposed by municipalities under their general home rule authority" (Carrion and Libby, 2000). One of the rulings was a 2000 decision by the Ohio Supreme Court that reversed a lower court ruling and allowed the City of Beavercreek, Ohio to impose impact fees on new developments within an area of the city defined as an "impact fee district." As local needs for capital infrastructure improvements and expansion grow, the use of development impact fees or system development charges may need to be considered as a dedicated source of funding.

Section II: Cuyahoga County's Capital Improvement Plans (CIPs)

Section I provided a brief overview of specific, large-scale local infrastructure projects planned for the next 10 years, as well as the funding commitments necessary for their completion. Section II of this report offers a general overview of currently available capital improvement plan (CIP) data that were supplied by several public infrastructure agencies within Cuyahoga County. For purposes of making standard comparisons, the CIP data examined in this section are, for most agencies, reported in five-year periods from 2004-2008.

However, additional years of CIP data are available for some of the infrastructure agencies examined in this report, and long-range CIP data is included in Appendix C of this report.

CIP Expenditure Projections

To assess the anticipated cost estimates of capital improvement projects planned for both the short- and long-term, CIP data from the following specific public agencies were reviewed:

Roads and Bridges

- The Ohio Department of Transportation (ODOT) – District 12
- The Cuyahoga County Engineer
- The City of Cleveland – City Bridge Summary

Transit

- The Greater Cleveland Regional Transportation Authority (GCRTA)

Water and Sewer

- The Northeast Ohio Regional Sewer District (NEORSD)
- The City of Cleveland – Division of Water
- BUGC Municipal Water Resources Infrastructure Survey Report

(NOTE: Additional data from other public infrastructure agencies was also requested, but was not received, and thus not available for this analysis).

Transportation Funding Sources

Table 4 briefly outlines the respective sources of public agency funding for different types of transportation/transit infrastructure projects. It is important to note that while the funding ratios outlined in Table 4 are generally adhered to and implemented in most cases, there are instances where funding arrangements can "vary by agreement" and thus allow a variety of funding sources to be utilized, depending upon the circumstances. For instance, while township roadways and bridges are typically funded 100% by the County Engineer's office, there are some instances where federal funds can be used for these types of projects.

Public Agency Funds for Various Types of Transportation Infrastructure Projects

Table 4

Project Type	Funding Ratio
Roads/Highways/Bridges	
Interstate Roadways / Bridges	100% ODOT
State Roadways / Bridges (Not within a municipality)	100% ODOT
State Roadways / Bridges (Within a municipality)	Paving: 80% ODOT, 20% Local Rehabilitation: 100% Local
Township Roadways / Bridges	100% County Engineer
Municipal Street (Existing, new, enhanced)	100% Local
High Cost / Local Bridges (Bridges in municipalities not on State or US Routes)	80% ODOT, 20% Local
County Bridges	100% County Engineer
Major Arterials (State or Local)	Capacity Enhancement: 80% NOACA, 10% Country Engineer, 10% Local. Engineering: 60% County Engineer, 40% Local)
Transit	
Municipal / RTA Bridges	100% Local

Roads and Bridges

Ohio Department of Transportation (ODOT)

ODOT has compiled a long-term CIP for the years 2004-2014, essentially listing those projects that the agency has scheduled for work during these respective years. These scheduled projects involve various construction, maintenance, upgrade, and

repair work slated for highways and bridges throughout northeast Ohio within ODOT District 12's jurisdiction. Table 5 provides a summary of the anticipated costs for six specific program areas within ODOT's CIP for the five-year period from 2004-2008.

Table 5

ODOT CAPITAL IMPROVEMENT SUMMARY 2004-08 ($ in thousands)						
ODOT Program	**2004**	**2005**	**2006**	**2007**	**2008**	**Totals 2004-2008**
District Paving	$13,103	$15,336	$12,612	$17,876	$14,707	$73,634
City Paving	$5,139	$4,473	$7,722	$6,227	$7,390	$30,951
District Bridge	$33,961	$5,436	$8,640	$14,104	$8,772	$70,913
Major Rehab	$0	$0	$17,000	$0	$0	$17,000
Major Bridge	$8,400	$0	$1,300	$8,000	$25,000	$42,700
Major New/High Priority/Safety	$21,880	$2,800	$27,700	$0	$0	$52,380
Totals	**$82,483**	**$28,045**	**$74,974**	**$46,207**	**$55,869**	**$287,578**

As Table 5 illustrates, most of the anticipated expenditures during the five-year period examined are scheduled in 2004 and 2006, respectively. ODOT's long range capital improvement projections (2004-2014) presently estimate that spending within these six program areas will total approximately $627 million. (See Appendix C for ODOT's long range CIP, 2004-2014).

It is important to emphasize the fact that much of the capital improvement spending for several large ODOT projects, such as the Innerbelt Renewal and Shoreway Reconfiguration projects is not accounted for in Table 5. For a list of major new capital infrastructure projects, see Tables 1 and 3 in Section I of this report.

Cuyahoga County Engineer

The Cuyahoga County Engineer plays a key role in assisting municipalities in the improvement of 794 miles of multi-lane arterial highways. Also included in its responsibilities are the maintenance and reconstruction of 220 bridges and 22 miles of roadway in two townships within Cuyahoga County. Table 6 provides a summary of the Cuyahoga County Engineer's projected capital improvement expenditures from 2004-2007 (see Appendix C for the Cuyahoga County Engineer's long range CIP, 2004-2009).

Table 6

CUYAHOGA COUNTY ENGINEER CAPITAL IMPROVEMENT PLAN SUMMARY 2004-2007 ($ in thousands)	
Year	**Capital Improvement Expenditures**
2004	$36,505
2005	$51,386
2006	$107,410
2007	$39,296
Total	**$234,597**

The capital improvement expenditures currently slated for 2006 will account for the highest yearly amount of infrastructure investment by the Cuyahoga County Engineer's office (approximately $107 million) over the course of this time period.

City of Cleveland – City Bridge Summary

For this part of the analysis, the City of Cleveland provided an updated summary on the status of bridges within the city, particularly those bridges that are slated for repair work in the near term. The *City Bridge Summary* that was provided estimated cost details for bridge projects scheduled from 2004-2007 (see Table 7).

Table 7

CITY OF CLEVELAND CITY BRIDGE SUMMARY	
Year	**Estimated Cost (Actual)**
2004	$31,900,000
2005	$16,300,000
2006	$63,000,000
2007	$2,900,000
Total	**$114,100,000**

In terms of project costs, more than half of the work is slated to begin in 2006. The data provided also included just over $20 million in capital improvement projects that did not have a specific year listed as to when work would begin. Overall, approximately $114 million in capital improvement projects slated for 2004-2007 are identified.

Transit

The Greater Cleveland Regional Transit Authority

To assess the local capital improvement needs of the mass transit sector over the next few years, the 2004-2007 Capital Improvement Plan from the GCRTA was used to identify the specific capital investments that are scheduled to begin over this time period. The GCRTA utilizes approximately 10-15 percent of annual county sales tax revenues to help fund local capital improvement expenditures. The information presented in Table 8 provides a summary of the planned capital investments that GCRTA has scheduled from 2004-2007.

In particular, the RTA Development Fund includes those CIP categories where the anticipated financial capital commitments for this time period are highest, including Bus Rapid Transit ($165 million), Buses ($94 million), and Rail Projects ($86 million). (See Table 8).

Table 8

GCRTA 2004-07 CAPITAL IMPROVEMENT PLAN SUMMARY TOTALS

Department	2004	2005	2006	2007	Totals 2004-2007
Rail Projects	23,182,000	14,851,593	19,303,551	28,736,000	86,073,144
Bus Garages	800,000	600,000	1,100,000	10,150,000	12,650,000
Park-N-Ride Transit Centers	11,320,000	26,086,424	11,166,076	6,790,000	55,362,500
Facilities Improvements	4,638,000	3,737,000	5,731,000	6,430,000	20,536,000
Buses	12,815,000	26,846,440	26,487,070	27,870,460	94,018,970
Bus Rapid Transit	76,938,592	77,540,553	9,048,263	1,728,042	165,255,450
TOTALS	**$129,693,592**	**$149,662,010**	**$72,835,960**	**$81,704,502**	**$433,896,064**

NOTE: Information is taken from the Greater Cleveland Regional Transit Authority's 2003-2007 Capital Improvement Plan. Non-capital infrastructure items and expenses are not included in Table 8.

Sewer and Water

Northeast Ohio Regional Sewer District

As part of the effort to assess the regional infrastructure needs of northeast Ohio over the coming years, capital program projections from NEORSD were also examined. Table 9 provides a brief summary of the estimated costs of planned capital improvement projects that NEORSD has scheduled for 2004-2007.

For the four-year period from 2004-2007, NEORSD has identified total capital improvement needs of slightly more than $604 million, including $421 million in combined sewer overflow (CSO) projects and $183 million in non-CSO projects (approximate totals, see Table 9).

Table 9

NEORSD 2004-07 CAPITAL IMPROVEMENT PLAN SUMMARY TOTALS ($ in thousands)			
Year	**CSO Projects**	**Non CSO Projects**	**Total Capital**
2004	$86,965	$35,620	$122,585
2005	$54,060	$35,400	$89,460
2006	$115,977	$26,680	$142,657
2007	$164,280	$85,550	$249,830
Totals	**$421,282**	**$183,250**	**$604,532**

While the totals reported in Table 9 represent summary totals for the anticipated capital project costs from 2004-2007, Appendix C provides a more detailed listing of NEORSD's capital improvement program projections for the 2004-2008 time period (see Appendix C).

City of Cleveland – Division of Water

The City of Cleveland's Division of Water has produced a capital infrastructure plan that details cost estimates for anticipated projects from 2004-2012. Table 10 presents a categorical summary of these projections for the immediate period (2004-2007).

Table 10

CITY OF CLEVELAND DIVISION OF WATER 2004-2007 CAPITAL IMPROVEMENT PLAN TOTALS (Projected Funding Year Schedule -- $ in thousands)					
Project Description	**2004**	**2005**	**2006**	**2007**	**Total Est. 2004-2007**
Program Management at Water works Plants	$0	$0	$20,000	$0	$20,000
Baldwin Plant Improvements	$33,000	$0	$7,000	$22,650	$62,650
Crown Plant Improvements	$0	$0	$500	$2,760	$3,260
Morgan Plant Improvements	$59,460	$0	$14,500	$44,030	$117,990
Nottingham Plant Improvements	$0	$0	$5,000	$17,180	$22,180
Miscellaneous Plant Improvements	$3,000	$0	$5,000	$3,000	$11,000
Supply Mains	$2,000	$6,000	$0	$0	$8,000
Distribution Mains	$0	$400	$0	$400	$800
Cleaning and Lining Water Mains	$6,000	$6,000	$6,000	$6,000	$24,000
Secondary Station Improvements	$11,550	$200	$200	$200	$12,150
Cleveland Roadway Projects	$1,500	$1,500	$1,500	$1,500	$6,000
Non-Programmed Capital Projects	$0	$0	$0	$30,000	$30,000
Non-Programmed Projects	$0	$0	$0	$0	$0
TOTALS	**$116,510**	**$14,100**	**$59,700**	**$127,720**	**$318,030**

For the short-term period (2004-2007), the Division of Water has identified $318 million in capital projects, with the largest investments being Morgan Plant improvements ($118 million), and Baldwin Plant improvements ($63 million). Appendix C to this report also provides summary totals for the Division of Water's long-range CIP, 2004-2012. The Division of Water estimates that total capital improvement expenditures over this extended period will be approximately $717 million (see Appendix C).

Large-Scale Capital Improvement Projects in the Near-Term

The following is a brief summary description of some of the larger scale infrastructure projects in Cuyahoga County that are scheduled to commence within the next few years, along with the respective cost estimates. This summary list was compiled through a review of information provided by Build Up Greater Cleveland, and an examination of the long-range capital improvement plans of six public infrastructure agencies in Cuyahoga County that will be overseeing these projects.

Interstate Related Projects

- Innerbelt Renewal:
  Includes $300 for million highway connector between I-490/I-77 interchange and University Circle and the Flats Consolidated Intermodal Connector.….$1.2 billion
  (Estimated local share: $60 million)

- Shoreway Reconfiguration……..…….$250 million

- Cleveland Hopkins Airfront Surface Transportation Package:
  Improvements to I-480/Grayton Road Interchange, possible I-71/I-480 interchange upgrades; improved airport access…….……..…..$150 million

Major Arterial Projects

Examples: Pleasant Valley Road (York to Pearl), Crocker –Stearns Extension (Lorain to Center Ridge), Snow-Rockside Road, Eastland Road..……..$150 million
(Estimated local share: $30 million)

High Cost Bridge Projects

Examples: Fulton Road Bridge Replacement (Cleveland, over Big Creek), West 3rd Street Bridge, Pleasant Valley Road Bridge Replacement (Middleburg Heights)…….…….$150 million
(Estimated local share: $30 million)

Cuyahoga River Valley Projects

- Cuyahoga River Valley Access Improvements…….$100 million
  (Estimated local share: $50 million)

Transit-Related Projects

- Euclid Corridor Transportation Project……..$168 million
  (Estimated local share: $84 million)

- Suburban & Downtown Transit Centers..……..……..……..$100 million
  (Estimated local share: $50 million)

- Other major (non-routine) capital investments……..$100 million
  (Estimated local share: $20 million)

Waste Water Related Projects

- Additional NEORSD Combined Sewer Overflow Projects (to be funded by future rate increases)……..$300 million
  (Estimated local share: $300 million)

- New Regional Stormwater Program..…….$300 million
  (Estimated local share: $300 million)

- Cuyahoga County: Mandated municipal stormwater (Phase 2) sewer projects
  ……..……..……$200 million
  (Estimated local share: $200 million)

Drinking Water Related Projects

- Additional City of Cleveland Water Department Regional Water System Projects (to be funded by future rate increases)……..……..$200 million
  (Estimated local share: $200 millon)

Other Infrastructure Project

- Replacement of Cuyahoga Industrial Channel Bulkheads:…….$150 million
  (Estimated local share: $150 million)

In addition, there are other smaller cost projects that are also scheduled to begin in the near term. They are listed in Appendix C to this report, and are reflected in the projected $5 billion (over 10 years) current capacity estimate.

Section III:
Funding Mechanisms for Public Infrastructure Projects

A national scan was conducted to identify unique or innovative methods to fund state and local infrastructure initiatives. While there exists a number of methods to finance infrastructure projects at the federal and state levels, funding specific capital improvement projects at the local level is often more challenging, usually due to a lack of available funds. A number of the specific approaches reviewed in this report have strived to address this need.

Tax Increment Financing

When the State of California passed the nation's first Tax Increment Financing (TIF) law in 1952, the original intent was to provide local governments with a self-financing funding mechanism for the redevelopment of blighted urban areas. Over time, the TIF approach was applied to capital infrastructure projects as well, including roads, bridges, water, and wastewater facilities. Under the TIF system, infrastructure improvements are funded through increases in property tax revenues from a designated area (TIF district). As these improvements increase the value of properties within the TIF district, the respective increases in property tax revenues are utilized to cover the cost of the infrastructure improvements. In the state of Illinois, there are more than 400 TIF districts in over 250 different cities. Tax Increment Financing is currently utilized in 44 states, including Ohio. The TIF mechanism has been used here in Ohio to encourage private investment, and to help fund large development projects.

One potential risk involving the utilization of TIF is the issue of whether the increase in assessed values of the properties within the TIF district will be sufficient to finance the infrastructure improvements. This potential risk makes some wary of pursuing TIF financing. As described by Melby and Hall (2003), "If the property fails to increase in value, the improvement costs fall back on the general taxpayer."

In most cases, the maximum life of a TIF district is typically between 20 and 30 years. As the TIF expires and the community's investments in the redevelopment project within the designated TIF are paid back, all property tax revenues are typically once again shared by all the different taxing entities. As a result, the respective taxing agencies usually reap the benefits of greater tax revenues, based upon the new development made possible by the TIF.

Local and Regional Applications/Feasibility

Like most other states, Ohio has a legal statute allowing the use of Tax Increment Financing. Under Ohio law, the local municipality has governing authority (pending approval from the local board of education). Bonds are issued to finance the TIF project, with the time period allowed by law ranging from 10 to 30 years. Several high profile development projects within the state have utilized TIF as part of their funding packages, including the Rock and Roll Hall of Fame and Museum in Cleveland and Nationwide Arena in Columbus. Another recent local example of this practice can be found in the City of Cleveland's plans for the development of lower Euclid Avenue, which proposes a funding package that includes $9.2 million in tax increment financing. While cities have used TIF to help finance development projects such as these, TIFs have not been utilized to help fund capital infrastructure improvements.

An example of the application of TIF through the Greater Columbus Chamber of Commerce for economic development projects is detailed below:

- A designated percentage of the increase in assessed value of a parcel resulting from development (the tax increment) is declared tax-exempt for a specified period of time, not to exceed 30 years. Specific public improvements, such as new or upgraded roads, sewers, or water mains, are designated that will directly benefit the parcel.

- The developer of the property makes service payments in lieu of the abated taxes on the parcel's increased value. These service payments are deposited into a special fund and used to defray the cost of the designated public improvements.

- The terms of the TIF are negotiated between the local government and the developer. Affected school boards must be notified of the proposed TIF, and must approve all tax exemptions that exceed 75 percent or 10 years in duration. The school board may require that in-lieu payments be made to the school district to compensate for foregone revenue.

In addition to TIFs, there may be potential to utilize a "value capture" aspect of local property taxes to help finance local infrastructure as well. Similar in some ways to TIF, some municipalities have utilized a value capture technique embedded within their local property tax to help finance local development within urban areas. This is often achieved through the adoption of a "split rate" property tax, where buildings are taxed at a lesser rate than land is taxed. As a result, property taxes and development costs in urbanized areas become more competitive with those in outlying areas (where land is often cheaper). An illustration of how this principle could be used to finance local infrastructure occurred in the District of Columbia in 1995, when the RF&P Corporation

offered to pay for the design and construction of a new Metrorail station between the National Airport and the Braddock Road stations. The company owned a large former rail-switching yard (Potomac Yards) south of National Airport, but development of the property was constrained by limited direct access, and nearby roads that were already strained to capacity during rush hour traffic. After local officials indicated that creation of a new Metrorail station there would provide sufficient access to allow additional residential and commercial development within the property, RF&P Corporation offered to finance the entire design and construction cost of a new Metrorail station, based on the enhanced development value of the land as a result of the new infrastructure.

Development Impact Fees

To provide much needed funds for public infrastructure improvements, municipalities in many states are now implementing "impact fees" to help pay for these new facilities. These fees, which are paid by developers, are one-time charges that are levied on a new development (or owners of the new development) to help pay for the infrastructure that serves the new development.

In their assessment of how impact fees affect economic development and job growth, Nelson and Moody (2003) outline several conclusions supported by their analysis:

- **Impact fees do not slow job growth**. In a statistical analysis of impact fees and job growth in the state of Florida, the authors found "a significant positive association between impact fees collected per building permit in one year and job growth over the next two years." The authors note that this finding holds even when other important factors are controlled for – such as base year employment growth, prior decade employment growth, property taxes per capita, the value of local building permit activity, regional, temporal and other factors.

- **Impact fees increase the supply of buildable land**. Without impact fees, local governments may not have the revenue necessary to accommodate growth. Impact fees allow them to gain the necessary infrastructure – water, sewer, drainage, and road facilities – to open new parcels of land to development.

- **Impact fees have complex effects on housing prices**. One especially thorough study on the effect of impact fees on housing prices found that fees reduced land prices by the amount of fees paid, but also raised finished house prices by about half of the fee amount. One reason for this may be that while impact fees lower raw land prices as predicted by conventional economic theory, the amount of the fee reflecting infrastructure value is recovered in the sale price. Additionally, the amount above the fee represents the value of the infrastructure as a whole, and/or the certainty perceived by the market that facilities will be

provided at a desired level and quality of service (i.e., no congestion) regardless of growth pressures.

- **Impact fees, like user fees, offer a more efficient way to pay for infrastructure than general taxes, and ensure benefits to those who pay for them.** A review of the academic literature indicates that the aggregate benefits of impact fees improve efficiency in the provision of infrastructure. While impact fees often may not reflect the full price of capital infrastructure improvements, impact fees do make the economic linkage between those paying for and those receiving benefits more direct, thus promoting economic efficiency.

The Federal Highway Administration (FHWA) also reports that some states are using Development Impact Fees (DIFs) to help fund transportation projects. One example is the Foothill/Eastern Transportation Corridor project in Orange County, CA – a planned 52-mile public toll road system. According to a 1999 report by the FHWA, DIFs had raised $178 million for this project. The State of Georgia also allows local governments to establish DIFs.

System Development Charges

In Oregon, legislation was passed granting local governments the authority to assess System Development Charges (SDCs) to provide funding for capital improvements. The city of Albany, OR defines SDCs as "fees paid by persons who are developing property to help pay for the impact of the development on the public infrastructure." Oregon state law authorizes local governments to assess SDCs for capital improvements in the following areas:

- Water supply, treatment, and distribution;
- Wastewater collection, transmission, treatment, and disposal;
- Stormwater and flood control;
- Transportation;
- Parks and recreation.

In his *Comprehensive Guide to Water and Wastewater Finance and Pricing,* Raftelis (1993) identified several key advantages that system development charges could provide to a community including:

- The charges are paid up-front to the utility, enabling the community to provide additional services immediately. The revenue is worth more paid in a lump sum than if it were paid over time to the community.

- Usually, SDCs are administratively easy to collect. However, complex assessment methods (e.g., fixture unit method) can make administration more costly and complicated.

- Unlike certain types of bonds, the charges do not normally require a public vote.

- SDCs are an equalization device. When they are calculated properly, they require new development or customers to "buy into" the city's infrastructure at a fair rate and to repay users who have subsidized the system-wide facilities through prior service charges or taxes.

- When developed appropriately, the charges can impose the cost of extra capacity for infrastructure facilities upon properties that create the need for those facilities.

- SDCs provide an additional source of revenue to bolster otherwise inadequate funds for constructing and/or maintaining essential facilities and services. As a result, less pressure is placed on taxes and user charges for financing capital items. In addition, SDCs provide a source of funds when the bond market is unfavorable for financing capital facilities.

However, in addition to the above-mentioned advantages that SDCs can provide to communities, Raftelis also describes some of the objections to SDCs that are sometimes voiced, typically by homebuilders, land developers, and new water and wastewater customers. The fact that SDCs can add to the "front-end" cost of housing can make new housing less affordable to low and middle income families. The additional fact that SDCs are not deductible for federal income tax purposes can also make them more costly (in relative terms) than ad valorem taxes, if taxes are used to pay debt for infrastructure facilities. Also, Raftelis argues that while it is only fair that new home buyers should be required to pay the costs of facilities and other improvements that benefit them directly, system development charges can represent a subsidy of pre-existing services and thus be unfair to new home buyers who are long-standing community residents.

Local and Regional Applications/Feasibility

Presently, Ohio does not have specific legislation providing for the creation of local development impact fees or system development charges. However, a series of court cases over the past 30 years has generally affirmed "the constitutionality of utility tap-in fees or recreational excise taxes imposed by municipalities under their general home rule authority" (Carrion and Libby, 2000). Among these legal cases was a ruling by the Ohio Supreme Court in 2000 that reversed a lower court decision and allowed the City of Beavercreek, Ohio to impose impact fees on new developments within an

area of the city defined as an "impact fee district." Due to the fact that the city had made a great effort to limit the fee to developments requiring related new transportation expenditures, the Court was persuaded that "the impact fee was indeed a fee, and not a tax, and that a matching fund was not required to remain a constitutionally valid action under home rule authority" (Carrion and Libby, 2000).

State Infrastructure Banks (SIBs)

As part of the National Highway System Designation Act of 1995, Congress authorized a pilot program for the creation of State Infrastructure Banks (SIBs). The Act gave authority to the Secretary of Transportation to enter into agreements with up to 10 states (Ohio was included in this group) for the purpose of establishing state and multi-state infrastructure banks. Since then, the SIB program has been expanded to include 38 states plus the Commonwealth of Puerto Rico.

Ohio's SIB program is a direct loan and bond financing program that was initially capitalized with federal and state funds totaling $120 million. The program is managed by the Ohio Department of Transportation (ODOT), and operates as a revolving loan program, as loan repayments are then used for new projects.

Despite the fact that many states are officially included in the program, it should be duly noted that SIBs are much more active in certain states than in others. As recently as September 2001, 91 percent of all funds loaned through SIBs were concentrated in six states – South Carolina, Florida, Arizona, Ohio, Texas, and Missouri. Among these six states, the FHWA reported that South Carolina's SIB is highly leveraged based on amounts loaned through bonding, and that three other states (Ohio, Arizona, and Florida) have all contributed additional state funds to their respective SIBs. The FHWA also reported that Missouri has benefited from additional TEA-21 capitalization.

The U.S. Department of Transportation (USDOT) has defined an SIB as an infrastructure investment fund established to facilitate and encourage investment in eligible transportation infrastructure projects sponsored by public and/or private entities. As such, an SIB serves as a financial intermediary established by a state or group of states to help finance transportation projects. Financial assistance from SIBs is provided through loans and credit enhancement. The credit enhancement provided usually comes in some form of guarantee that strengthens the quality of the debt used to finance transportation projects. It frequently includes such measures as bond insurance, loan guarantees, capital reserves, letters of credit, and lines of credit.

In February 2002, the USDOT released the findings from a review that had been conducted of the SIB program to that point in time. In this study, which surveyed those states that have participated in the SIB program, several particular obstacles to effective

implementation of the SIB program were identified. Among the findings was the fact that many states lacked the legislative authority to leverage their funds and thereby increase the capitalization level of the SIB. In 2002, a report from the U.S. General Accounting Office found that only two states – Florida and Missouri – had capitalized their SIBs with TEA-21 funds. As a result, capitalization levels sometimes constrain the SIB maximum loan size and loan portfolio. Also, the complexity of Federal requirements has been cited as an obstacle to SIB activity and the effectiveness of the program, particularly for transit projects. Several project sponsors have also noted that Federal requirements for smaller projects can significantly delay construction schedules and increase overall project costs.

Other limitations and concerns have raised questions pertaining to the extent that SIBs can be utilized to address transportation needs. A 1998 Congressional Budget Office review of innovative highway finance methods concluded that "Without restructuring of the entire federal aid program, SIBs are unlikely to become a major source of highway financing in the next few years." This assessment was based on the concern summed up by one FHWA official, who said that only a small number of projects could generate enough revenue to repay loans made by SIBs.

A few states have also indicated that insufficient demand for loans has been a factor affecting program implementation. However, the lack of interest or demand in some instances may be attributed to limited marketing efforts.

Despite the above-noted challenges that states may encounter in their efforts to implement a successful and productive SIB program, the U.S. Department of Transportation also reported that the consensus among the states interviewed during their SIB review was that the SIB financing mechanism is an effective tool; however, there are potential improvements that could be made to the program at both the federal and state levels.

Local and Regional Applications/Feasibility

Despite the above-noted concerns and limitations associated with SIBs, Ohio's SIB has been one of the more active programs among the 38 states participating in the program. The first SIB loan in the nation was made in Ohio – to the Butler County Transportation Improvement District. Loan funds totaling $35 million were used for construction of a 10.7 mile, divided highway connecting the City of Hamilton, Ohio to I-75 through Fairfield and Liberty townships. The highway opened to the public in December 1999 – eight months ahead of schedule. In a review of the SIB program, the FHWA reported that Ohio was among the top six states with 35 loan agreements totaling more than $146 million through September, 2001. Through Spring 2004, Ohio's SIB program has made a total of 60 loans to various road projects within the state, totaling more than $208 million. While no new capitalization funding has recently been

added to the SIB program, efforts are underway to leverage additional funding for the SIB through a bond issuance.

Local Option Gas Taxes

Fuel taxes have historically been a primary transportation revenue source at the federal and state levels. A total of 15 states have now authorized assessment of fuel taxes at the county or local level as an additional way to generate much needed revenue for road projects. In essence, a local option fuel tax is a tax on motor fuel levied by a county or municipal government for the purpose of raising needed revenue for local or regional transportation projects.

In a 1996 review of different funding strategies utilized in other states for local infrastructure projects, the Center for Public Management at Cleveland State University determined that a 12-cent per gallon local option tax on motor fuel could generate approximately $70 million per year for local governments within Cuyahoga County. This amount was more than three times greater than the $21.6 million in motor fuel tax funds that Cuyahoga County received from the State of Ohio in calendar year 1994. In this report, the local option gas tax administered by the state of Florida was specifically profiled to illustrate the potential benefits and limitations of this particular tax mechanism. A current summary description of that profile is provided in Table 11.

Table 11

PROFILE OF LOCAL OPTION GAS TAXES: STATE OF FLORIDA	
Description	• Permits counties and local governments to levy local option fuel taxes up to 12 center per gallon for purpose of funding local transportation needs • Transportation funds can be used for planning, assessment, design, engineering, operating, maintenance, and capital purposes • Tax has been enacted by all 67 counties and is split with municipalities based on a mutually agreed upon distribution formula • Tax can be approved by the county commission or a county-wide referendum
Development History	• Local option taxes began in 1972 at one cent per gallon • Major changes since have increased the rate and changed the level at which the tax is assessed from wholesale to retail (allows for identification of the location at which each gallon of fuel is sold to determine the proper rate)
Benefits	• Local officials are not dependent on state actions • Counties that are willing to vote for taxes reap the benefits • There is a close correlation between usage and revenues received • There are no “donor” counties • Local officials can determine intra-county distribution formulas • The issue could be left up to the voters
Restrictions	• A new tax structure would require considerable legislation • Local option taxes could require changes in tax administration
Implementation	• In addition to rewriting Florida’s fuel tax laws, gas tax collections need to be moved from wholesale to retail (much more difficult level to administer) • Local referendum should emphasize its replacement aspects and the fairness and flexibility of the distribution method

Cuyahoga County records indicate that in 2002 the county received just under $23.6 million in motor fuel tax funds from the state of Ohio. The vast majority of this amount (94 percent) was disbursed to municipalities within the county, with the remainder going to the county itself and the few townships within the county's borders. Table 12 below provides a brief summary of the fuel tax revenue disbursements to Cuyahoga County for the five-year period from 1998-2002.

Table 12

MOTOR FUEL TAX DISBURSEMENTS TO CUYAHOGA COUNTY (1998-2002)				
	Amount Distributed to:			
Year	Total	County	Townships	Municipalities
1998	$23,069,849	$1,348,239	$94,577	$21,627,033
1999	$23,839,904	$1,390,485	$100,584	$22,348,835
2000	$23,522,126	$1,378,130	$99,701	$22,044,294
2001	$23,685,207	$1,385,531	$100,258	$22,199,418
2002	$23,579,671	$1,387,402	$100,398	$22,091,870

Source: Ohio Department of Taxation. Five-year period from 1998-2002 represents most recent data currently available for Cuyahoga County.

As Table 12 illustrates, the fuel tax revenue disbursed annually to Cuyahoga County has generally hovered around $23.5 million for the 1998-2002 period. (However, with the recent three-phase increase in the state fuel tax beginning in July 2003, fuel tax disbursements to Ohio counties are expected to increase substantially). A brief summary of those states that have currently authorized the use of local option gas taxes is provided below:

- Current estimates project that Florida's current distribution of fuel tax money (which includes both a state fuel sales tax and a local option sales tax) will provide approximately $88.5 million in funds to the state's 67 counties.

- A total of 10 states have now adopted some form of a local option gas tax (Alabama, Alaska, Florida, Hawaii, Illinois, Mississippi, Nevada, Oregon, Virginia, and Washington). In addition, another five states have authorized its use, although no local governments in these states have yet adopted gas taxes (California, Montana, New Mexico, South Dakota, and Tennessee).

- In two of these states (Florida and Nevada), all counties within each state have now imposed a local option gas tax for transportation funding purposes. In Alabama, more than 60 cities have also adopted local gas taxes.

Goldman, Corbett and Wachs (2001) reported that most local option gas taxes were adopted in states where voter approval was not required, and a few states even permitted some of the revenues to be used for non-transportation related purposes. However, they also report that in the five states where local option gas taxes have been

most widely implemented (Alabama, Florida, Hawaii, Illinois, and Nevada), revenues are used primarily to maintain and improve county road systems.

While local fuel taxes may have some appeal, there are several potential concerns regarding the extent to which they can provide a substantial revenue source for local transportation projects. If the tax is levied as pennies per gallon of fuel (as is usually the case) as opposed to a percentage of the fuel price, the revenues generated will lag over time, since the real value of each penny collected will decline due to inflation. In addition, increasing fuel efficiency of newer vehicles may also limit growth of the fuel tax as a revenue source. Also, as Goldman, Corbett and Wachs (2001) illustrate, the limitations of the local revenue base (such as a county or city) may come into play. Since only one product is being taxed, the tax rate may need to be set high to generate enough revenue for major infrastructure projects. If the local tax is set too high, drivers could go elsewhere to purchase fuel.

Local and Regional Applications/Feasibility

The state of Ohio has not granted authority to levy fuel taxes to local governments. Attempts to establish additional fuel taxes at the local level could be met with considerable opposition among both citizens and public officials. At the present time, there does not appear to be any organized, substantive drive within the state to enact local option gas taxes. Thus, the likelihood that local option fuel taxes could be enacted any time soon as an additional revenue source for transportation needs appears dim, at best.

In part, the recent increase in the state fuel tax could make justification of a local option fuel tax less attractive to both drivers and public officials. On July 1, 2003, a two-cent increase to the state fuel tax was passed into law, raising the current state fuel tax to 24 cents per gallon. A subsequent two-cent increase is scheduled to take effect July 1, 2004; and another two-cent increase is scheduled for July 1, 2005 if certain changes are not made to the federal gasoline tax distribution formula.

As mentioned in the previous section, the increase in the state fuel tax will significantly increase available funding for road projects for county and local municipal governments. By 2007, it is estimated that local governments could receive approximately double the funding amounts now generated through the state fuel tax. At the time of this writing, county-level fuel tax revenue disbursements for calendar year 2003 were not yet available. However, information from the Ohio Tax Commissioner's office indicates that state-level revenue generated from Ohio's fuel tax increased by 3 percent to $71.4 million in FY 2003. As the six-cent per gallon increase in the state fuel tax is gradually phased in, state fuel tax receipts should also increase, as should the subsequent disbursements to county and local governments.

User Fees: Toll Roads and Congestion Pricing

Toll Roads

Tolls have been utilized as a common mechanism to fund highway and bridge projects. The use of tolls has generally been considered as more equitable and economically efficient than other funding strategies which shift part of the burden of paying for improvements to non-users. In the United States, 22 states (including Ohio) now operate some form of a toll road.

The first toll road in Ohio (and still the only one) is the Ohio Turnpike, which runs 241 miles east-west from the Pennsylvania border to the Indiana border. It is operated by the Ohio Turnpike Commission – not the Ohio Department of Transportation. The first leg of the Ohio Turnpike opened in 1954 (22 miles), and the remainder was opened to the public in 1955 (219 miles). The maintenance, operation, and security costs for the Ohio Turnpike are funded almost exclusively through tolls.

The Ohio Turnpike differs from other state highways in the fact that it receives no federal funding, and only a small portion of the state gasoline tax ($.05 per gallon from gasoline *purchased only at service stations on the Turnpike*) is set aside for the Turnpike. In turn, this small portion of tax money is specifically allocated to the maintenance and repairs of the bridges and overpasses that are state routes. In essence, Ohio Turnpike tolls serve as a user fee for only those drivers who use the Turnpike.

Local and Regional Applications/Feasibility

The Ohio Turnpike Commission recently approved a $203 million operating budget for 2004, an increase of 1.2 percent. The Commission reported that it collected $180 million in tolls in 2003, up slightly from $179.2 million from the prior year. The Commission also expects to collect an additional $13.7 million from service plaza concessions and will receive additional revenue from other areas such as investment earnings. The Commission has two major capital projects slated to begin soon – the replacement of two service plazas in Sandusky County for $22 million and interchange improvements at Interstate 280 near Toledo for $18 million. In 2003, passenger vehicle traffic on the Turnpike increased 1.5 percent to 39.2 million vehicles, while commercial traffic decreased by 0.1 percent to 9.1 million vehicles. Turnpike officials also say that no toll increases are planned.

Congestion Pricing

"Time is money" is essentially the concept behind congestion pricing (sometimes referred to as value pricing or variable tolling). Aside from raising a revenue source for transportation needs, another motivation behind the implementation of congestion pricing is to ultimately reduce or alleviate road congestion. This is accomplished by fostering more efficient use of limited road capacity by encouraging some motorists to shift their traveling to off-peak periods, mass transit, carpooling, and/or less congested travel routes.

In February 2003, the largest and most extensive road pricing project in the world was launched in central London. To address the issue of traffic congestion, vehicles were electronically charged a flat fee between the hours of 7 a.m. and 6:30 p.m. on weekdays. Deloitte Research (2003) conducted a study of the program's impacts upon traffic flow and found that traffic congestion had been alleviated by the new road fees. Eight months after the program's start date, traffic speeds had increased 37 percent, congestion had dropped 40 percent during charging hours, and round trip travel times had been reduced by 13 percent.

Similarly, the Port Authority of New York and New Jersey has also documented how its variable toll pricing schedule has affected traffic and transit patterns at the agency's Hudson River crossings and Port Authority Trans-Hudson (PATH). A comparison was made between a typical day in May 2001 (less than two months after the variable pricing program went into effect) with a typical day in May 2000. Results indicated that seven percent fewer drivers were using PATH bridges and tunnels during the morning peak hour period, while four percent fewer were traveling the crossings during the afternoon peak hours. These findings amounted to 150 fewer vehicles during the morning rush hour and 2,500 fewer vehicles during the early evening rush hour. In addition, PATH reported that the shift of traffic from peak travel hours was accompanied by a corresponding increase in off-peak travel, car-pooling, and transit use.

Local and Regional Applications/Feasibility

A $200,000 federal grant was recently awarded to the Ohio Department of Transportation and the Ohio Turnpike Commission to study the use of turnpike truck toll discounts as a way to alleviate arterial roadway congestion. Citing evidence that truck drivers are increasingly using nearby arterial roadways to bypass turnpike tolls, a key objective of this study is to determine if value pricing can attract traffic from parallel routes onto the turnpike. In particular, the development of a pricing strategy that would encourage trucks to use the less congested turnpike is an issue of key interest for this project. The grant for this study was awarded through FHWA's Office of Transportation Policy Studies, for fiscal year 2003.

Grant Anticipation Revenue Vehicles (GARVEES)

A Grant Anticipation Revenue Vehicle (GARVEE) is a debt financing instrument authorized to receive Federal reimbursement of debt service and related financing costs under Section 122 of Title 23, United States Code (U.S. FHWA). GARVEES are state issued bonds or notes that are repayable with future federal aid. In addition, credit assistance under the Transportation Infrastructure Finance and Innovation Act (TIFIA) – including loans, loan guarantees, and lines of credit – can also be used to repay GARVEE debt issues. Essentially, GARVEE financing enables states to pay debt service and other bond-related expenses while generating up-front capital for major highway projects at tax-exempt rates.

GARVEEs can be a useful financing mechanism to address gaps in funding and accelerate construction on large projects. According to the FHWA, GARVEE financing is typically used for large projects (or a program of projects) that have the following characteristics:

- The costs of delay outweigh the costs of financing;
- Other borrowing approaches may not be feasible or are limited in capacity;
- No access to a revenue stream and other forms of repayment are not feasible;
- The sponsors are willing to reserve a portion of future year Federal-aid highway funds to satisfy debt service requirements.

By Fall 2002, a total of six states (including Ohio) had issued GARVEE bonds to fund highway and transit infrastructure projects. In June 1999, Arkansas voters approved $575 million in GARVEE bond issues to help finance highway reconstruction projects, thus providing the means for these projects to proceed on an accelerated schedule. Another application of GARVEE financing was utilized in New Jersey, where the New Jersey Transit Corporation issued $151.5 million in debt to purchase 500 new buses for the mass transit agency. Debt repayments will be funded entirely with future Federal Transit Administration (FTA) funding.

Local and Regional Applications/Feasibility

Ohio was the first state to leverage federal funds through GARVEES, utilizing four GARVEE bond issues from 1998-2002, that totalled $325 million. The FHWA reports that Ohio's use of GARVEE bonds and toll credits generated from the Ohio Turnpike System have been used in tandem to help facilitate major infrastructure improvements within the state, including the Spring–Sandusky Corridor, the new Maumee River Crossing, and the Southeast Ohio Plan (these projects total an estimated $807 million). In particular, the FHWA adds that the state's use of toll credits has freed cash resources to be allocated to other priorities, as well as providing a

means for projects like these three to be completed much sooner than they would have been using traditional financing methods.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

As part of the Transportation Equity Act for the 21st Century (TEA-21) that was passed in 1998, the Transportation Infrastructure Finance and Innovation Act (TIFIA) established a new federal credit program to help fund large surface transportation projects. Through TIFIA, the U.S. Department of Transportation (USDOT) may provide certain forms of assistance to large projects meeting certain eligibility criteria. The forms of assistance provided include federal loans, federal loan guarantees, and standby lines of credit.

Because the TIFIA program funds a lower share of eligible project costs than do traditional federal-aid programs, a larger investment by non-federal funding sources is required. This, however, can help to leverage federal funds by attracting more non-federal investments to infrastructure projects.

Some of the primary benefits provided by the TIFIA program include flexible repayment terms, low interest rates, and improved access to capital markets. TIFIA funding can provide a flexible source of subordinate capital that might not otherwise be available on attractive terms. In turn, this flexibility can allow a project's senior debt to demonstrate higher coverage margins and attain investment grade bond ratings. A 2002 report from the U.S. General Accounting Office adds that bond rating companies "view TIFIA as 'quasi-equity' because the federal loan is subordinate to all other debt in terms of repayments, and offers debt-service grace periods, low interest costs, and flexible repayment terms."

Local and Regional Applications/Feasibility

TIFIA credit assistance is essentially limited to major projects that can attract substantial private capital with limited federal funding. Specifically, a project must meet certain criteria in order to qualify for TIFIA funding assistance:

- A project must have a minimum cost of $100 million, or 50 percent of a state's federal-aid highway apportionments for the most recent fiscal year, whichever is less. For Intelligent Transportation System (ITS) projects, the minimum threshold is $30 million.
- The project must also be supported either wholly or at least partially from user charges or other non-federal dedicated funding sources, and be included in the state's transportation plan.

Water Pollution Control Loan Fund

For water-related infrastructure needs, the Water Pollution Control Loan Fund (WPCLF) is a state revolving loan fund designed to offer communities low interest loans for wastewater treatment system improvements and non-point source pollution control projects. Infrastructure projects that are eligible for assistance include wastewater treatment facilities, urban stormwater runoff, and septage receiving facilities.

The WPCLF is administered by the Ohio EPA's Division of Environmental and Financial Assistance and the Ohio Water Development Authority. In addition to low interest financing, the program can also provide communities with technical assistance in completing the loan application, preparing bid documents, and developing user charge systems.

Local and Regional Applications/Feasibility

Since 1989, the WPCLF has provided more than $1.8 billion in assistance to municipal water facilities in Ohio. In addition, the WPCLF has also received the highest attainable bond ratings from both Moody's and Standard & Poor's rating services, making it one of the strongest publicly managed bond programs in Ohio. The Ohio EPA also reports that the low interest financing provided by the WPCLF can save the ratepayers served by a municipal sewer system up to $232,000 for each $1 million that is borrowed for long-term water pollution improvements.

Drinking Water Assistance Fund

The Drinking Water Assistance Fund (DWAF) is another program designed to make low interest loans available to community water systems, specifically for water treatment and water distribution system improvements. Eligible systems must be publicly or privately owned community water systems, or nonprofit, non-community water systems. A large component of the DWAF program is the Water Supply Revolving Loan Account (WSRLA), a revolving loan fund account that provides low interest loans to recipients for the planning, design, and construction of improvements to water systems.

Local and Regional Applications/Feasibility

In the *Program Year 2004 DWAF Program Management and Intended Use Plan* prepared by the Ohio EPA, it was reported that applications for funding had been submitted for 117 community water projects throughout the state of Ohio. The report also estimated that as of March 2003, the WSRLA had just over $67 million as "currently available funds for the program year to fund capital improvements to

community and nonprofit, non-community public water systems through loans and other types of assistance for qualifying projects."

Life Cycle Cost Analysis

Roads and Bridges

The Federal Highway Administration (FHWA) describes life cycle cost analysis (LCCA) as an engineering economic analysis tool that allows transportation officials to quantify the differential costs of alternative investment options for a given project. Applications of LCCA include the study of new construction projects and analysis of different preservation strategies for existing transportation assets. An important aspect of LCCA is the consideration of all agency expenditures and user costs throughout the life of an alternative, not only its initial investments. The FHWA views LCCA as more than a simple cost comparison because it involves sophisticated methods to determine the economic merits of a project alternative based upon a thorough analysis of the data.

A primary goal of life cycle cost analysis is to determine the most cost efficient approach to the design and construction of infrastructure projects. Often this involves the use of innovative construction materials. One project example in Ohio would be the Tech 21 Bridge located in Butler County. This particular bridge utilized a fiber composite design within its deck infrastructure and supporting beams, and was opened to the public in July 1997.

In particular, the FHWA adds that life cycle cost analysis helps transportation agencies answer the following important questions:

- Which design alternative results in the lowest total cost to the agency over the life of the project?
- To what level of detail have the alternatives been investigated?
- What are the user cost impacts of alternative preservation strategies?

In 1998, the Innovative Bridge Research and Construction (IBRC) Program was established as part of TEA-21. This six-year program was designed to help state and local transportation agencies use innovative materials for bridge repair, rehabilitation, replacement, and construction. The program concluded in fiscal year 2003. One of the projects funded by the IBRC Program included a bridge deck in New Jersey that utilized a carefully engineered high performance concrete (HPC) to enhance durability. Another project involved a new bridge in California where the increased strength from the use of high performance steel in the plate girders allowed designers to build longer spans and eliminate some of the piers.

The American Society of Civil Engineers (ASCE) is another group that has also advocated its support for the use of life cycle cost analysis in the design process to evaluate the total cost of infrastructure projects.

Local and Regional Applications/Feasibility

In 2001, ODOT issued new pavement preventive maintenance guidelines and provided training on these guidelines to personnel in each district and county. Highlighted within these guidelines are a variety of preventive maintenance treatment and preservation techniques that have been approved for use. These guidelines were developed by a team of representatives from the FHWA, the Ohio Pavement Preservation Association, the American Concrete Pavement Association, and Flexible Pavements of Ohio.

ODOT was one of 12 state DOTs that participated in a survey in 1998 that examined the life cycle costs and performance of concrete bridge decks. The findings from this study indicated that the cost advantages of fiber reinforced polymer bridge decks may partially, or perhaps even completely compensate for their higher initial cost. A report summarizing the study results was subsequently made to the Transportation Research Board in January 2001.

Water Systems

In addition to transportation projects, life cycle costing models can also be applied to water, wastewater, and stormwater infrastructure needs. Numerous engineering, planning, and design consultants offer life cycle costing and assessment services to both private and public institutions, including public infrastructure agencies. One particular firm that specializes in this area (CSIRO Building, Construction and Engineering) describes in detail the application of a life cycle methodology for assessment of urban water systems:

- Methodology has been applied to five classes of potable water assets: *storage, transport, pumping, treatment,* and *disposal.*

- The life cycle costs associated with each of these classes of assets are defined in three categories: *establishment, operation, and replacement costs.*

- Each category is further subdivided into several subcategories (e.g., capital, installation, maintenance, staff – as appropriate for the category) to enable explicit cost functions to be defined.

Local and Regional Applications/Feasibility

The City of Columbus, Ohio has utilized the resources of private contractors to undertake several value engineering (VE) studies as part of the 1998-2003 capital improvements program for the city's wastewater treatment facilities. Value engineering is a specific, recognized practice where the primary objective is to maximize value for money. To date, VE studies have been conducted at the city's Southerly Wastewater Treatment Plant and the Jackson Pike Wastewater Treatment Plant. Operational aspects examined in these studies included effluent disinfection improvements, sludge holding system improvements, sludge handling and dewatering improvements, and removal of PCB-contaminated electrical equipment.

In Summation: Infrastructure Finance Mechanisms

Table 13 provides a summary of the finance mechanisms discussed in this section of the report, along with the respective potential benefits and limitations of each. The respective finance mechanisms are categorized as *local funding mechanisms* and *federal/state funding mechanisms*.

Table 13

SUMMARY OF INFRASTRUCTURE FINANCING MECHANISMS		
Local Funding Mechanisms		
Funding Mechanism	**Description**	**Benefits/Limitations**
Tax Incremental Financing (TIF)	Infrastructure improvements funded through increases in property tax revenues from designated area. Improvements spur increases in property tax revenues, which are then utilized to cover costs of infrastructure improvements.	Potential risk of whether increase in assessed values of properties will be sufficient to finance the infrastructure improvements.
Development Impact Fees/System Development Charges (DIF/SDC)	Fees assessed to property developers to help pay for infrastructure that serves new development.	Some research suggests development impact fees do not slow job growth, and may help facilitate development by affording communities opportunity to gain necessary infrastructure for growth. Possible limitations include cost objections from homebuilders, developers, and new water/wastewater customers. Also, adding to the "front-end" cost of new housing could make it less affordable to low and middle income families.
Local Option Gas Taxes	Legislative authority of counties and local governments to levy local fuel taxes for funding local transportation needs. Currently used in 10 states (Ohio not included).	Benefits include local transportation needs being less dependent upon state funding. Counties willing to vote for taxes reap the benefits. Limitations include possible local resistance to an "extra" fuel tax, and the need for legislative and administrative changes in tax collection, if implemented.

Table 13 (continued)

SUMMARY OF INFRASTRUCTURE FINANCING MECHANISMS		
Local Funding Mechanisms (continued)		
User Fees (Toll Roads, Congestion Pricing)	Drivers charged a fee to use a particular road or highway; congestion pricing approach charges drivers different fees for highway use during different times of day or night.	Benefits include additional source of revenue for transportation needs. Some research suggests congestion pricing fostered more efficient use of limited road capacity by encouraging some motorists to shift travel to off-peak periods, use mass transit, carpool, or use less congested travel routes. Limitations include potentially strong public opposition to converting "free" highways to toll roads.
Life Cycle Cost Analysis	An economic analysis approach that employs sophisticated methods to determine the long-term overall costs of an infrastructure project over the course of time.	Holds much potential for enabling public agency officials to make more effective and cost-efficient decisions regarding the design of capital infrastructure and the materials used in construction.
Federal/ State Funding Mechanisms		
Grant Anticipation Revenue Vehicles (GARVEEs)	State issued bonds or notes that are repaid with future federal aid highway funding.	Can be a useful mechanism to generate up-front capital at tax-exempt rates for major highway projects. Helpful in addressing gaps in funding and accelerating construction on large projects. Must reserve portion of future federal aid highway funding for debt service.
Transportation Infrastructure Finance and Innovation Act (TIFIA)	Federal credit assistance program designed to help fund large surface transportation projects. Forms of assistance include federal loans, federal loan guarantees, and standby lines of credit.	Can provide flexible repayment terms, low interest rates, and improved access to capital markets. Eligibility is limited to projects with minimum cost of $100 million or 50% of a state's federal aid highway funding for most recent fiscal year (whichever is less). Cost eligibility threshold less for Intelligent Transportation System projects ($30 million). Projects must also be supported at least partially from user charges or non-federal dedicated funding sources.
State Infrastructure Banks (SIB)	Defined by USDOT as "an infrastructure investment fund established to facilitate and encourage investment in eligible transportation infrastructure projects sponsored by public and/or private entities."	Can provide financial assistance through loans and various forms of credit enhancement. Limitations include size and number of loans often constrained by fact that many states lack legislative authority to leverage funds, and thus increase capitalization level of their SIB. Complexity of federal requirements also cited as an obstacle to effective implementation of the program.
Water Pollution Control Loan Fund (SRF)	Offers communities below-market interest rates for municipal wastewater treatment improvements and non-point source pollution control projects. Infrastructure projects eligible for assistance include wastewater treatment facilities, urban stormwater runoff, and septage receiving facilities.	Can provide low interest loans for capital infrastructure improvements. In addition, Ohio EPA staff (who administers the program) can also provide communities with technical assistance in areas such as completion of the loan application, preparation of bid documents, and development of user charge systems.
Drinking Water Assistance Fund	Offers loans to public water system owners at below-market rates for water treatment and water distribution system improvements. Eligible systems must be publicly or privately owned community water systems or non-profit, non-community water systems.	A source of low interest funding for capital infrastructure improvements. Program is made up of four separate accounts designed to aid water-related projects, including the Water Supply Revolving Loan Account (WSRLA). The WSRLA can provide financial assistance for the planning, design, and construction of improvements to community water systems, and nonprofit, non-community public water systems.

By its definition, the concept of life cycle cost analysis is more of a “best practice” to be utilized in the design of capital infrastructure rather than a funding mechanism. Nonetheless, it is included in the table above to provide a summary description of its approach and the potential benefits that it can potentially yield to the process of paying for capital improvements.

Section IV: Current Infrastructure Needs and Challenges

Transportation/Transit

Maintaining a sufficient level of funding for the nation's road, bridge and transit projects in the coming years will be a challenge for not only the federal government but for state and local governments as well. The TEA-21 Act that was passed in 1998 increased funding for highways by 27 percent (in real terms) over the previous surface transportation legislation – the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Despite this funding increase, serious concerns have been voiced over how infrastructure funding needs will be met in the coming years, especially since the federal government and virtually all 50 state governments are facing budget deficits in the years ahead, totaling hundreds of billions of dollars. Reauthorization of federal transportation legislation will be crucial to these efforts.

The 2002 Conditions and Performance Report issued by the Federal Highway Administration estimated that a $375 billion investment over 6 years would be the amount needed just to maintain current road conditions of the nations highway system. In a recent report from the U.S. General Accounting Office that examined funding trends in federal and state investment in highway projects, the FHWA estimates that the nation will need to spend about $76 billion – or 18 percent more than it spent in 2000 – each year through 2020 to maintain the average conditions and performance of the nation's highways and bridges. About $107 billion – or 65 percent more than was spent in 2000 – is additionally needed to efficiently improve the nation's highway system.

In regard to short term infrastructure needs (FY 2004 to FY 2009), the USDOT estimated that a federal highway program averaging about $50 billion per year would be needed just to maintain current physical, safety, and performance conditions on the nation's highways and bridges. The American Society of Civil Engineers (ASCE) also concluded in a recent progress report on the nation's infrastructure needs that federal funding levels for infrastructure improvements will fall well short of what is currently needed. In Ohio, ASCE noted the observation from one civil engineer in the state who said the present backlog of bridge replacements extends to fiscal year 2010.

Outlook on Federal Level Funding Projections

Traditionally, the federal aid highway program has been financed through fuel taxes and other levies on highway users. Federal funds for highways are typically disbursed to states in the form of grants that are apportioned based on a series of funding formulas. Federal funding is also subject to grant matching rules, where for most federally funded highway projects an 80 percent federal and 20 percent state funding ratio is applied.

In February 2003, the Bush Administration released its proposed "Budget of the U.S. Government for Fiscal Year 2004." Although some early budget reports indicated that drastic cuts could be made in highway spending, the 2004 budget report proposed spending provisions over the next five years for highway and mass transit programs that were essentially flat, and were listed as follows:

- For the federal highway program, the budget recommends $29.3 billion for FY 2004, down $2.5 billion from $31.8 billion enacted in FY 2002 and $31.6 billion in FY 2003. After FY 2004, funding for the highway program would grow just under $1 billion per year to $33.1 billion in FY 2008, the last year included in the FY 2004 budget.

- For the mass transit program, the budget recommends $7.2 billion for FY 2004, exactly the same as enacted for FY 2003. Mass transit funding would then grow slowly to $7.9 billion by FY 2008.

At the time of this writing, TEA-21 had already expired on September 30, 2003 and Congress was still in the process of producing a new transportation bill. As mentioned in Section I of this report, both houses of Congress had passed separate versions of a new transportation bill by April, 2004, and work had begun to produce a compromise bill that would become law. (Note: The House version called for spending $275 billion over 2004-2009 for highway and transit projects, while the Senate version authorized spending $318 billion. Despite threats of a veto from the White House (on the grounds that both versions of the bill were too costly), both houses of Congress appeared to have enough votes to override a potential presidential veto if necessary.

Outlook on State Level Funding Projections

The increase in the state gas tax will certainly increase the funding amounts that municipalities are now currently receiving for local road projects. In calendar year 2002, Cuyahoga County governments received nearly $23.6 million in motor fuel tax funds. However, due to a three-phase increase in the state fuel tax, it is estimated that by 2007 local governments in Cuyahoga County could receive approximately double the amount of funding now generated through this source. The overall net funds collected from the state fuel tax increased by 3 percent from FY 2002 to FY 2003 – before the first phase of the incremental increase in this tax took effect in July 2003.

A local source of funding for road and bridge projects is additionally supplied through Issue 2 funds, which provided approximately $18 million in 2003 for the maintenance and rehabilitation of roads, bridges, and sewers in Cuyahoga County. A statewide referendum for renewal of the Issue 2 program will likely be presented to voters in 2005.

In August 2003, Governor Bob Taft traveled to Dayton, Cincinnati, Columbus, and Cleveland to promote a 10-year $5 billion plan to rebuild Ohio's stressed and aging highway system. If fully funded and implemented, this plan would be Ohio's largest investment in its highways since work began in earnest on the interstate system roughly 50 years ago. Current plans are for the $500 million per year spending plan to consist of half state and half federal funds. The state portion of the funding plan would come from the 2003 legislation that was passed to implement an incremental increase in the gas tax -- a move that will raise this tax six cents a gallon over three years – to 28 cents per gallon in 2005. It is anticipated that this increase will raise $250 million per year for the state. However, the funding for the federal portion of the plan is contingent upon at least two legislative changes at the federal level that had not yet been adopted at the time of this writing:

- If Congress decides to eliminate the "ethanol penalty" that Ohio currently pays; and
- If a new transportation bill is enacted that returns a higher portion of federal gas tax funds back to the state.

For Northeast Ohio, several large projects would be included in the plan proposed by Governor Taft, some of which are listed below:

- An estimated $1.2 billion reconstruction of the Inner Belt, the highway system that carries I-71 and I-90 through downtown Cleveland
- Shoreway Reconfiguration (State Route 2 between Edgewater Park and Innerbelt Curve)
- Widening of I-77 in Independence and Broadview Heights
- Widening of Ohio 2 in Lake County
- Upgrading Ohio 8 to a divided highway through Boston Heights and neighboring communities

Drinking Water/Wastewater

The Water Infrastructure Network (WIN) has argued that a greater federal role is needed in addressing water and wastewater infrastructure needs. In its recent report *Clean and Safe Water for the 21st Century: A Renewed National Commitment to Water and Wastewater Infrastructure*, WIN describes the unique benefits that an increased federal role can bring to water and wastewater infrastructure investment.

- **Size of the Challenge:** The sheer size of the anticipated funding shortfall provides a sound argument for greater federal involvement. The federal government is unique in its capacity and available resources in that it can reach a broad economic base. While the average annual funding gap may appear daunting at the local or even state level, these funding shortfalls are often small when measured against total federal resources.

- **Enhanced Local Revenue-Raising Capacity:** Depending on how programs and non-federal matching requirements are established, federal funding can actually help passage of local fee increase initiatives. Arguments for local water and sewer fee increases may be more acceptable to citizens and local officials if failure to raise additional revenues will result in the loss of federal funding. This scenario has certainly been the history of most federal infrastructure programs. In addition, the Federal Highway Program mandates states to maintain motor fuel taxes at or above certain historical levels as a condition of receiving distributions from the Highway Trust Fund.

- **Validation of Needs:** As mentioned above, public misperception about infrastructure investment needs sometimes creates barriers to raising sufficient revenues at the local level. The willingness of the federal government to step in and assist in funding needed system improvements can raise public awareness about water and wastewater issues and provide high-level validation that increased investment is important.

- **Program Stability and Predictability:** Because of the national scope of the federal government's revenue base, federal funding programs are typically insulated from the impacts of regional economic swings. This helps to ensure that program funding levels remain stable from year to year, and aids the ability of local water and wastewater utilities to conduct comprehensive short- and long-range investment planning. (Note: Program funding could perhaps be assembled through a combination of sources, such as low interest loans and grants). These benefits can also be expanded depending on the type of budgeting structure utilized and the nature of the programs developed.

- **Innovative Financing:** In recent years, the forms of assistance provided by existing federal infrastructure programs have evolved from simple grant and allocation programs to a variety of mechanisms designed to support innovative project financing. Creating a broader federal funding role can further allow local utilities to leverage the unsurpassed credit capabilities of the federal government. This approach is particularly valuable for those projects that face large funding gaps, measured in either absolute or relative terms.

Current Local Needs

In a March 2003 hearing before the House Subcommittee on Water Resources and the Environment, William B. Schatz, General Counsel for the Northeast Ohio Regional Sewer District in Cleveland, Ohio and Board Member of the Association of Metropolitan Sewerage Agencies, testified on behalf of the Water Infrastructure Network on the topic of "Meeting the Nation's Wastewater Infrastructure Needs." Schatz's testimony argued that an expanded federal role is needed in addressing a growing shortfall in water infrastructure funding. Discussing the enormous infrastructure funding needs in the Northeast Ohio area, he cited the following specifics:

- Since 1972, the Northeast Ohio Regional Sewer District (NEORSD) has invested over $1.8 billion in its facilities, including treatment plants and combined sewer overflow control facilities. While capital program projections for these efforts exceed $1 billion over the next 25 years, recently completed planning studies reveal that NEORSD will need to invest another $1.35 billion in new infrastructure to comply with its combined sewer overflow requirements, which are not factored into current rate structures.

- Schatz also testified to the Subcommittee that rate hikes alone cannot cover the funding shortfall, adding that NEORSD recently passed a rate increase averaging seven percent per year for the next four years, but that the District's rate structures do not include the costs of future regulatory mandates. He added that a large concern is the fact that the $1.35 billion total does not include the significant investment that will be required of 60 member communities to comply with the existing storm water program and the upcoming sanitary sewer overflow control program. In addition, a strong concern that the burden these mandates place on ratepayers will soon be too much for them to bear was also voiced.

Appendices

Appendix A: Current Policy Recommendations Regarding Public Infrastructure Funding

Appendix B: References

Appendix C: Capital Improvement Plans: Cuyahoga County Infrastructure Agencies

Appendix A

Current Policy Recommendations on the Subject of Public Infrastructure Funding

I. From the Committee for the Third National Conference on Transportation Finance (From the Third National Transportation Finance Conference, October 27-30, 2002; Chicago, Illinois).

- Expand overall transportation funding. While the Committee does not endorse any particular approach to increasing overall funding, following are some of the potential recommendations considered at the Conference:

    - Indexing the gas tax to maintain its purchasing power;
    - Raising the gas tax;
    - Crediting the Highway Trust Fund with the amount of ethanol tax subsidies from the General Fund or raising the tax on ethanol to be equal with gasoline;
    - Securing interest on the Trust Fund balances for the benefit of the Trust Fund;
    - Addressing the fuel tax evasion problem;
    - Increasing the funding responsibility placed on trucks;
    - Facilitating tax-oriented investments in surface transportation infrastructure;
    - Eliminate the pilot status of value pricing, Interstate tolling, and high-occupancy toll lane programs to encourage broader implementation.

- Maintain and enhance alternative financing initiatives. This could be accomplished in numerous ways. While the Committee does not endorse any particular approach, some of the potential recommendations addressed at the Conference include:

    - Increase utilization of the State Infrastructure Bank (SIB) program and expand eligibility for federal funding of state level SIBs while maintaining federal policy goals;
    - Facilitate public-private partnerships that help develop, finance, and operate transportation facilities. One specific measure would revise the tax code to enable public purpose surface transportation projects with significant private participation to access tax-exempt financing (as is currently allowed for other transportation modes). These so-called “private activity” bonds were proposed in the Multimodal Transportation Financing Act (S. 870, “Multitrans”) introduced in the Senate in 2001, as

well as previously in the Highway Infrastructure Privatization Act (HIPA, 1997) and the Highway Innovation and Cost Savings Act (HICSA, 1999).

II. From "Improving Efficiency and Equity in Transportation Finance." By Martin Wachs, The Center on Urban and Metropolitan Policy, April 2003, The Brookings Institution Series on Transportation Reform.

- ***Four Recommendations for Improving the Equity and Efficiency of our Nation's Surface Transportation System***

1) **States should assume responsibility for increasing transportation revenues, rather than devolving the obligation to local governments.** "User fees continue to be among the most effective, efficient, and equitable approach to transportation finance. In the short term, fuel taxes are the most readily available user fees, and states should raise fuel taxes to support transportation programs rather than devolve funding responsibility to local governments through tax measures. " The author makes the case that state and federal motor fuel taxes are often not viewed as taxes at a all, but more as "charges appropriately levied against those who benefit from the system and whose travel imposes costs on it."

2) **While continuing to rely on motor fuel taxes as the principal source of user financing, states should explore and plan for widespread deployment of electronic toll collections systems.** "Tolls were originally understood to be a direct and appropriate form of user charge, but tolls were expensive and annoying to collect. But now we have finally perfected electronic toll collection, a technology that it makes it feasible to collect tolls unobtrusively and inexpensively. Motorists by the millions are using "EZ Pass" on the East Coast, Fastrak on the West Coast, and a variety of electronic toll devices in between. The success of this approach is a clear glimpse of the future. Eventually, electronic toll collection could possibly supplant fuel taxes as the principal means by which states finance the construction, maintenance, and operation of highways."

3) **Pricing strategies should promote more efficient use of the transportation system.** Efficiency gains from toll collection come not only from the simple flat fees applied for the use of a facility. Rather, the real gains from greater reliance on tolling will flow from the opportunity to use price differentials to promote more efficient use of the system. One example would be using higher tolls on existing toll bridges and highways at the most congested hours and lower tolls when demand for travel is lowest. Another example is "High Occupancy Toll (HOT) lanes," a variety of High Occupancy Vehicle (HOV) lanes. Where HOV lanes have unutilized capacity, they can be made available to single-occupant vehicles

for a fee using electronic toll collection. This enhances state highway system revenue and reduces congestion on the parallel, mixed-flow lanes without requiring much construction. A similar application of tolling that has the potential to increase efficiency is that of allowing heavy trucks to pay fees for the privilege of bypassing ramp meters at freeway entrances."

4) **Pricing strategies should reflect the costs to provide different transportation services.** In keeping with the principle that pricing can be used to induce behavior that makes more efficient use of the transportation system, it follows that, in many instances, the most appropriate way of achieving this is to set charges that reflect the social marginal cost of the use of the facility. Heavy trucks should eventually be charged more to travel on a toll road than light duty vehicles because they impose heavier costs on those facilities; peak-hour users of roadways should be charged more than off-peak users because they impose higher marginal costs on society by traveling at the most crowded hours. Off-peak travelers, on the other hand, should receive a price break because they impose lower costs on transportation facilities."

III. From the Congressional Budget Office, "A Comparison of Tax Credit Bonds, Other Special Purpose Bonds, and Appropriations in Financing Federal Transportation Programs," June, 2003.

This report was prepared for the Senate Committee on the Budget and it provided an economic/fiscal analysis of three hypothetical budget proposals. Under these proposals, the federal government would:

- Create a government-sponsored enterprise authorized to issue bonds on which "interest" was paid in the form of credits against federal income taxes;
- Issue special tax-credit bonds for transit programs; and
- Issue conventional bonds whose proceeds were earmarked for transit programs.

The following are conclusions of the CBO Analysis: "CBO concludes that financing transit spending through tax-credit and other special-purpose bonds would generally be more expensive to the federal government than financing an equivalent amount through appropriations would be. Investors would likely view the proposed bonds as more risky and less liquid than Treasury bonds and therefore would demand a higher a rate of return – making financing through the tax-credit or special purpose bonds more costly than conventional financing. Even under the most favorable circumstances, those bond mechanisms would impose costs for issuance and administration that appropriations would not."* "Issuing bonds (that is, borrowing) to finance transit programs could shift the cost of those programs from the Highway Trust Fund to the general fund of the Treasury because the general fund would pay the interest or tax-credit costs.** Even though the Highway Trust Fund is essentially an

accounting mechanism that shows how much tax revenue is received from highway users and how much is spent on highways and mass transit, it influences spending on surface transportation programs. Reducing the amount of money in the trust fund that is designated for transit programs would probably result in more spending for highways."

* The federal government's existing mechanisms for disbursing appropriations and issuing Treasury bonds to finance them would not incur additional costs.

** That shift would happen unless the law authorizing the bonds required the Highway Trust Fund to cover the interest or tax-credit costs.

IV. From the American Society of Civil Engineers (ASCE) "Report Card for America's Infrastructure: 2003 Progress Report – An Update to the 2001 Report Card."

Policy Recommendations Supported by ASCE

Roads and Bridges

- Enact the House Transportation and Infrastructure Committee's Surface Transportation Reauthorization Plan that provides $375 billion over 6 years for the nation's surface transportation program – the amount identified as the Cost to Maintain by the FHWA in the 2002 Conditions and Performance Report.

- Provide support for environmental streamlining of highway projects.

Transit

- Fully support the intermodal (including transit) vision of TEA-21.

- Enact the House Transportation and Infrastructure Committee's Surface Transportation Reauthorization Plan that provides $375 billion over 6 years for the nation's surface transportation program – the amount identified as the Cost to Maintain by the FHWA in the 2002 Conditions and Performance Report.

Drinking Water and Wastewater

- Pass H.R. 1560, Water Quality Financing Act of 2003 and S. 170, the Clean Water infrastructure Financing Act of 2003.

- Funding of $5 billion annually over five years under the current State Revolving Loan Fund (SRFs) program in the Safe Drinking Water Act. Congressional appropriations of $6 billion annually over five years for immediate wastewater infrastructure repairs and system upgrades under the Clean Water Act.

- Create a water trust fund to finance the national shortfall in funding for water and wastewater infrastructure. These trust funds should not be diverted for non-water purposes.

- Federal appropriations from general treasury funds and issuance of revenue bonds and tax exempt financing at the state and local levels, as well as public-private partnerships, state infrastructure banks and other innovative financing mechanisms.

Appendix B

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Appendix C

Capital Improvement Plans: Cuyahoga County Infrastructure Agencies

CITY OF CLEVELAND
City Bridge Summary
(Estimated Actual Totals)

Location	Status/Activity	Total Cost	2004	2005	2006	2007
MADSN	In design; scheduled 2005 - Closed	$ 2,800,000		$ 2,800,000		
E105TH	In design, scheduled 2005	$ 4,200,000		$ 4,200,000		
W53ST	In design, schedule 2005	$ 2,300,000		$ 2,300,000		
W65TH	Replacement scheduled 2004	$ 3,300,000	$ 3,300,000			
WODID	In Design; Replace 2005	$ 7,000,000		$ 7,000,000		
ADLBT	In Design, scheduled 2004	$ 3,000,000	$ 3,000,000			
AETNA	Requested for ODOT Local Bridge Program 2006/2007	$ 1,300,000			$ 1,300,000	
CORNL	Requested for ODOT Local Bridge Program 2006/2007	$ 3,000,000			$ 3,000,000	
E79ST	Requested for ODOT Local Bridge Program 2006/2007	$ 2,800,000			$ 2,800,000	
E93ST	Requested for ODOT Local Bridge Program 2006/2007	$ 3,000,000			$ 3,000,000	
FUTLN	Replacement scheduled 2006	$ 50,000,000			$ 50,000,000	
W3RDLIFT	In Design; Replace 2004	$ 23,000,000	$23,000,000			
W44TH	Replacement scheduled 2004	$ 2,600,000	$ 2,600,000			
W74ST	In design, schedule 2006	$ 2,900,000			$ 2,900,000	
W77ST	In design, schedule 2007	$ 2,900,000				$2,900,000
Estimated Total Costs		**$ 114,100,000**	**$ 31,900,000**	**$ 16,300,000**	**$ 63,000,000**	**$ 2,900,000**

Source: City of Cleveland City Bridge Summary

CUYAHOGA COUNTY ENGINEER
2004-2009 CAPITAL PROJECTS PLAN
(Estimated Actual Totals)

Project Description	Location	Activity	Funding	Municipality	Total Cost	2004	2005	2006	2007	2008-2009
2004										
Bagley Road	Median Project	Resurfacing	N/A	Berea	$ 1,800,000	$ 1,800,000				
Belvoir Boulevard	Monticello to Euclid	OP RSRF	N/A	South Euclid & Cleveland	$ 1,000,000	$ 1,000,000				
Brainard Road	Relocation of Brainard Road	Resurfacing	N/A	Pepper Pike	$ 2,800,000	$ 2,800,000				
Brainard Road	Emery to Woodmere Corp. Line	Rehabilitation	N/A	Orange	$ 400,000	$ 400,000				
Chagrin River Road	Miles Road to S. Woodland Road	OP RSRF	N/A	Moreland Hills, Bentleyville	$ 1,400,000	$ 1,400,000				
Chagrin River Road Intersection	Intersection Improvements	Rehabilitation	N/A	Moreland Hills, Hunting Valley	$ 200,000	$ 200,000				
Clague Road	Lorain Road to North Olmsted WCL	OP RSRF	N/A	North Olmsted	$ 560,000	$ 560,000				
Cook Road	County Line to Stearns	OP RSRF	N/A	Olmsted Township	$ 610,000	$ 610,000				
Cook Road	Fitch to Columbia	OP RSRF	N/A	Olmsted Township & Olmsted Falls	$ 430,000	$ 430,000				
Culvert Group 10: County Line Road Culvert No. 23	Over a creek	Replacement	N/A	Gates Mills	$ 500,000	$ 500,000				
Culvert Group 10: Old Mill Road Culvert No. 1	Over a creek to the Chagrin River	Replacement	N/A	Gates Mills	$ 330,000	$ 330,000				
Culvert Group 4B: Canal Road Culvert No. 19	Over a stream	Replacement	N/A	Valley View	$ 622,000	$ 622,000				
Culvert Group 7: Albion Road Culvert No. 8	Over west branch of Rocky River	Replacement	N/A	Strongsville	$ 178,000	$ 178,000				
Culvert Group 8: Shaker Blvd. Culvert No. 14	Over a creek to the Chagrin River	Replacement	N/A	Hunting Valley	$ 500,000	$ 500,000				
Culvert Group 8: Shaker Blvd. Culvert No. 15	Over a creek to the Chagrin River	Replacement	N/A	Hunting Valley	$ 360,000	$ 360,000				
Eastside Deck Sealing	Sealing Project	Resurfacing	N/A	Various	$ 122,000	$ 122,000				
Eddy Road	Bratenahl Village SCL to Lakeshore Blvd.	Rehabilitation	N/A	Bratenahl Village	$ 180,000	$ 180,000				
Emery Road	Miles to Warrensville Center	Grade, Drain, Pave	STP	North Randall (37.5%); Warrensville Hts. (62.5%)	$ 4,140,000	$ 4,140,000				
Fairmount Boulevard	South Green to Richmond Road	Resurfacing	N/A	Beachwood	$ 545,500	$ 545,500				
Harvard Avenue	Cuyahoga Hts. WCL to Denison-Harvard Rd.	Resurfacing	N/A	Cuyahoga Heights	$ 266,600	$ 266,600				
Hilliard Boulevard	Rocky River WCL to ECL	Resurfacing	STP	Rocky River	$ 4,620,000	$ 4,620,000				
Miles Road		OP RSRF	N/A		$ 1,000,000	$ 1,000,000				
Pleasant Valley Road Bridge No. 58	York to State	Rehabilitation	Issue II	Parma	$ 479,410	$ 479,410				
Prospect Road Culvert No. 8	Branch of Bakers Creek	Replacement	N/A	Strongsville	$ 230,000	$ 230,000				
Ridge Road: Phase IIB	Memphis to I-71	Resurfacing	N/A	Brooklyn (46%); Cleveland (54%)	$ 1,025,000	$ 1,025,000				
Schaaf Road	Independence WCL to West Creek	Reconstruction	N/A	Independence	$ 575,000	$ 575,000				
Snow/Rockside Phase I	I-77 to Brecksville Road	Resurfacing	N/A	Independence	$ 1,700,000	$ 1,700,000				
Sprague Road Culvert No. 24	Over Baldwin Creek	Replacement	N/A	North Royalton, Parma	$ 475,994	$ 475,994				
Triskett Road Bridge No. 195	Over RTA; NS RR	Rehabilitation	LBR	Cleveland	$ 2,817,500	$ 2,817,500				
West 130th Street	Snow to Pleasant Valley	OP RSRF	N/A		$ 3,100,000	$ 3,100,000				
Westside Deck Sealing	Sealing Project	Resurfacing	N/A	Various	$ 138,000	$ 138,000				
Wolf Road Bridge No. 6	Over Cahoon Creek	Rehabilitation	LBR	Bay Village	$ 2,400,000	$ 2,400,000				
Wooster Road	Lorain to Center Ridge Road	Resurfacing	N/A	Fairview Park, Rocky River	$ 1,000,000	$ 1,000,000				
Estimated Total Costs - 2004					**$ 36,505,004**	**$ 36,505,004**				
2005										
Bagley Road	Lindberg Road to North Rocky River Drive	OP RSRF	N/A	Berea	$ 800,000		$ 800,000			
Broadview Road Bridge No. 78	Over West Creek	Rehabilitation	SSTP; ODOT	Parma	$ 1,125,000		$ 1,125,000			
Cedar Road	Taylor to Green	Rehabilitation	STP	South Euclid (35%); University Hts. (65%)	$ 6,785,000		$ 6,785,000			
Cedar Road	Brainard to Lander	Widen, Grade, Drain, Pave	Issue II	Mayfield Heights, Lyndhurst	$ 598,000		$ 598,000			
Culvert Group 10: Belvoir Blvd. Culvert No. 1	Over Nine Mile Creek	Replacement	N/A	South Euclid	$ 345,000		$ 345,000			
Culvert Group 4A: Canal Road Culvert No. 10	Over a creek to Cuyahoga River	Replacement	N/A	Valley View	$ 362,000		$ 362,000			
Culvert Group 4A: Canal Road Culvert No. 1A	Over Sagamore Creek	Replacement	N/A	Valley View	$ 377,000		$ 377,000			
Culvert Group 4B: Canal Road Culvert No. 11	Over a Stream	Replacement	N/A	Valley View	$ 457,000		$ 457,000			
Culvert Group 7: Lewis Road Culvert No. 7	Over Marks Ditch	Replacement	N/A	Olmsted Falls	$ 189,000		$ 189,000			
Culvert Group 7: Prospect Road Culvert No. 9	Over Bakers Creek	Replacement	N/A	Strongsville	$ 380,000		$ 380,000			
Culvert Group 9: Edgerton Road Culvert No. 22	Over East Branch of Rocky River	Replacement	N/A	North Royalton	$ 152,000		$ 152,000			
Emery Road	Richmond Road to Jackson	Grade, Drain, Pave	STP	Moreland Hills (1%); Orange (66%); Warrensville Hts. (33%)	$ 7,000,000		$ 7,000,000			
Harvard Road Bridge No. 82	Over Cuyahoga River	Rehabilitation	LBR	Cuyahoga Heights; Cleveland	$ 1,386,000		$ 1,386,000			
Hilliard Road	Hilliard Road/Franklin Blvd. 140th to 117	OP RSRF	N/A	Lakewood	$ 1,138,500		$ 1,138,500			
Jennings Road Bridge No. 80	Over Big Creek	Rehabilitation	LBR	Cleveland	$ 1,386,000		$ 1,386,000			
ODOT 93B Bridge Program: Broadway Avenue Bridge No. 121	Over Mill Creek	Replacement	NH; ODOT	Garfield Heights	$ 1,250,000		$ 1,250,000			
ODOT 93B Bridge Program: Broadway Avenue Bridge No. 122	Over Mill Creek	Replacement	NH; ODOT	Garfield Heights	$ 1,650,000		$ 1,650,000			
ODOT 93B Bridge Program: Chagrin River Road Bridge No. 159	Over Chagrin River	Replacement	SSTP; ODOT	Gates Mills	$ 2,300,000		$ 2,300,000			
ODOT 9B Bridge Program: Union Street Bridge No. 133	Over Tinkers Creek	Rehabilitation	SSTP; ODOT	Bedford Heights	$ 580,000		$ 580,000			
Rockside Road Bridge No. 215	Over CSX Railroad	Rehabilitation	N/A	Maple Heights	$ 825,000		$ 825,000			
Schaaf Road Bridge No. 6034	Over CSX Railroad	Replacement	Issue II	Brooklyn Heights, Cleveland	$ 3,220,000		$ 3,220,000			
Shaker Boulevard Bridge No. 165	Over a creek to Chagrin River	Rehabilitation	N/A	Pepper Pike	$ 674,454		$ 674,454			
Snow/Rockside Phase II	Lombardo Drive to I-77	Reconstruction	STP	Independence	$ 6,000,000		$ 6,000,000			

CUYAHOGA COUNTY ENGINEER
2004-2009 CAPITAL PROJECTS PLAN
(Estimated Actual Totals)

Project Description	Location	Activity	Funding	Municipality	Total Cost	2004	2005	2006	2007	2008-2009
St. Clair Avenue Phase II	East 140th to Cleveland ECL	Resurfacing	STP	Cleveland	$ 6,900,000		$ 6,900,000			
West 130th Street Bridge No. 64	Over Big Creek	Replacement	LBR	Cleveland	$ 924,000		$ 924,000			
West 28th Street Bridge No. 196	Over subway to Detroit Superior	Rehabilitation	N/A	Cleveland	$ 500,000		$ 500,000			
Western Road Bridge No. 38	Baldwin Creek	Replacement	Issue II	Middleburg Heights	$ 575,000		$ 575,000			
Wilson Mills Road	S.O.M. to Chagrin River & Slide	Rehabilitation	Issue II	Gates Mills, Mayfield	$ 3,507,500		$ 3,507,500			
Estimated Total Costs - 2005					**$ 51,386,454**		**$ 51,386,454**			
2006										
Barrett Road	Spafford Road to Berea WCL	Reconstruction, Grade, Dra	Issue II	Olmsted Township	$ 1,265,000			$ 1,265,000		
Bassett Road/Crocker Road	.1 mile south of Bay Village to Lake Road	Replace, Grade, Drain, Pa	STP; LBR	Bay Village (92%); Westlake (8%)	$ 6,930,000			$ 6,930,000		
Bellaire Road Bridge No. 24	Over Big Creek	Replacement	LBR	Cleveland	$ 2,310,000			$ 2,310,000		
Cook Road/Stearns Road	.2 miles south of Cook to to I-480	New, Grade, Drain, Pave,	CSTP	Olmsted Township (79%); North Olmsted (21%)	$ 3,465,000			$ 3,465,000		
Crocker-Stearns Extension	Lorain to Center Ridge Road	New, Grade, Drain, Pave,	STP	North Olmsted (64%); Westlake (36%)	$ 16,330,000			$ 16,330,000		
Culvert Group 5: Stearns Road Culvert No. 5	Over Fitch lateral	Replacement	N/A	Olmsted Township	$ 218,500			$ 218,500		
Fairmount Boulevard	Cedar Road to Cleveland Heights ECL	Resurfacing	STP	Cleveland Heights	$ 4,025,000			$ 4,025,000		
Fulton Road Bridge	Over Big Creek	Replacement		Cleveland	$ 51,750,000			$ 51,750,000		
Mastick Road	Slide Repair	Slide	Issue II	Fairview	$ 805,000			$ 805,000		
St. Clair Avenue Bridge No. 90	Over Doan Brook	Replacement	LBR	Cleveland	$ 2,079,000			$ 2,079,000		
St. Clair Avenue Phase I	East 72nd to East 140th	Resurfacing	STP	Cleveland	$ 7,000,000			$ 7,000,000		
Warrensville Center Road	Cedar Road to Mayfield	Rehabilitation	STP	Cleveland Heights (28%); South Euclid (72%)	$ 3,500,000			$ 3,500,000		
Warrensville Center Road Bridge No. 205	Over Erie Railroad	Replacement	LBR	Warrensville Heights	$ 1,732,500			$ 1,732,500		
Warrensville Center Road/Noble Road	Mayfield to Euclid	Reconstruction	STP	Cleveland Heights (65%); East Cleveland (34.9%); South Euclid (.1%)	$ 6,000,000			$ 6,000,000		
Estimated Total Costs - 2006					**$ 107,410,000**			**$ 107,410,000**		
2007										
Cannon Road Bridge No. 140	Over Tinkers Creek	Replacement	LBR	Solon	$ 725,000				$ 725,000	
East 222nd Street	Euclid to Lakeshore	Rehabilitation	STP	Euclid	$ 4,042,000				$ 4,042,000	
Eastland Road	Bagley to 237	GDP, Replace, Widen	STP; LBR	Berea (23%); Brookpark (34%); Middleburgh Heights	$ 16,100,000				$ 16,100,000	
Green Road	Miles to Emery	GDP, Widen	STP	Warrensville Heights	$ 5,578,650				$ 5,578,650	
Main Street Bridge No. 36	Over Baldwin Creek	Replacement	N/A	Middleburg Heights	$ 930,046				$ 930,046	
Schaaf Road	Over Granger Road	Rehabilitation	ODOT; SSTP	Brooklyn Heights	$ 995,000				$ 995,000	
Snow/Rockside Phase IV	West section Broadview to Lom	Reconstruction	STP	Parma; Seven Hills	$ 10,925,000				$ 10,925,000	
Estimated Total Costs - 2007					**$ 39,295,696**				**$ 39,295,696**	
2008-2009										
Bainbridge Road	S.O.M. Center Road To Solon ECL	Grade, Drain, Pave	STP	Solon	$ 5,000,000					$ 5,000,000
Bennett Road Bridge No. 50	East Branch of Rocky River	Rehabilitation	LBR	North Royalton	$ 1,725,000					$ 1,725,000
Hillside Road	Brecksville to Broadview	Grade, Drain, Pave	STP	Independence, Seven Hills	$ 7,000,000					$ 7,000,000
Pleasant Valley Road Bridge No. 116 & 144	Pearl to York	GDP, Replace, Widen	STP	Middleburg Heights, Parma	$ 17,665,725					$ 17,665,725
Rockside Road Bridge No. 218	Over Ohio Canal	Replacement	LBR	Valley View	$ 2,021,250					$ 2,021,250
Estimated Total Costs - 2008-2009					**$ 33,411,975**					**$ 33,411,975**
ESTIMATED TOTAL CAPITAL CONTRACTING COSTS: 2003-2009					**$ 268,009,129**	**$ 36,505,004**	**$ 51,386,454**	**$ 107,410,000**	**$ 39,295,696**	**$ 33,411,975**

Source: Cuyahoga County Engineer 2003-2009 Capital Projects Plan

OHIO DEPARTMENT OF TRANSPORTATION
CAPITOL IMPROVEMENT PLAN: 2004-2014
($ in thousands)

Type	Project Description	PID No.	Activity	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
District	Columbus Rd to Emery Rd	12995	Construction	$ 3,100					$ 3,100						
Pavement	Columbus Rd to Emery Rd	12995	Extra Work Change Orders	$ 93					$ 93						
Program	Brat ECL to County Line: Mill & Fill	22205	Construction	$ 4,800								$ 4,800			
	Bridge to Broadway: Mill & Fill	22218	Construction	$ 2,110				$ 2,110							
	Bridge to E 55th	24855	Construction	$ 850									$ 850		
	Bridge to SR-2: Mill & Fill	75480	Construction	$ 2,000								$ 2,000			
	Broadway to IR-271: Mill & Fill	75476	Construction	$ 2,600			$ 2,600								
	Brooklyn ECL to I-90	21810	Construction	$ 700						$ 700					
	Central Viaduct Corridor: Major Rehab	20459	Construction	$ 20,000										$ 20,000	
	Clague to Joslyn: Minor rehab	21700	Construction	$ 12,100		$ 12,100									
	Clague to Joslyn: Minor rehab	21700	Extra Work Change Orders	$ 605			$ 605								
	County Line to Columbus: Minor Rehab	22200	Construction	$ 6,200						$ 6,200					
	County Line to Columbus: Minor Rehab	22200	Extra Work Change Orders	$ 186						$ 186					
	County Line to Lacey Ln: Minor Rehab	18396	Construction	$ 4,900				$ 4,900							
	County Line to Lacey Ln: Minor Rehab	18396	Extra Work Change Orders	$ 147				$ 147							
	County Line to SR-252	22198	Construction	$ 580						$ 580					
	County Line to the Rocky River Bridge: Minor Rehab	21749	Construction	$ 10,100	$ 10,100										
	County Line to the Rocky River Bridge: Minor Rehab	21749	Extra Work Change Orders	$ 505		$ 505									
	County Line to US-42	21747	Construction	$ 860				$ 860							
	Denison to I-71: Cleveland	22896	Construction	$ 100						$ 100					
	Emery to Fairmount: Minor Rehab	12996	Construction	$ 6,900			$ 6,900								
	Emery to Fairmount: Minor Rehab	12996	Extra Work Change Orders	$ 207			$ 207								
	Grayton to SR-94: Ramp Resurfacing	21750	Construction	$ 1,150	$ 1,150										
	I-480 to Denison: Cleveland: Cracksealing	21770	Construction	$ 205	$ 205										
	I-480 to I-271	24854	Construction	$ 1,600									$ 1,600		
	Joslyn to W. 44th: Cleveland	21748	Construction	$ 780				$ 780							
	Main Ave Bridge to IR-90: Cleveland: Overlay	24858	Construction	$ 1,800			$ 1,800								
	N of Fairmount to Wilson Mills: Minor Rehab	23960	Construction	$ 6,400							$ 6,400				
	N of Fairmount to Wilson Mills: Minor Rehab	23960	Extra Work Change Orders	$ 192							$ 192				
	Roadway Relocation, Bridge Replacement, Environmental Study	22907	Right of way/Utility Relocation	$ 579	$ 579										
	Roadway Relocation, Bridge Replacement, Environmental Study	22907	Construction	$ 6,150							$ 6,150				
	Roadway Relocation, Bridge Replacement, Environmental Study	22907	Extra Work Change Orders	$ 185							$ 185				
	Rockside Road Ramps: County project	5248	Construction	$ 1,215				$ 1,215							
	Rockside Road Ramps: County project	5248	Extra Work Change Orders	$ 36				$ 36							
	Rockside to IR-90: Minor Rehab	18735	Construction	$ 10,800					$ 10,800						
	Rockside to IR-90: Minor Rehab	18735	Extra Work Change Orders	$ 324					$ 324						
	Rocky River Bridge to W 130th St: Minor Rehab	12999	Construction	$ 7,600				$ 7,600							
	Rocky River Bridge to W 130th St: Minor Rehab	12999	Extra Work Change Orders	$ 228				$ 228							
	Solon Rd to SR-306	23961	Construction	$ 475										$ 475	
	SR-175 to I-90	22211	Construction	$ 1,200									$ 1,200		
	SR-2 to Brat ECL: Mill & Fill	75483	Construction	$ 4,400									$ 4,400		
	SR-252 to Joslyn	24853	Construction	$ 1,190									$ 1,190		
	Tuxedo to Valleyview Bridge: Major Rehab	21751	Construction	$ 200	$ 200										
	US-42 to Clev/Brkln CL	21744	Construction	$ 1,600		$ 1,600									
	US-42 to Clev/Brkln CL		Construction	$ 1,600									$ 1,600		
	W 44th to I-90: Minor Rehab	23959	Construction	$ 390					$ 390						
	WaltHL; SCL to Forbes; WnvlHts, HgHl, ShHt; Emery to US-422	22199	Construction	$ 1,098		$ 1,098									
	WaltHL; SCL to Forbes; WnvlHts, HgHl, ShHt; Emery to US-422	22199	Extra Work Change Orders	$ 33		$ 33									
	West 139th to Idlewood	75474	Construction	$ 500			$ 500								

OHIO DEPARTMENT OF TRANSPORTATION
CAPITOL IMPROVEMENT PLAN: 2004-2014
($ in thousands)

Type	Project Description	PID No.	Activity	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	West Shoreway: Cleveland: Overlay 452-03	19532	Construction	$ 869	$ 869										
	Wilson Mills to IR-90: Minor rehab	75482	Construction	$ 6,200								$ 6,200			
	Wilson Mills to IR-90: Minor rehab	75482	Extra Work Change Orders	$ 186								$ 186			
	Estimated Total Costs District Paving			**$ 138,828**	**$ 13,103**	**$ 15,336**	**$ 12,612**	**$ 17,876**	**$ 14,707**	**$ 7,766**	**$ 12,927**	**$ 13,186**	**$ 10,840**	**$ 20,475**	**$ -**
City	Bradley to Long Beach: Bay Village: Minor Rehab	25344	Construction	$ 240	$ 192										
Pavement	Bridge to ECL: Lakewood: Minor Rehab	24509	Construction	$ 1,180		$ 944									
Program	City Paving	24862		$ 7,390					$ 7,390						
	City Paving	24862		$ 6,754						$ 6,754					
	City Paving			$ 7,390							$ 7,390				
	City Paving			$ 7,390								$ 7,390			
	City Paving			$ 7,390									$ 7,390		
	CL to N of SR-82: Broadview Hts	22895	Construction	$ 460		$ 368									
	County Line to N. Olm SCL/Butternut to Country Club	75516	Construction	$ 820		$ 681									
	E. 37th to E. 93rd: Cleveland	21776	Construction	$ 810			$ 648								
	E. 55th to E. 72nd: Cleveland	21775	Construction	$ 410		$ 328									
	E. 93rd to ECL: Cleveland: Minor Rehab	19537	Construction	$ 870	$ 696										
	I-77 to ECL: Cleveland	22901	Construction	$ 1,220			$ 976								
	I-90 to SR-283: Euclid	22894	Construction	$ 360		$ 288									
	N of Bagley to NCL: Berea	19536	Construction	$ 210		$ 168									
	Public Sq to ECL: Cleveland	21767	Construction	$ 2,400				$ 1,920							
	Public Sq to ECL: Cleveland: Euclid Corridor	21768	Construction	$ 2,100				$ 1,680							
	Riverside to US-20/SR-237 to US-6: Lakewood: Minor Rehab	21759	Construction	$ 176	$ 141										
	Rockside to SR-43: Maple Ht, Bdfd, BdHt: Major rehab, widen	13418	Construction	$ 1,000	$ 1,000										
	SCL to NCL: Brook Park	24859	Construction	$ 1,635			$ 1,635								
	SCL to NCL: Mayfield Heights	75115	Construction	$ 420		$ 336									
	SCL to NCL: Parma	24861	Construction	$ 1,295				$ 1,035							
	SCL to NCL: Strongsville	22900	Construction	$ 339			$ 271								
	SCL to Rockside: Independence: Minor Rehab	24142	Construction	$ 1,145	$ 1,030										
	SCL to SR-82: Brecksville	22893	Construction	$ 990				$ 792							
	SR-17 to ECL: N. Olmsted	24144	Construction	$ 1,040			$ 832								
	SR-237 to ECL: Lakewood	13994	Construction	$ 1,525			$ 1,220								
	SR-82 to NCL: Brecksville: Minor Rehab	21769	Construction	$ 720	$ 576										
	SR-91 to SR-175: Solon	19541	Construction	$ 795						$ 636					
	Union to Rockside: Bedforf	23966	Construction	$ 435		$ 348									
	US-6A to SR-237: Lakewood	21509	Construction	$ 180		$ 144									
	W. 65th to W. 41st: Cleveland: Minor Rehab	21760	Construction	$ 360	$ 288										
	Wagner to Wooster: Fairview Park, Rocky River	75535	Construction	$ 360			$ 288								
	WCL to ECL: Cleveland: Minor Rehab	76895	Construction	$ 450		$ 360									
	WCL to ECL: Fairview Park	2506	Construction	$ 1,060	$ 848										
	WCL to ECL: Rocky River	21766	Construction	$ 625			$ 500								
	WCL to ECL: Shaker Hts: Minor Rehab	21777	Construction	$ 460	$ 368										
	WCL to ECL: Westlake	22892	Construction	$ 1,690			$ 1,352								
	WCL to Lake Road: Cleveland	13995	Construction	$ 1,000				$ 800							
	WCL to W. 65th: Cleveland: Minor Rehab	225570	Construction	$ 635		$ 508									
	Estimated Total Costs City Pavement Program			**$ 65,729**	**$ 5,139**	**$ 4,473**	**$ 7,722**	**$ 6,227**	**$ 7,390**	**$ 7,390**	**$ 7,390**	**$ 7,390**	**$ 7,390**	**$ -**	**$ -**
District	2 Bridges over I-77: Replace/lengthen	13564	Construction	$ 8,500	$ 8,500										
Bridge	2 Bridges over I-77: Replace/lengthen	13564	Extra Work Change Orders	$ 425		$ 425									
Program	4 N&SS Bridges over I-77: Replace/lengthen	13565	Right of Way/Utility Relocation	$ 1,050	$ 1,050										
	4 N&SS Bridges over I-77: Replace/lengthen	13565	Construction	$ 10,000	$ 10,000										

OHIO DEPARTMENT OF TRANSPORTATION
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($ in thousands)

Type	Project Description	PID No.	Activity	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	4 N&SS Bridges over I-77: Replace/lengthen	13565	Extra Work Change Orders	$ 500		$ 500									
	Airport Freeway over ramps: Deck Replacement	23441	Preliminary Engineering	$ 190		$ 190									
	Airport Freeway over ramps: Deck Replacement	23441	Construction	$ 1,860					$ 1,860						
	Airport Freeway over ramps: Deck Replacement	23441	Extra Work Change Orders	$ 93					$ 93						
	Cedar Avenue: Widening	21029	Construction	$ 6,000	$ 6,000										
	Cedar Avenue: Widening	21029	Extra Work Change Orders	$ 200		$ 200									
	CEI Corridor: Bridge Replacement, 4 Bridges	19685	Construction	$ 5,000	$ 5,000										
	CEI Corridor: Bridge Replacement, 4 Bridges	19685	Extra Work Change Orders	$ 400		$ 400									
	Central Viaduct Corridor: 19 bridges	20459	Preliminary Engineering	$ 2,500						$ 2,500					
	Central Viaduct Corridor: 19 bridges	20459	Construction	$ 36,400								$ 36,400			
	Central Viaduct Corridor: System Maintenance	25795	Construction	$ 9,000				$ 9,000							
	Clark Avenue: Deck	22216	Construction	$ 1,500		$ 1,500									
	Clark Avenue: Deck	22216	Extra Work Change Orders	$ 75		$ 75									
	Columbia over I-90: Deck	22215	Preliminary Engineering	$ 150			$ 150								
	Columbia over I-90: Deck	22215	Construction	$ 1,500						$ 1,500					
	Columbia over I-90: Deck	22215	Extra Work Change Orders	$ 75						$ 75					
	Conrail S of Cannon: Replacement	11230	Preliminary Engineering	$ 400					$ 400						
	Conrail S of Cannon: Replacement	11230	Right of Way/Utility Relocation	$ 50							$ 50				
	Conrail S of Cannon: Replacement	11230	Construction	$ 3,900								$ 3,900			
	Conrail S of Cannon: Replacement	11230	Extra Work Change Orders	$ 195								$ 195			
	Deck Replace and widen: Sell w/Cuy-77-2.82 pvmt	22222	Construction	$ 1,485						$ 1,485					
	Deck Replace and widen: Sell w/Cuy-77-2.82 pvmt	22222	Extra Work Change Orders	$ 75						$ 75					
	Denison over Jennings: Cleveland	12075	Preliminary Engineering	$ 100						$ 100					
	Denison over Jennings: Cleveland	12075	Construction	$ 600								$ 600			
	Denison over Jennings: Cleveland	12075	Extra Work Change Orders	$ 300								$ 30			
	Detroit over I-90: Overlay	21781	Construction	$ 1,200					$ 1,200						
	Detroit over I-90: Overlay	21781	Extra Work Change Orders	$ 36					$ 36						
	East 55th St: Deck	18742	Construction	$ 900				$ 900							
	East 55th St: Deck	18742	Extra Work Change Orders	$ 45				$ 45							
	Harper Rd: Decks, 2 bridges		Preliminary Engineering	$ 265			$ 265								
	Harper Rd: Decks, 2 bridges		Construction	$ 2,640						$ 2,640					
	Harper Rd: Decks, 2 bridges		Extra Work Change Orders	$ 132						$ 132					
	Libby over Conrail: Overlay & Paint	21784	Construction	$ 1,315				$ 1,315							
	Libby over Conrail: Overlay & Paint	21784	Extra Work Change Orders	$ 66				$ 66							
	Minor Rehab: 4 Bridges	21782	Construction	$ 420	$ 420										
	Over a stream: Replace		Preliminary Engineering	$ 20			$ 20								
	Over a stream: Replace		Construction	$ 200						$ 200					
	Over a stream: Replace		Extra Work Change Orders	$ 10						$ 10					
	Over Big Creek: Replacement	22212	Construction	$ 615					$ 615						
	Over Big Creek: Replacement	22212	Extra Work Change Orders	$ 31					$ 31						
	Over Chagrin River: Rehab	13185	Right of Way/Utility Relocation	$ 10		$ 10									
	Over Chagrin River: Rehab	13185	Construction	$ 1,000			$ 1,000								
	Over Chagrin River: Rehab	13185	Extra Work Change Orders	$ 50			$ 50								
	Over Chagrin River: Superstructure	22217	Construction	$ 1,000					$ 1,000						
	Over Chagrin River: Superstructure	22217	Extra Work Change Orders	$ 50					$ 50						
	Over Hemlock Creek: Replace	23449	Preliminary Engineering	$ 30							$ 30				
	Over Hemlock Creek: Replace	23449	Construction	$ 300									$ 300		
	Over Hemlock Creek: Replace	23449	Extra Work Change Orders	$ 15									$ 15		
	Over I-480: Deck	10465	Construction	$ 6,000			$ 6,000								

OHIO DEPARTMENT OF TRANSPORTATION
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Type	Project Description	PID No.	Activity	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Over I-480: Deck	10465	Extra Work Change Orders	$ 300			$ 300								
	Over I-490: Deck, widen	13567	Construction	$ 7,500						$ 7,500					
	Over I-490: Deck, widen	13567	Extra Work Change Orders	$ 375						$ 375					
	Over Mill Creek: Replacement	23450	Construction	$ 300		$ 300									
	Over Mill Creek: Replacement	23450	Extra Work Change Orders	$ 15			$ 15								
	Over RTA @ Shaker Replacement	10787	Construction	$ 6,800								$ 6,800			
	Over RTA @ Shaker Replacement	10787	Extra Work Change Orders	$ 325								$ 325			
	Over WB Broadway: Cleveland: Superstructure	13188	Preliminary Engineering	$ 150		$ 150									
	Over WB Broadway: Cleveland: Superstructure	13188	Construction	$ 750					$ 750						
	Over WB Broadway: Cleveland: Superstructure	13188	Extra Work Change Orders	$ 38					$ 38						
	Over West Creek: Replacement	21783	Construction	$ 800			$ 800								
	Over West Creek: Replacement	21783	Extra Work Change Orders	$ 40			$ 40								
	Paint 8 Bridges	21808	Construction	$ 1,600		$ 1,600									
	Pershing: Deck	22891	Preliminary Engineering	$ 100	$ 100										
	Pershing: Deck	22891	Construction	$ 1,500				$ 1,500							
	Pershing: Deck	22891	Extra Work Change Orders	$ 75				$ 75							
	Replace 10 Decks & Widen: Sell w/Cuy-77-4.02 pvmt	22222	Construction	$ 9,635						$ 9,635					
	Replace 10 Decks & Widen: Sell w/Cuy-77-4.02 pvmt	22222	Extra Work Change Orders	$ 480						$ 480					
	Replace 4 decks & widen		Construction	$ 11,000							$ 11,000				
	Replace 4 decks & widen		Extra Work Change Orders	$ 550							$ 550				
	Replace: Over the East Branch of the Rocky River	5557	Construction	$ 1,725	$ 1,725										
	Replace: Over the East Branch of the Rocky River	5557	Extra Work Change Orders	$ 86		$ 86									
	W 25th St: Deck	23414	Preliminary Engineering	$ 110				$ 110							
	W 25th St: Deck	23414	Construction	$ 1,100							$ 1,100				
	W 25th St: Deck	23414	Extra Work Change Orders	$ 55							$ 55				
	W. 143rd St: Deck	21786	Construction	$ 755				$ 755							
	W. 143rd St: Deck	21786	Extra Work Change Orders	$ 38				$ 38							
	W. 14th St: Deck	18741	Construction	$ 2,200									$ 2,200		
	W. 14th St: Deck	18741	Extra Work Change Orders	$ 110									$ 110		
	W. 14th St: Deck Replacement	23446	Construction	$ 2,570					$ 2,570						
	W. 14th St: Deck Replacement	23446	Extra Work Change Orders	$ 129					$ 129						
	W. 44th to US-42: Bridge painting	14198	Construction	$ 1,000									$ 1,000		
	W. 44th to US-42: Bridge painting	12198	Extra Work Change Orders	$ 50									$ 50		
	Warrensville Ctr: Deck		Preliminary Engineering	$ 300				$ 300							
	Warrensville Ctr: Deck		Construction	$ 2,000							$ 2,000				
	Warrensville Ctr: Deck		Extra Work Change Orders	$ 100								$ 100			
	Widen 2 decks, replace/lengthen SR-14		Construction	$ 5,218							$ 5,218				
	Widen 2 decks, replace/lengthen SR-14		Extra Work Change Orders	$ 261							$ 261				
	Wooster Road over I-90: Deck	21785	Construction	$ 1,110	$ 1,110										
	Wooster Road over I-90: Deck	21785	Extra Work Change Orders	$ 56	$ 56										
	Estimated Total Costs District Bridge Program			**$ 170,179**	**$ 33,961**	**$ 5,436**	**$ 8,640**	**$ 14,104**	**$ 8,772**	**$ 26,707**	**$ 20,264**	**$ 48,350**	**$ 3,675**	**$ -**	**$ -**
	County Line to SR306		Construction	$ 3,120									$ 3,120		
Major Rehab	County Line to SR306		Extra Work Change Orders	$ 94									$ 94		
Program	I-490 to I-90		Construction	$ 3,020									$ 3,020		
	I-490 to I-90		Extra Work Change Orders	$ 151									$ 151		
	Rockside to I-490		Construction	$ 11,735									$ 11,735		
	Rockside to I-490		Extra Work Change Orders	$ 587									$ 587		
	Tuxedo to Valleyview Bridge	21751	Construction	$ 17,000			$ 17,000								
	Valley Bridge to I-271		Construction	$ 7,250									$ 7,250		

OHIO DEPARTMENT OF TRANSPORTATION
CAPITOL IMPROVEMENT PLAN: 2004-2014
($ in thousands)

Type	Project Description	PID No.	Activity	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Valley Bridge to I-271		Extra Work Change Orders	$ 218									$ 218		
	Estimated Total Costs Major Rehab Program			**$ 43,175**	**$ -**	**$ -**	**$ 17,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 26,175**	**$ -**	**$ -**
Major Bridge Program Program	Brooklyn-Brighton Bridge: Paint	25619	Construction	$ 2,000					$ 2,000						
	Central Viaduct Corridor: Widen & new deck	20459	Construction	$ 62,000								$ 62,000			
	Deck and Paint		Preliminary Engineering	$ 1,000				$ 1,000							
	Deck and Paint		Construction	$ 27,000						$ 27,000					
	Detroit-Superior: Paint		Construction	$ 2,000							$ 2,000				
	Innerbelt Bridge: Overlay	25620	Construction	$ 7,000				$ 7,000							
	Innerbelt Bridge: Repairs	76192	Construction	$ 1,400	$ 1,400										
	Jennings: Deck Overlay	20459	Construction	$ 2,000								$ 2,000			
	Jennings: Deck Overlay	20459	Construction	$ 900								$ 900			
	Lorain Road Bridge: Overlay		Construction	$ 2,000								$ 2,000			
	Main Avenue: Paint	22130	Construction	$ 7,000	$ 7,000										
	Over NS, Train Ave: Cleveland: Overlay & Paint	25617	Construction	$ 2,300					$ 2,300						
	Over Solon Road: Paint, seal concrete		Construction	$ 2,000							$ 2,000				
	Over the Cuya. River: Cleveland: Overlay	25622	Construction	$ 5,500							$ 5,500				
	Over the Cuyahoga River: Valleyview, Independence: Overlay, parapets	25621	Construction	$ 8,000					$ 8,000						
	Over the Rocky River: Lakewood, Rocky River: Overlay		Construction	$ 3,000						$ 3,000					
	Over the Rocky River: Paint	22131	Construction	$ 1,300			$ 1,300								
	Various Bridges (8): Deck sealing		Construction	$ 2,000								$ 2,000			
	Whitehouse Crossing: Replacement	25618	Construction	$ 12,700					$ 12,700						
	Estimated Total Costs Major Bridge Program			**$ 151,100**	**$ 8,400**	**$ -**	**$ 1,300**	**$ 8,000**	**$ 25,000**	**$ 30,000**	**$ 9,500**	**$ 68,900**	**$ -**	**$ -**	**$ -**
Major New High Priority / Safety Program	At Hopkins Airport: Cleveland: Ramp Relocation	23051	Construction	$ 16,500			$ 16,500								
	County Line to SR-237: Strongsville: Widening	7848	Construction	$ 5,280	$ 5,280										
	E. 55th to E. 65th: Cleveland: New Construction	20329	Construction	$ 3,400	$ 2,600	$ 2,800									
	East of I-71 to W. 130th: Strongsville: Widening	9222	Construction	$ 2,000	$ 2,000										
	I-271 to SR-91: Mayfield Heights: Widening	12472	Construction	$ 11,200			$ 11,200								
	SR-82 to Pleasant Valley: Add lane	22222	Preliminary Engineering	$ 2,500	$ 2,500										
	SR-82 to Pleasant Valley: Add lane	13707	Construction	$ 8,000						$ 8,000					
	WCL to ECL: North Royalton: Intersections	20340	Construction	$ 1,500	$ 1,500										
	Wilson Mills to NCL: Mayfield: Widening	20334	Construction	$ 8,000	$ 8,000										
	Estimated Total Costs Major New/High Priority/Safety Program			**$ 58,380**	**$ 21,880**	**$ 2,800**	**$ 27,700**	**$ -**	**$ -**	**$ 8,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
	Estimated Total Costs All Programs			**$ 627,391**	**$ 82,483**	**$ 28,045**	**$ 74,974**	**$ 46,207**	**$ 55,869**	**$ 79,863**	**$ 50,081**	**$ 137,826**	**$ 48,080**	**$ 20,475**	**$ -**

Source: Ohio Department of Transportation - District 12: 2004-2014 Capital Improvement Projects for Cuyahoga County

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
2004-2007 CAPITAL IMPROVEMENT PLAN
(Estimated Actual Totals)

Department	Project Name	2004	2005	2006	2007	Totals 2004-2007
RAIL PROJECTS						
Electrical System	Red Line Self Catenary Self Tensioning	$ -	$ 327,560	$ 6,057,551	$ 11,036,000	$ 17,421,111
	New Substation: East 121st Street	$ 367,000	$ 2,420,000	$ 50,000	$ -	$ 2,837,000
Track Rehabilitation	Track Rehabilitation Overhaul	$ 500,000	$ 500,000	$ 500,000	$ -	$ 1,500,000
	Articulating Trucks for Tamper	$ 300,000	$ -	$ -	$ -	$ 300,000
	Brookpark Tower to Airport-Track & Overhead	$ 50,000	$ -	$ -	$ -	$ 50,000
Rail Station Rehab	East 55th Street Station Rehab	$ 5,750,000	$ 150,000	$ -	$ -	$ 5,900,000
	University Circle Station Rehab	$ -	$ -	$ 975,000	$ 7,825,000	$ 8,800,000
	Puritas Station Rehab	$ 4,525,000	$ 125,000	$ -	$ -	$ 4,650,000
	Shaker Square Station Rehab	$ 915,000	$ 50,000	$ -	$ -	$ 965,000
	Van Aken Station Roadway Improvement	$ -	$ 310,000	$ -	$ -	$ 310,000
	Brookpark Station Rehab-Phase II	$ -	$ -	$ 1,055,000	$ 7,875,000	$ 8,930,000
	Woodhill Station Rehab	$ 2,275,000	$ 25,000	$ -	$ -	$ 2,300,000
	West 117th Street Station Rehab	$ 100,000	$ -	$ -	$ -	$ 100,000
Train Control/Signal System	Cab Signaling/East 79th St. to Shaker Square	$ -	$ -	$ 10,566,000	$ -	$ 10,566,000
	Electrification of Pocket Track at Moreland	$ -	$ 1,544,033	$ -	$ -	$ 1,544,033
Rail Extensions	Red line extension via I/X Center	$ -	$ -	$ 100,000	$ 2,000,000	$ 2,100,000
Heavy Rail Vehicle (HRV) Fleet	Tokyu Car (HRV) Overhaul	$ 2,400,000	$ 2,400,000	$ -	$ -	$ 4,800,000
Light Rail Vehicle (LRV Fleet)	Breda Car (LRV) Overhaul	$ 6,000,000	$ 7,000,000	$ -	$ -	$ 13,000,000
	TOTAL RAIL PROJECTS	**$ 23,182,000**	**$ 14,851,593**	**$ 19,303,551**	**$ 28,736,000**	**$ 86,073,144**
BUS GARAGES						
Bus Garage Rehab	Triskett Garage Rehab	$ 800,000	$ 600,000	$ -	$ -	$ 1,400,000
New Garages	Southwest Garage	$ -	$ -	$ 1,100,000	$ 10,150,000	$ 11,250,000
	TOTAL BUS GARAGES	**$ 800,000**	**$ 600,000**	**$ 1,100,000**	**$ 10,150,000**	**$ 12,650,000**
PARK-N-RIDE/TRANSIT CENTERS						
Bus Shelters	Passenger Shelters	$ 450,000	$ 150,000	$ 450,000	$ 150,000	$ 1,200,000
Bus Loops	Bus Storage Facility	$ 345,000	$ 1,037,500	$ -	$ -	$ 1,382,500
Transit Centers	Parmatown Transit Center	$ 1,300,000	$ 1,540,000	$ -	$ -	$ 2,840,000
	I-77/Independence Transit Center	$ -	$ -	$ -	$ 1,610,000	$ 1,610,000
	Solon Transit Center	$ -	$ 180,000	$ 1,970,000	$ 825,000	$ 2,975,000
	Mayfield/Highland Heights Transit Center	$ 975,000	$ 625,000	$ 3,375,000	$ -	$ 4,975,000
	Oakwood Transit Center	$ -	$ -	$ -	$ 1,500,000	$ 1,500,000
	Brecksville Transit Center	$ 150,000	$ 1,550,000	$ 810,000	$ 2,605,000	$ 5,115,000
	East Side Transit Center	$ 7,765,000	$ -	$ -	$ -	$ 7,765,000
	West Side Transit Center	$ 335,000	$ 21,003,924	$ 4,561,076	$ 100,000	$ 26,000,000
	TOTAL PARK-N-RIDE/TRANSIT CENTERS	**$ 11,320,000**	**$ 26,086,424**	**$ 11,166,076**	**$ 6,790,000**	**$ 55,362,500**

GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY
2004-2007 CAPITAL IMPROVEMENT PLAN
(Estimated Actual Totals)

Department	Project Name	2004	2005	2006	2007	Totals 2004-2007
FACILITIES IMPROVEMENTS						
Bridge Rehab	Track Bridge Rehab-Mayfield Road	$ -	$ 165,000	$ 10,000	$ 1,680,000	$ 1,855,000
	Track Bridge Rehab-Lorain Road	$ 1,724,000	$ -	$ -	$ -	$ 1,724,000
	Red Line Track Bridge Rehab	$ 30,000	$ 3,487,000	$ 3,487,000	$ -	$ 7,004,000
	Street Bridge Rehab-East 121st Street	$ 2,154,000	$ -	$ -	$ -	$ 2,154,000
	Street Bridge Rehab-Abbey Road	$ 230,000	$ 50,000	$ 2,199,000	$ -	$ 2,479,000
	Street Bridge Rehab-Broadway Avenue	$ 500,000	$ 35,000	$ 35,000	$ 4,750,000	$ 5,320,000
	TOTAL-FACILITIES IMPROVEMENTS	**$ 4,638,000**	**$ 3,737,000**	**$ 5,731,000**	**$ 6,430,000**	**$ 20,536,000**
BUSES						
	Bus Improvement Program	$ 11,535,000	$ 25,146,440	$ 25,687,070	$ 24,570,460	$ 86,938,970
	Paratransit Improvement Program	$ 1,280,000	$ 1,700,000	$ 800,000	$ 3,300,000	$ 7,080,000
	TOTAL BUSES	**$ 12,815,000**	**$ 26,846,440**	**$ 26,487,070**	**$ 27,870,460**	**$ 94,018,970**
BUS RAPID TRANSIT						
	BRT-Euclid Corridor Transportation Project	$ 76,938,592	$ 77,540,553	$ 9,048,263	$ 1,728,042	$ 165,255,450
	TOTAL-BUS RAPID TRANSIT	**$ 76,938,592**	**$ 77,540,553**	**$ 9,048,263**	**$ 1,728,042**	**$ 165,255,450**
GRAND TOTAL CAPITAL IMPROVEMENT PLAN		**$ 129,693,592**	**$ 149,662,010**	**$ 72,835,960**	**$ 81,704,502**	**$ 433,896,064**

Source: Greater Cleveland Regional Transit Authority Capital Improvement Plan: 2004-2007

CITY OF CLEVELAND DIVISION OF WATER
CAPITOL IMPROVEMENT PLAN: 2004-2012
($ in thousands)

Type	Project Description	Activity	Funding Source	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012
Program Management	PEP Program Management - Phase III	Engineer Services	Future Bonds	$ 20,000			$ 20,000						
	Estimated Total Costs - Program Management/Waterworks Plants			**$ 20,000**	**$ -**	**$ -**	**$ 20,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Baldwin Plant Improvements	Rapid Mix/Flocculation/Sedimentation (PDR 8 &9)	Construction	Series K	$ 33,000	$ 33,000								
	Phase II Design	Design Services	Oper. Rev.	$ 7,000			$ 7,000						
	Residuals/Reservoir	Construction	Oper. Rev.	$ 9,470					$ 9,470				
	Fairmount Pumps and Bldg Improvements	Construction	Future Bonds	$ 22,650				$ 22,650					
	Kirtland Pumps, Electrical and Building Modification	Construction	Future Bonds	$ 22,670					$ 22,670				
	Estimated Total Costs - Baldwin Plant Improvements			**$ 94,790**	**$ 33,000**	**$ -**	**$ 7,000**	**$ 22,650**	**$ 32,140**	**$ -**	**$ -**	**$ -**	**$ -**
Crown Plant Improvements	Phase III Design	Design Services	Oper. Rev.	$ 500			$ 500						
	Low Voltage Electrical	Construction	Oper. Rev.	$ 1,260				$ 1,260					
	Residual Handling Modifications (Dewatering Bldg Rehab)	Construction	Future Bonds	$ 1,500				$ 1,500					
	Estimated Total Costs - Crown Plant Improvements			**$ 3,260**	**$ -**	**$ -**	**$ 500**	**$ 2,760**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Morgan Plant Improvements	Filter Rehabilitation	Construction	Series K	$ 30,280	$ 30,280								
	East Reservoir (PDR 6)	Construction	Series K	$ 29,180	$ 29,180								
	West Reservoir (PDR 7)	Construction	Future Bonds	$ 25,080				$ 25,080					
	Phase III Design	Design Services	Oper. Rev.	$ 14,500			$ 14,500						
	Intake Improvements	Construction	Future Bonds	$ 5,800				$ 5,800					
	Chemical Facility (PDR 14)	Construction	Future Bonds	$ 13,150				$ 13,150					
	Residuals, Pretreatment, Raw Water Pump	Construction	Future Bonds	$ 30,110							$ 30,110		
	Estimated Total Costs - Morgan Plant Improvements			**$ 148,100**	**$ 59,460**	**$ -**	**$ 14,500**	**$ 44,030**	**$ -**	**$ -**	**$ 30,110**	**$ -**	**$ -**
Nottingham Plant Improvements	Phase III Design	Design Services	Oper. Rev.	$ 5,000			$ 5,000						
	Pump Rehabilitation	Construction	Future Bonds	$ 17,180				$ 17,180					
	Rehabilitate Finished Water Reservoir	Construction	Future Bonds	$ 20,800					$ 20,800				
	Estimated Total Costs - Nottingham Plant Improvements			**$ 42,980**	**$ -**	**$ -**	**$ 5,000**	**$ 17,180**	**$ 20,800**	**$ -**	**$ -**	**$ -**	**$ -**
Miscellaneous Plant Improvements	Plant Computer Control System (PCCS)- Ph. II	Programming	Oper. Rev.	$ 3,000	$ 3,000								
	Plant Computer Control System (PCCS)- Ph. III	Programming	Future Bonds	$ 3,000				$ 3,000					
	Developing Regulatory Mandates	Design Services	Future Bonds	$ 5,000			$ 5,000						
	Estimated Total Costs - Miscellaneous Plant Improvements			**$ 11,000**	**$ 3,000**	**$ -**	**$ 5,000**	**$ 3,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Supply Mains	Bagley/Fitch Road Water Mains	Construction	Series K	$ 2,000	$ 2,000								
	Broadview Water Supply Mai- Phase II	Construction	Series K	$ 6,000		$ 6,000							
	Estimated Total Costs - Supply Mains			**$ 8,000**	**$ 2,000**	**$ 6,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Distribution Mains	Distribution Main Replacement Program	Design Services	Oper. Rev.	$ 1,600		$ 400		$ 400		$ 400		$ 400	
	Estimated Total Costs - Distribution Mains			**$ 1,600**	**$ -**	**$ 400**	**$ -**	**$ 400**	**$ -**	**$ 400**	**$ -**	**$ 400**	**$ -**
Cleaning and Lining Water Mains	Cleaning and Lining- Distribution Main Program	Construction	Series K	$ 6,000	$ 6,000								
	Cleaning and Lining- Distribution Main Program	Construction	Oper. Rev.	$ 48,000		$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000
	Estimated Total Costs - Cleaning and Lining Water Mains			**$ 54,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**	**$ 6,000**
Secondary Station Improvements	Future Towers and Tanks Rehabilitation	Design Services	Oper. Rev.	$ 1,800	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200	$ 200
	Bagley Road Tower	Construction	Series K	$ 5,000	$ 5,000								
	Broadview Road Tower	Construction	Series K	$ 4,350	$ 4,350								
	North Royalton 4th High Pumps	Construction	Series K	$ 2,000	$ 2,000								
	Estimated Total Costs - Secondary Station Improvements			**$ 13,150**	**$ 11,550**	**$ 200**	**$ 200**	**$ 200**	**$ 200**	**$ 200**	**$ 200**	**$ 200**	**$ 200**
Roadway Projects	Various City of Cleveland Roadway Projects	Construction	Oper. Rev.	$ 13,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500	$ 1,500
	Estimated Total Costs - Cleveland Roadway Projects			**$ 13,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**	**$ 1,500**
Non-Programmed Capital Projects	Non-programmed capital projects allocation (2007-12)		**Future Bonds**	$ 180,000				$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000	$ 30,000
	Estimated Total Costs - Non-Programmed Capital Projects			**$ 180,000**	**$ -**	**$ -**	**$ -**	**$ 30,000**	**$ 30,000**	**$ 30,000**	**$ 30,000**	**$ 30,000**	**$ 30,000**

CITY OF CLEVELAND DIVISION OF WATER
CAPITOL IMPROVEMENT PLAN: 2004-2012
($ in thousands)

Type	Project Description	Activity	Funding Source	Total Cost	2004	2005	2006	2007	2008	2009	2010	2011	2012
Non-Programmed Projects	AMR Conversion			$ 50,000									
	Aurora Road Pumping Station			$ 5,000									
	Aurora Road Water Supply Main- Phase I	Construction		$ 3,500									
	Cathodic Protection Program	Construction		$ 750									
	Broadview Supply Main- Phase III	Design Services		$ -									
	Center Street Water Supply Main	Design Services		$ 2,200									
	West 130th Street Water Supply Main	Design Services		$ 500									
	West 130th Street Pump Station	Design Services		$ 175									
	West 130th Street Tower	Design Services		$ -									
	SCADA System Upgrade	Construction		$ 2,000									
	Allowance for Other Projects (year 5-10)			$ 50,750									
	Darrow Road/Stow Water Main	Construction		$ 4,730									
	Shoreway Trunk Main Relocation	Construction		$ 2,000									
	Morgan Trunk Main Relocation	Construction		$ 3,115									
	Cleaning & Lining- Trunk Main Program	Construction		$ 2,000									
	Estimated Total Costs - Non-Programmed Projects			**$ 126,720**									
	Estimated Total Costs All Programs			**$ 717,100**	**$ 116,510**	**$ 14,100**	**$ 59,700**	**$ 127,720**	**$ 90,640**	**$ 38,100**	**$ 67,810**	**$ 38,100**	**$ 37,700**

Source: City of Cleveland Division of Water

NORTHEAST OHIO REGIONAL SEWER DISTRICT
FIVE-YEAR CAPITAL PROJECTS PLAN (2004-2008)
($ in Thousands)

Type	Project Description	Total Cost	2004	2005	2006	2007	2008
Southerly Improvements	New Biosolids Incinerators: Design	$ 6,320	$ 6,320				
	Outside Lighting Improvements: CA/RE	$ 150	$ 150				
	Outside Lighting Improvements: Construction (OLI-1)	$ 1,300	$ 1,300				
	Traveling Bridges Recoating (BR-3)	$ 1,200	$ 1,200				
	Wet Weather Processing & Hydraulic Evaluation	$ 1,700	$ 1,700				
	Electrical Infrastructure Improvements: Design	$ 1,500		$ 1,500			
	Electrical Infrastructure Improvements: CA/RE	$ 2,000		$ 2,000			
	Electrical Infrastructure Improvements: Construction (EII-1)	$ 10,000		$ 10,000			
	Second Stage Final Tank Rehabilitation Phase I	$ 2,500		$ 2,500			
	Travelling Bridges Recoating (BR-3)	$ 700		$ 700			
	Headworks Grit & Screening Upgrades: Design	$ 500			$ 500		
	New Biosolids Incinerators: CA/RE	$ 8,530			$ 8,530		
	Zimpro Phaseout Project: Design	$ 750			$ 750		
	Easterly Biosolids Process Separation: Design	$ 500				$ 500	
	Easterly Biosolids Process Separation: CA/RE	$ 500				$ 500	
	Headworks Grit & Screening Upgrades: CA/RE	$ 500				$ 500	
	Headworks Grit & Screening Upgrades: Construction	$ 4,000				$ 4,000	
	New Biosolids Incinerators: Construction	$ 63,200				$ 63,200	
	Second Stage Final Tank Rehabilitation: Phase II	$ 2,500				$ 2,500	
	Zimpro Phaseout Project: CA/RE	$ 750				$ 750	
	Zimpro Phaseout Project: Construction	$ 6,000				$ 6,000	
	Easterly Biosolids Process Separation: Construction	$ 5,000					$ 5,000
	Primary Sludge Degritting Facility Upgrades: Design	$ 500					$ 500
	Primary Sludge Degritting Facility Upgrades: CA/RE	$ 600					$ 600
	Primary Sludge Degritting Facility Upgrades: Construction	$ 5,000					$ 5,000
	Estimated Total Costs Southerly Improvements	**$ 126,200**	**$ 10,670**	**$ 16,700**	**$ 9,780**	**$ 77,950**	**$ 11,100**
Easterly Improvements	Headworks Electrical Improvements: Construction (HEI-1)	$ 6,500	$ 6,500				
	Pavement Restoration & Resurfacing (PRR-1)	$ 500	$ 500				
	Final Clarifier Rehabilitation (FCR-2) & (FCR-3)	$ 3,000		$ 1,500	$ 1,500		
	Wet Weather Facilities Operational Evaluation	$ 500		$ 500			
	Miscellaneous Improvements	$ 700				$ 500	$ 200
	Estimated Total Costs Easterly Improvements	**$ 11,200**	**$ 7,000**	**$ 2,000**	**$ 1,500**	**$ 500**	**$ 200**
Westerly Improvements	Miscellaneous Improvements	$ 700				$ 500	$ 200
	Estimated Total Costs Westerly Improvements	**$ 700**	**$ -**	**$ -**	**$ -**	**$ 500**	**$ 200**

NORTHEAST OHIO REGIONAL SEWER DISTRICT
FIVE-YEAR CAPITAL PROJECTS PLAN (2004-2008)
($ in Thousands)

Type	Project Description	Total Cost	2004	2005	2006	2007	2008
Inter-Community Sewers	Bryden-Farnsleigh ICRS: CA/RE	$ 360	$ 360				
	Bryden-Farnsleigh ICRS: Construction	$ 3,600	$ 3,600				
	Lee-Superior ICRS Contract 2: CA/RE	$ 165	$ 165				
	Lee-Superior ICRS Contract 3: CA/RE	$ 125	$ 125				
	Lee-Superior ICRS Contract 2: Construction (LSRS-2)	$ 1,100		$ 1,100			
	Lee-Superior ICRS Contract 2: Construction (LSRS-3)	$ 850		$ 850			
	Estimated Total Costs Inter-Community Sewers	**$ 6,200**	**$ 4,250**	**$ 1,950**	**$ -**	**$ -**	**$ -**
CSOC & Interceptor Rehabilitation	Big Creek Interceptor Rehabilitation: Trestle Slope Stability Investigation	$ 500	$ 500				
	Big Creek Interceptor Rehabilitation: CA/RE	$ 1,600	$ 1,600				
	Big Creek Interceptor Rehabilitation: Construction	$ 17,000	$ 17,000				
	Mill Creek CSO Relief- E.90th St.: CA/RE	$ 600	$ 600				
	Mill Creek CSO Relief- E.90th St.: Construction	$ 5,000	$ 5,000				
	Mill Creek Interceptor Rehabilitation: Design	$ 400	$ 400				
	Easterly District Interceptors Rehabilitation: Hydraulic Improvement Contract: Construction	$ 4,000	$ 4,000				
	Easterly District Interceptors Rehabilitation: Service Agreement Contract: Construction	$ 2,100	$ 2,100				
	Easterly District Interceptors Rehabilitation: Reline & Replacement Contract: CA/RE	$ 1,360	$ 1,360				
	Easterly District Interceptors Rehabilitation: Reline & Replacement Contract: Construction	$ 12,000	$ 12,000				
	Easterly District CSO Control: Dugway East Interceptor Replacement: Design	$ 1,100	$ 1,100				
	Easterly District CSO Control: Euclid Creek Storage Tunnel: Design	$ 4,850	$ 4,850				
	Easterly District CSO Control: Euclid Creek Storage Tunnel: CA/RE	$ 9,700			$ 9,700		
	Easterly District CSO Control: Euclid Creek Storage Tunnel: Construction	$ 97,000			$ 97,000		
	Easterly District CSO Control: Euclid Creek Pump Station Upgrade: Design	$ 477			$ 477		
	Easterly District CSO Control: Euclid Creek Pump Station Upgrade: CA/RE	$ 477				$ 477	
	Easterly District CSO Control: Euclid Creek Pump Station Upgrade: Construction	$ 4,770					$ 4,770
	Southerly District CSO Control: Early Action Projects: CA/RE	$ 1,100	$ 1,100				
	Southerly District CSO Control: Early Action Projects: Construction 2A	$ 8,115	$ 8,115				
	Southerly District CSO Control: Early Action Projects: Construction 2B	$ 2,115	$ 2,115				
	Westerly District CSO Control: CSOTF Expansion: CA/RE	$ 1,500	$ 1,500				
	Westerly District CSO Control: CSOTF Expansion: Construction	$ 13,200	$ 13,200				
	Easterly/Westerly/Southerly Districts Interceptors: Manhole Rehabilitation Contract CA/RE	$ 175	$ 175				
	Easterly/Westerly/Southerly Districts Interceptors: Manhole Rehabilitation Contract: Construction	$ 2,200	$ 2,200				
	Westerly Interceptor- Lake Ave. Branch Relief: CA/RE	$ 400	$ 400				
	Westerly Interceptor- Lake Ave. Branch Relief: Construction	$ 3,150	$ 3,150				
	CSO Floatables Netting Facilities- Phase II: Construction (CSOFLOAT-2)	$ 2,500	$ 2,500				
	Systemwide Rehabilitation of Auto. Regulators	$ 2,000	$ 2,000				
	Big Creek Interceptor Rehabilitation Trestle Replacement: Construction	$ 2,500		$ 2,500			
	Mill Creek Interceptor Rehabilitation: CA/RE	$ 600		$ 600			
	Mill Creek Interceptor Rehabilitation: Construction	$ 4,000		$ 4,000			
	Mill Creek Interceptor Lee Rd. ICRS/MCSO- 8 & MCI- 2: Design	$ 750		$ 750			

NORTHEAST OHIO REGIONAL SEWER DISTRICT
FIVE-YEAR CAPITAL PROJECTS PLAN (2004-2008)
($ in Thousands)

Type	Project Description	Total Cost	2004	2005	2006	2007	2008
	Mill Creek Lee Rd. ICRS/MCSO- 8 & MCI- 2: CA/RE	$ 800			$ 800		
	Mill Creek Lee Rd. ICRS/MCSO- 8 & MCI- 2: Construction	$ 8,000			$ 8,000		
	Easterly District CSO Control: Dugway East Interceptor Replacement: CA/RE	$ 2,200		$ 2,200			
	Easterly District CSO Control: Dugway East Interceptor Replacement: Construction	$ 22,000		$ 22,000			
	Easterly District CSO Control Tunnel Dewatering Pump Station: Design	$ 11,680		$ 11,680			
	Southerly/Westerly Districts Interceptors Rehabilitation: Service Agreement Contract: CA/RE	$ 300		$ 300			
	Southerly/Westerly Districts Interceptors Rehabilitation: Service Agreement Contract: Construction	$ 2,000		$ 2,000			
	Southerly/Westerly Districts Interceptors Rehabilitation: Reline & Replace Contract: CA/RE	$ 730		$ 730			
	Southerly/Westerly Districts Interceptors Rehabilitation: Reline & Replace Contract: Construction	$ 7,300		$ 7,300			
	Easterly District CSO Control: Dugway West Interceptor Replacement Design	$ 2,468				$ 2,468	
	Easterly District CSO Control: Dugway West Interceptor Replacement CA/RE	$ 4,935					$ 4,935
	Easterly District CSO Control: Dugway West Interceptor Replacement Construction	$ 49,350					$ 49,350
	Easterly District CSO Control: Front Street Storage Tank: Design	$ 415				$ 415	
	Easterly District CSO Control: Front Street Storage Tank: CA/RE	$ 415					$ 415
	Easterly District CSO Control: Front Street Storage Tank: Construction	$ 4,145					$ 4,145
	Easterly District CSO Control: Tunnel Dewatering Pump Station: CA/RE	$ 14,600				$ 14,600	
	Easterly District CSO Control: Tunnel Dewatering Pump Station: Construction	$ 146,000				$ 146,000	
	Easterly District CSO Control: West 10th St.- Front Streets Rehabilitation: Design	$ 145				$ 145	
	Southerly District CSO Control: CSO-063 Consolidation Sewer: Design	$ 175				$ 175	
	Mill Creek Interceptor Relief: CA/RE	$ 700					$ 700
	Mill Creek Interceptor Relief: Construction	$ 7,000					$ 7,000
	Easterly District CSO Control: Doan Storage Tunnel: Design	$ 3,630					$ 3,630
	Easterly District CSO Control: Lakeshore/Nottingham Regulators/Relief: Design	$ 403					$ 403
	Easterly District CSO Control: Lakeshore Boulevard Relief Sewer: Design	$ 260					$ 260
	Easterly District CSO Control: West 10th- Front Streets Rehabilitation: CA/RE	$ 220					$ 220
	Easterly District CSO Control: West 10th- Front Streets Rehabilitation: Construction	$ 1,465					$ 1,465
	Southerly District CSO Control: CSO-063 Consolidation Sewer: CA/RE	$ 175					$ 175
	Southerly District CSO Control: CSO-063 Consolidation Sewer: Construction	$ 1,770					$ 1,770
	Westerly District CSO Control: Mary Street Pump Station: Design	$ 677					$ 677
	Estimated Total Costs CSOC & Interceptor Rehabilitation	**$ 501,197**	**$ 86,965**	**$ 54,060**	**$ 115,977**	**$ 164,280**	**$ 79,915**

NORTHEAST OHIO REGIONAL SEWER DISTRICT
FIVE-YEAR CAPITAL PROJECTS PLAN (2004-2008)
($ in Thousands)

Type	Project Description	Total Cost	2004	2005	2006	2007	2008
Other Projects	Geographic Information System (GIS): Phase II	$ 2,000	$ 2,000				
	Easterly/Southerly/Westerly/EMSC: Emergency Power Improvements	$ 36,000	$ 5,000	$ 12,000	$ 11,000	$ 4,000	$ 4,000
	Easterly/Southerly/Westerly/EMSC: Plant Automation Design	$ 1,800			$ 1,800		
	Easterly/Southerly/Westerly/EMSC: Easement and Property Acquisitions	$ -					
	East 49th St. Storm Culvert Drainage Improvs: Construction	$ 2,900	$ 2,900				
	Systemwide: Easement and Property Acquisition	$ 3,350	$ 800	$ 750	$ 600	$ 600	$ 600
	Systemwide: Net Project Change Orders	$ 11,000	$ 3,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000
	Estimated Total Costs Other Projects	**$ 57,050**	**$ 13,700**	**$ 14,750**	**$ 15,400**	**$ 6,600**	**$ 6,600**
	Estimated Total Costs All Programs	**$ 702,547**	**$ 122,585**	**$ 89,460**	**$ 142,657**	**$ 249,830**	**$ 98,015**

Source: NEORSD Capital Plan 2004-2008