



A Blueprint for 2003 Reauthorization of the Federal-aid Highway and Mass Transit Programs

Executive Summary

Introduction

In 2003, the Congress must reauthorize the Federal-aid Highway and Mass Transit Programs. To help focus the debate on this key national legislation, over 18 months in 1999-2001 the American Road & Transportation Builders Association (ARTBA) convened a task force of more than 100 industry experts to study how current federal transportation law is working and to suggest rec-

ommendations for the future. The task force included views from both the public and private sectors of the U.S. transportation construction industry and from agencies and firms that design, build and manage infrastructure for all modes of transportation. This document outlines ARTBA's views on reauthorization as endorsed by its Board of Directors in March 2001.

Federal Highway Policy Has Changed

The Federal-aid Highway Program is one of the federal government's most successful endeavors. Since 1956, in partnerships with the states, it has financed construction and upkeep of the largest and safest national network of highways and bridges in the world.

It is a program, however, that should no longer be viewed by the Congress, the Executive Branch, the media and the public as "just a construction program." It is rightly put in a larger context. Today, the Federal-aid Highway Program's successes—and shortcomings—impact virtually every aspect of American business and quality of life.

Over the past decade, this user-financed program has been guided by two laws—the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and 1998's Transportation Equity Act for the 21st Century (TEA-21)—that **rewrote federal surface transportation policy.**

Both laws **significantly boosted Federal-aid Highway Program investment** to record levels. They also have been very successful in reaching their intended policy goal of **providing state and local governments with much greater control and flexibility in their use of federal highway funds.** And both laws **dramatically expanded the scope**

of the Federal-aid Highway Program and the eligible activities it funds.

Despite media and public perceptions, to say that the federal government is now investing over \$30 billion per year in highway construction would not be correct. **With ISTEA and TEA-21, the “cost of doing business”—of building and maintaining roads and bridges—has changed.**

ARTBA’s analysis of U.S. Department of Transportation (U.S. DOT) data shows that, collectively, **state governments are now investing only 55 percent of their core federal highway program dollars each year in road and bridge construction and rehabilitation contracts (Fig. 1).**

U.S. DOT data show almost 10 percent—nearly \$2 billion—of these funds are being “flexed” annually by states to mass transit activities. (Very little of this “flexed” money—less than 20 percent—is being invested in new mass transit systems construction. About 60 percent is being

used to subsidize transit operating expenses or purchase/rehabilitate rolling stock—buses, vans and train cars. About 20 percent are being spent on transit-related buildings. This “flexed” money is in addition to the almost \$7 billion the federal government is currently providing the states for mass transit programs through the Federal-aid Transit Program that is also authorized by TEA-21.)

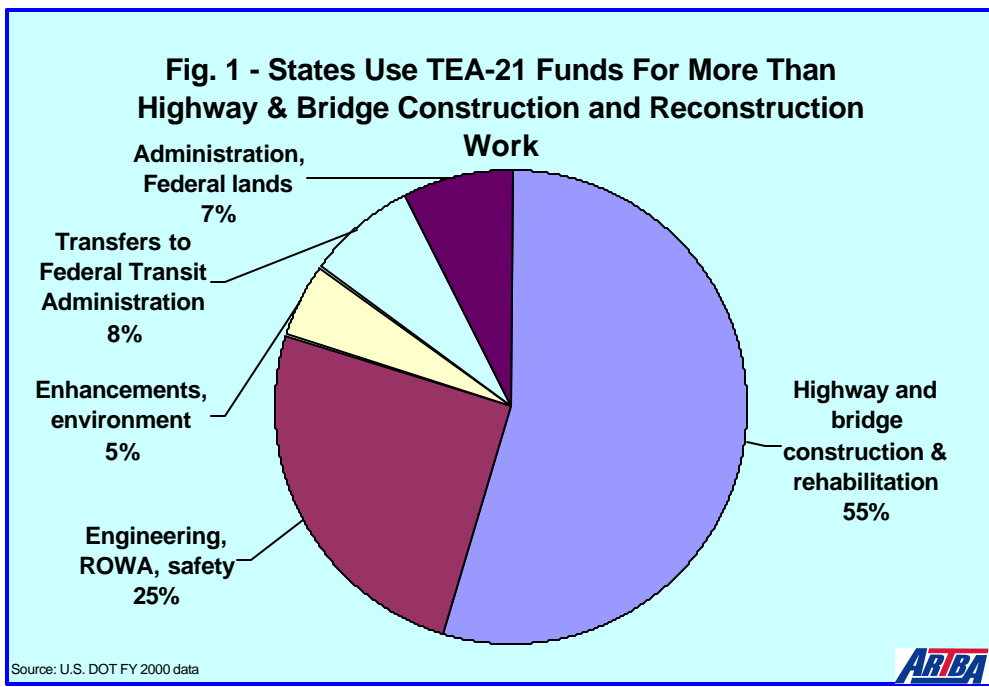
“The Federal-aid Highway Program should no longer be viewed as ‘just a construction program.’ Today, its successes—and shortcomings—impact virtually every aspect of American business and quality of life.”

An additional **five percent of total Federal-aid Highway Program dollars are being spent annually by states on environmental mitigation and advocacy programs,** auto emission testing centers and community enhancements.

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The remaining 30 percent of federal funding is being used for engineering, right-of-way acquisition, safety programs, federal lands activities and program administration.

ISTEA and TEA-21 also tied the state and local government transportation planning and project approval process to the Clean Air Act



(CAA). Transportation plans and federally-funded projects can now only move forward if a state can show that total annual emissions of criteria pollutants from all sources (transportation and non-transportation related) meet federal air quality standards.

While perhaps unintended, this policy has tied transportation development to a state's ability to control emissions from natural sources, power utilities and manufacturing plants. The environmental benefits of this policy action over the past decade, if any, are unknown.

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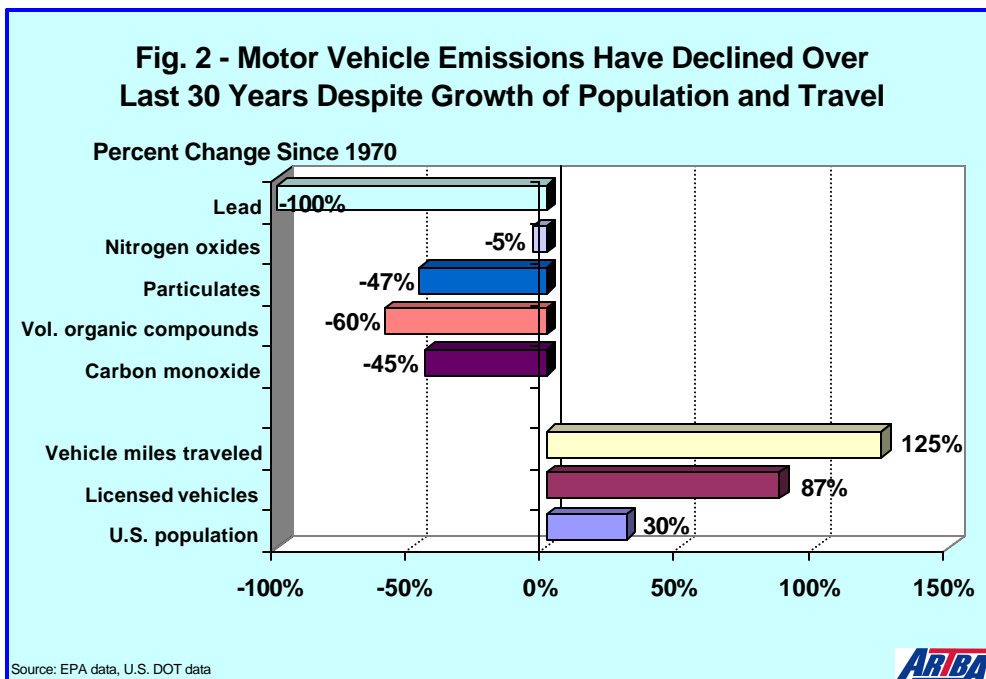
found even massive, multi-million dollar investments in light or fixed rail transit systems in urban-suburban areas can only be expected to reduce overall mobile source emissions by, at most, three percent.

One known "real world" result of linking ISTEA and TEA-21 to the CAA is that opponents of expanded road capacity are using loopholes and vague language in the law to mount litigation that is delaying and, in some cases, stopping environmentally sound road improvement projects across the nation.

jects across the nation.

According to the Environmental Protection Agency (EPA), since 1967 car emissions rates have declined by 80-90 percent depending on the pollutant, while diesel truck emission rates have declined 10-60 percent (Fig. 2). In fact, emissions positive vehicles are now entering the marketplace. The nation's motor vehicle fleet has gotten so environmentally "clean" that EPA and U.S. DOT research has

ISTEA also virtually eliminated categorical funding for secondary roads, ending a longstanding source of funding for road networks administered by county governments. This has led to concerns about adequately addressing safety needs on rural two-lane roads, the site of disproportionately high numbers of fatal and injury-causing auto crashes.



Finally, TEA-21 significantly cut federal investment in highway-related research and technology transfer programs, the “seed corn” for

future improvements in highway materials and operations.

U.S. DOT Still Reports Large, Unmet Highway and Bridge Capital Needs & Safety Concerns

While both ISTEA and TEA-21 significantly boosted federal highway investment (and stimulated increased state investments to take advantage of matching funds), the changes in the federal program discussed above, combined with inflation and ever-growing highway traffic resulted in a *highway and bridge construction investment* that did little more than maintain the physical condition of the overall system. System performance is actually further deteriorating.

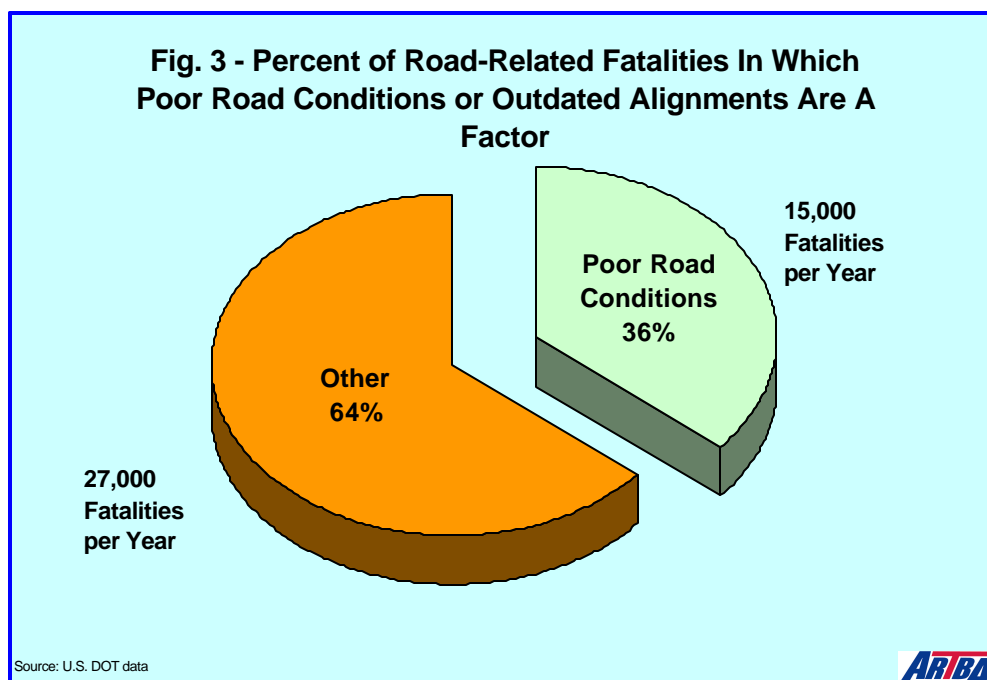
According to a 1999 U.S. DOT report to the Congress and other authoritative sources, the nation’s road and bridge network still has enormous, unmet capital needs:

- More than 40,000 people die and 3 million

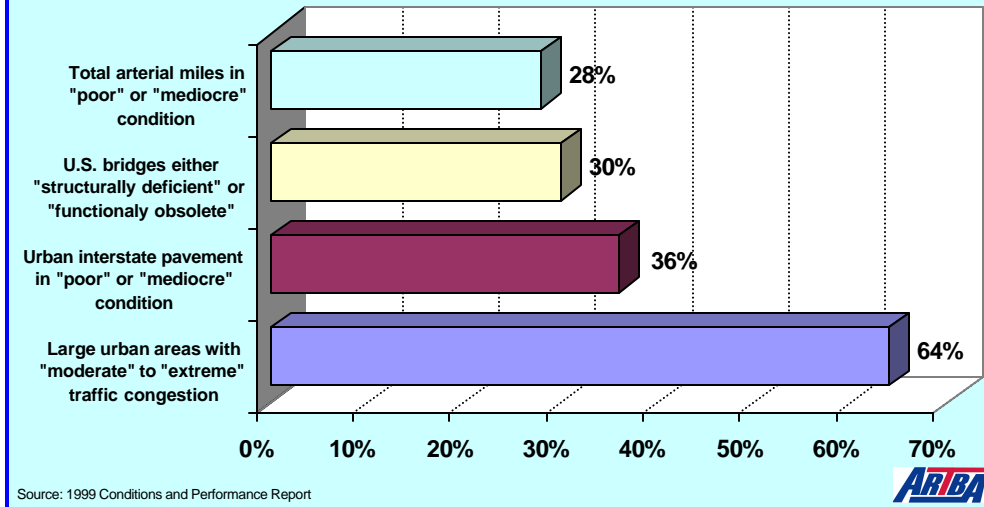
are injured in crashes on U.S. roads each year, costing American society more than \$160 billion annually. Traffic accidents are the leading cause of death of Americans 6 to 28 years of age and result in more permanent disabling injuries than any other type of accident. Poor road conditions or outdated alignments are a factor in an estimated 15,000 U.S. road-related fatalities each year (Fig. 3). This is unacceptable.

“Poor road conditions or outdated alignments are a factor in an estimated 15,000 U.S. road-related fatalities each year. This is unacceptable.”

- Twenty-eight percent of all arterial road miles in the U.S. are in “poor” (nine percent) or “mediocre” (19 percent) condition (Fig. 4). Twenty-six percent, government data show, are in “fair” condition. The situation is worst



**Fig. 4 - Troubled Highway & Bridge Network:
1999 U.S. DOT Report to Congress**



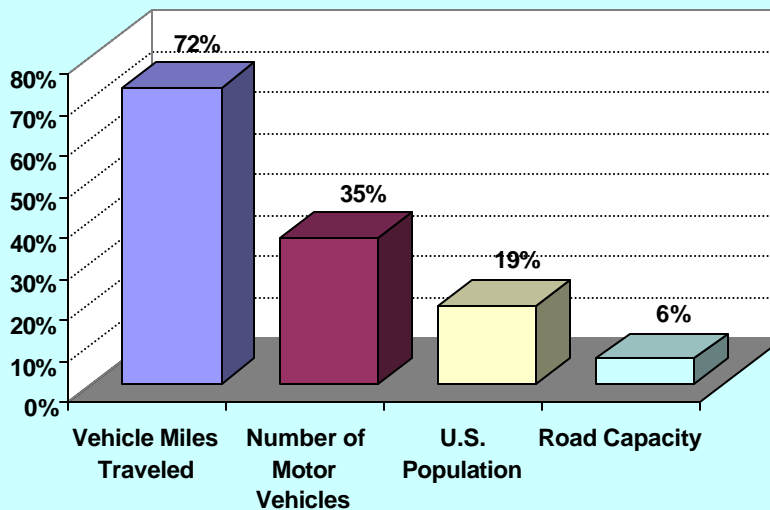
on the nation's heavily traveled urban interstates, where 36 percent of the pavement mileage is classified as in "poor" or "mediocre" condition.

- **Thirty percent—172,572 U.S. bridges—are either "structurally deficient" or "functionally obsolete."** That includes more than one out

of every four bridges (27 percent) on urban interstates.

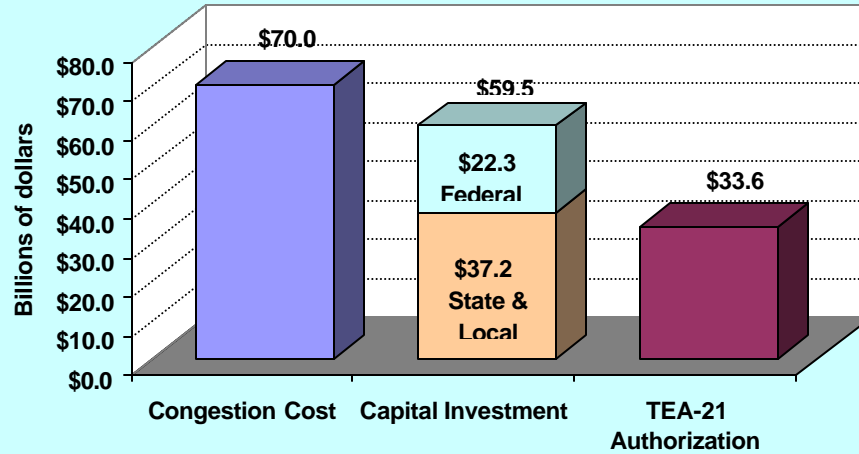
- **While two-lane roads handle about half of total vehicle miles traveled (VMT) each year, they are the sites of 77 percent of all fatal motor vehicle crashes.**

**Fig. 5 - Reasons for Current Road Traffic Congestion
Percent Increase, 1982 - 1999**



Source: U.S. DOT data

Fig. 6 - Traffic Congestion Cost to the U.S. Economy in 1999 vs. Total Highway Capital Investment in 1999 and FY 2003 TEA-21 Highway Authorization



Source: U.S. DOT data



- **Poor road conditions impact the American family budget. According to an analysis by The Road Information Program, driving on roads in need of repair increases the annual cost of operating a motor vehicle by an average \$222 per year. For the average American family, which owns two motor vehicles, that's almost an extra \$450 slice out of their annual household budget. Collectively, Americans are**

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paying an additional \$41.5 billion per year in motor vehicle operating costs due to substandard road surface conditions.

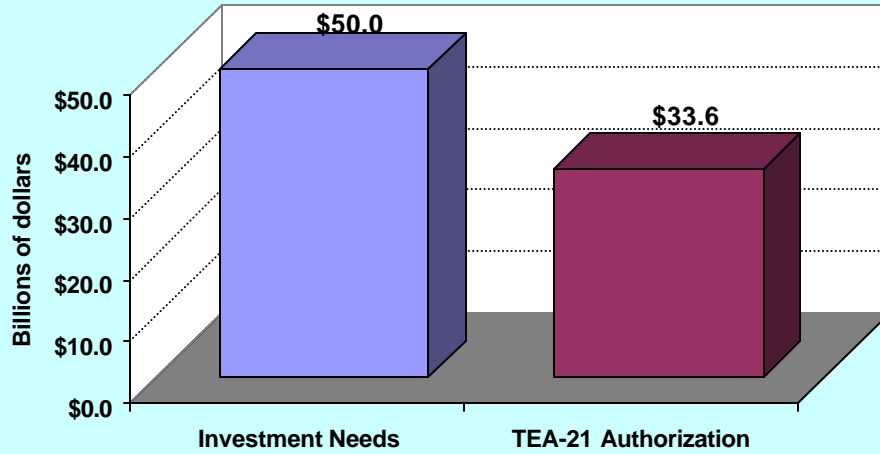
- **Highway capacity is a growing concern. Fifty-three percent of urban interstate highway miles are congested during the peak travel hour. In the nation's 68 largest urbanized areas, 64 percent of all travel occurs in "moderate" to "extreme" traffic congestion, compared to only 35 percent in 1982.**

- Research by the Texas Transportation Institute (TTI) provides insights into the traffic congestion crisis. Traffic congestion delays are up 213 percent since 1982, TTI says. Over the same time period, the U.S. population has increased 19 percent and (VMT) is up 72 percent. New road capacity in terms of lane miles, however, has increased only six percent. **Traffic congestion cost the U.S. economy about \$78 billion in 1999, more than triple the \$22 billion cost in 1982 (Fig. 6).** Perhaps even more distressing is the cost traffic congestion is imposing on the quality of life for American families.

Today, the federal government funds almost 45 percent of all state and local capital investment in road and bridge improvements. Data from the same 1999 U.S. DOT report to Congress, when adjusted for anticipated inflation and realistic increases in traffic, makes clear that **a \$50 billion per year federal highway program is necessary just to main-**

"Driving on roads in need of repair increases the annual cost of operating a motor vehicle by an average \$222 per year."

Fig. 7 - Total Federal Highway Investment Needed Just to Maintain Conditions & Performance vs. TEA-21 Authorization for FY 2003



Source: U.S. DOT data, assumes \$5 billion RABA for FY 2003

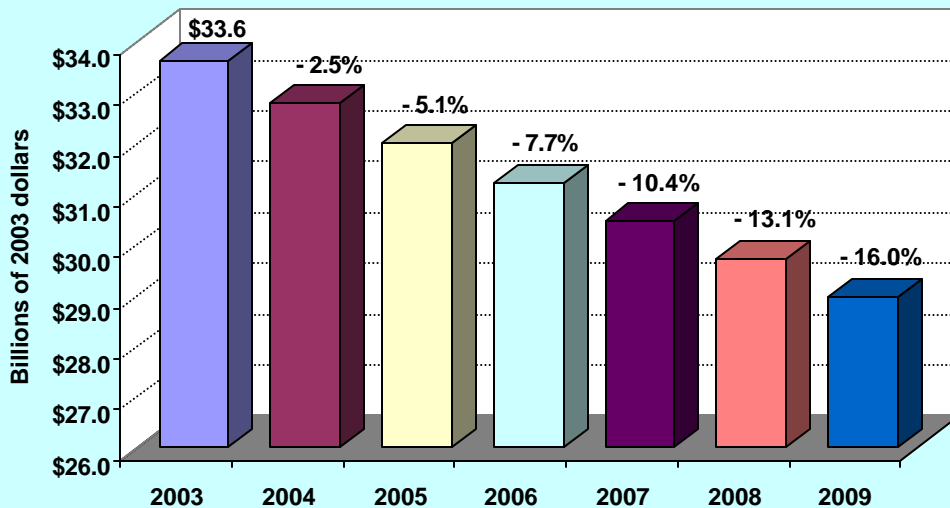


tain the system conditions and performance levels detailed above over the period 2004-2009 (Fig. 7). This is \$17 billion per year more than the expected federal highway investment in 2003, the last year of the current federal highway program authorization.

economically justified (returning more value to the economy than the expense incurred), the U.S. DOT report suggests, would require a \$65 billion per year federal highway program investment. This investment level would provide significant added capacity to the nation's road system.

Making all of the capital improvements to our national highway and bridge network that could be

Fig. 8 - Projected Loss of Federal Highway Program Purchasing Power If No Increase Over TEA-21 Level



Source: ARTBA calculations from U.S. Budget for FY 2002 data



Economic Impacts

The importance of the nation's highway and bridge network to the U.S. economy is hard to overstate.

America's road network facilitates:

- **90 percent of all personal travel** in the U.S. each year; and
- **76 percent of all domestic freight shipments**, with an annual value of more than \$5 trillion.

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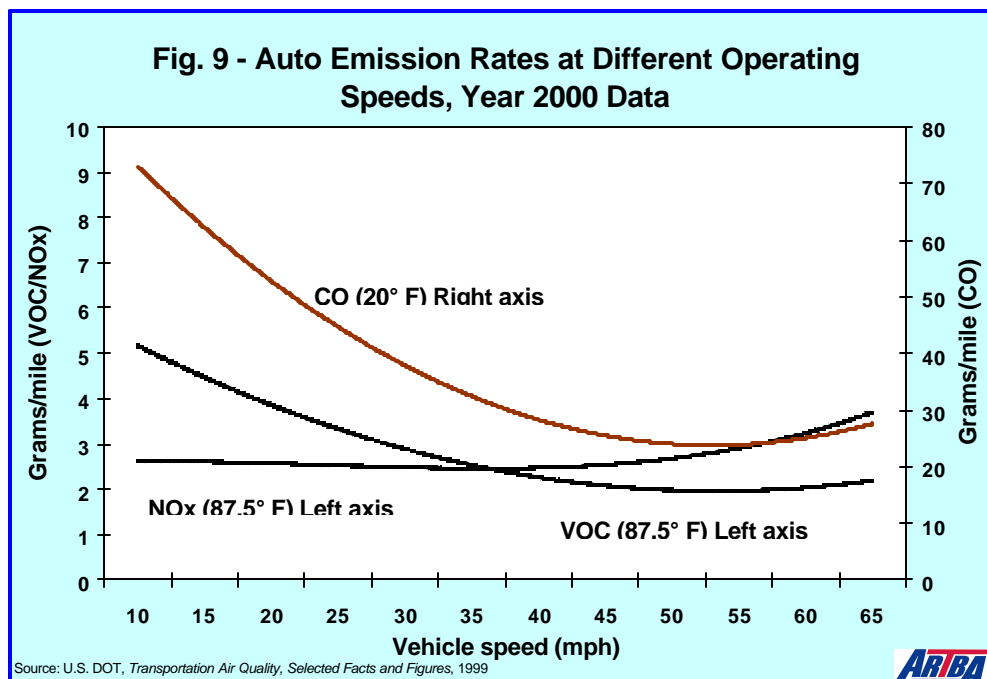
According to the U.S. Department of Commerce's latest report on the tangible assets of the United States, **publicly-owned roads and bridges represent a capital investment well worth protecting, with an asset value of almost \$1.4 trillion!**

And today, **publicly financed highway construction activity sustains almost 2.2 million American jobs** directly or indirectly.

An Environmental Consideration

U.S. DOT and EPA research show that as traffic congestion reduces average motor vehicle speed, air pollution increases (Fig. 9). For carbon monoxide, and volatile organic compounds, two of the three primary mobile source pollutants, from an air quality perspective, the optimal average motor vehicle operating speed is approximately 55 miles per hour (mph). As average speed goes down, pollutants

from these emissions increases. Nitrogen oxides (NO_x) are different. The optimum speed for NO_x currently is about 20 mph, although little additional pollution is produced at speeds up to 45 mph. Thus, with respect to air pollution, highway congestion that reduces average speeds below 45 mph unnecessarily increases harmful auto emissions.



The Context for the TEA-21 Reauthorization Debate

The next Federal-aid Highway Program reauthorization will be debated in a larger transportation context. Program and funding reauthorization bills will also be due for Amtrak and the federal mass transit and aviation programs.

Amtrak, the federally subsidized and financially ailing national passenger rail system, will be up for congressional reauthorization in 2002. Amtrak supporters are already suggesting a dedicated one-cent per gallon increase in the federal motor fuels excise to support Amtrak capital expenditures. There

is also growing support—among ARTBA members, a number of state and local governments and their representatives in Congress—for **development of high-speed rail facilities in the United States.** (ARTBA believes these initiatives should be funded without using Highway Trust Fund Highway Account resources.)

The federal highway and mass transit programs (TEA-21) and the federal Airport Improvement Program contained in AIR-21 will be up for reauthorization by the Congress in 2003.

The political context for these debates will include:

- **A new administration in the White House that has pledged to significantly cut the growth of federal revenues, not increase federal taxes.**
- **A Congress in which 25 percent—or more—of its members were not involved in the last reauthorization legislation.**
- **Suggestions that current investment levels can be “stretched” and existing system performance improved by greater investments in “Intelligent Transportation Systems”**

(ITS) and improved traffic operations management. (ITS and improved operations management are part of the solution. Most objective observers, however, would agree that their combined impact on overall future system performance would be modest at best absent new infrastructure capacity.)

- **Conservative “think tank” advocacy for devolving the Federal-aid Highway Program and the federal motor fuels excise to the states.** (This view ignores, among other factors: (a) the

federal government's Constitutional responsibilities for the nation's defense and regulation of interstate commerce; (b) the federal public health interest in reducing road-related injuries and deaths; (c) U.S. DOT and Commerce Department commodity flow data which show the sale of 45 percent of all goods produced by a state, on average, is dependent on moving those goods over other states' road networks; and (d) data which show inconsistent state investment levels for road and bridge programs and widespread diversion of state highway user fee revenue to non-transportation uses.)

- **Growing public frustration and impatience with worsening highway and aviation system congestion that has become front-page news and a hot local political issue.** (The congestion problem has been triggered by economic growth, increases in population, changing state and national demographics, increased personal,

“A \$50 billion per year federal highway program is necessary just to maintain system conditions and performance levels ... Making all capital improvements to our national highway and bridge network that could be economically justified would require a \$65 billion per year federal highway program.

“Publicly financed highway construction activity sustains almost 2.2 million American jobs.”

business and recreational travel, inadequate public investment in transportation infrastructure to meet travel demand, and federal environmental laws and regulations that are increasingly invoked to delay projects that increase transportation capacity.)

- **Well-financed and highly visible attacks on any proposals that would add new highway capacity, mounted by professional environmental organizations espousing “no growth”**

policies under the guise of “smart growth” and/or “environmental protection.” (Their rhetoric plays on public ignorance of the positive air and water quality impacts resulting from the dramatic, three-decade reduction in auto emissions and the equally dramatic commitment by government and the transportation construction industry to environmental mitigation, enhancements, wetlands replacement and recycling.)

ARTBA's Recommendation for TEA-21 Reauthorization

Here are some of ARTBA's recommendations for TEA-21 reauthorization at this juncture:

Funding—

- **To meet capital needs identified by the state transportation departments and the U.S. Department of Transportation with a continued commitment to environmental stewardship, the federal highway program should be funded at a minimum \$50 billion per year over the period 2004 to 2009. A goal should be to increase the program funding level to the \$65 billion annual level suggested by the U.S. DOT's 1999 report to Congress as necessary to substantially improve national highway system conditions and performance.**

Available methods to increase federal surface transportation investment to these levels include:

—**Annually drawing down on the estimated \$27 billion 2003 balance in the Highway Account of the Highway Trust Fund (HTF)**—would provide an additional \$5 billion per year. At its current revenue growth rate, the total Highway Trust Fund balance can be expected to balloon to more than \$50 billion by FY 2009 absent an increase in post TEA-21 authorizations (Fig. 10);

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—**Resume crediting interest earned on the HTF balance to the trust fund**, as was the case prior to enactment of TEA-21. This would make available an additional \$1.5 billion to \$2.0 billion per year in revenue available for surface transportation investment during the next authorization period (Fig. 11). Currently, this interest revenue goes to the General Fund;

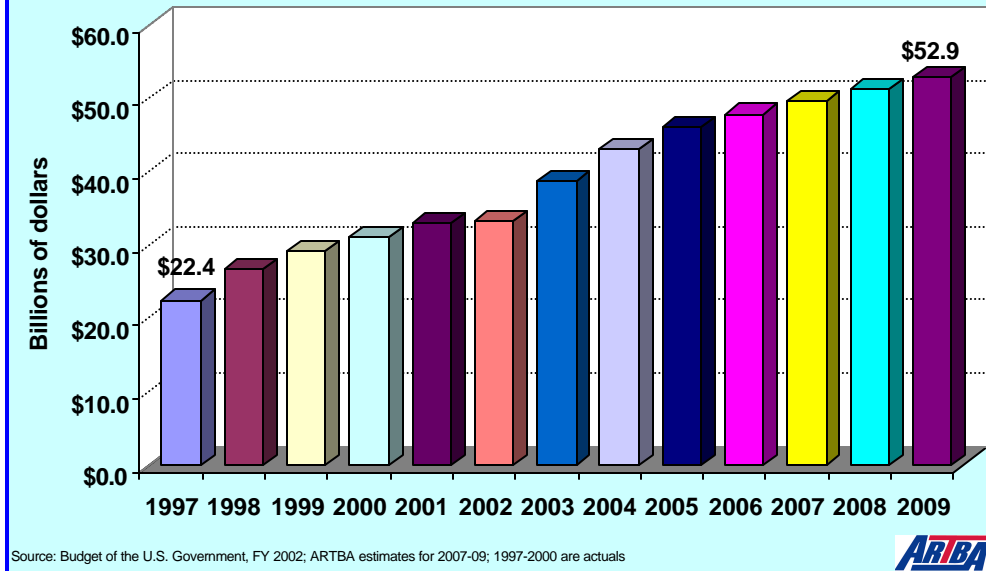
—**Increasing federal highway user fees**—each one cent per gallon increase in the federal motor fuels excise would currently generate just under \$2 billion per year to the HTF and more in the future as travel grows;

—**Fostering tax-exempt financing for transportation capital projects and the implementation of innovative financing mechanisms** like State Infrastructure Banks and regional transportation compacts to leverage funds;

—**Eliminating federal motor fuels user fee evasion**—would provide an additional \$1.8 billion per year to the HTF;

—**Eliminating the federal tax subsidy on ethanol-based motor fuels sales**—would generate an additional \$1.1 billion annually for the HTF; and

Fig. 10 - Projected Balance in the Federal Highway Trust Fund



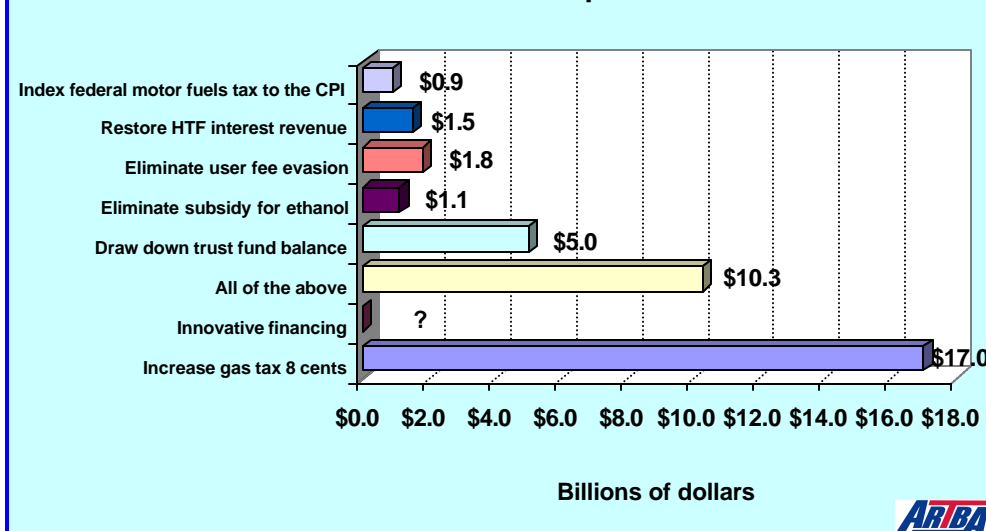
—Indexing the federal motor fuels tax to the Consumer Price Index (CPI)—would generate an estimated additional \$900 million per year to the Highway Trust Fund.

surface transportation investment, including the Revenue Aligned Budget Authority (RABA) provision.

- **Maintain TEA-21’s unique and direct budgetary linkage between incoming federal highway user fee revenue and annual federal**

- **Include a “maintenance of effort” provision that makes increased federal highway apportioned funds contingent on a state, at minimum, maintaining its own highway program capital**

Fig. 11 - How Can We Close the \$17 Billion per Year Highway Capital Investment Gap? Available Federal User Fee-Based Options



investment at the previous year's investment level.

- **Capitalize on innovative financing to supplement the core federal highway and transit capital programs**, such as State Infrastructure Banks, reauthorization of the Transportation Infrastructure Finance and Innovation Act (TIFIA) program and tax-exempt financing for public private venture capital projects to help meet transportation infrastructure needs.
- **Increase federal investment in transit capital construction (tracks, tunnels, bridges, facilities and stations) by \$1.4 billion per year, as substantiated by U.S. DOT data, to add capacity to the overall ground transportation system.** This can be achieved by limiting federal investment in non-capital construction transit activities that are more appropriately handled at the state and local level. The federal role for transit support in urbanized areas with populations above 200,000 should be strictly limited to capital investments.
- **Create a “blue ribbon” task force to provide recommendations to Congress on how alternative motor fuels and/or motor vehicle use should be taxed at the federal level to ensure that future revenues to the Highway Trust Fund are not further diminished** as the nation transitions to non-gasoline/diesel powering sources (electricity, natural gas, ethanol, etc.) and reacts to other environmentally-based mandates affecting motor vehicle use and HTF revenues (CAFÉ standards, Transportation Control Measures, etc.).
- **Eliminate all federal highway funding sanctions on state and local governments.**
- **Require the U.S. DOT to provide quarterly reports that quantify how federal surface transportation funds are being invested** and the anticipated benefits of those investments.

Safety—

- **With new funding, establish a new, \$1 billion per year federal program to upgrade the safety of high-risk, rural two-lane roads.** Over 77 percent of all fatal accidents occur on two-lane roads that generally are not eligible for federal assistance.
- **To ensure safety is a top priority on all federally-aided projects, require the use of unit bid pricing for safety-related products, activities and systems** on federally-aided project contracts.
- **Strengthen federal roadway infrastructure safety programs and increase federal involvement and investment in roadway construction work zone safety initiatives like the National Work Zone Safety Information Clearinghouse.**

Program Structure—

- **The existing “Surface Transportation Program” (STP) under the Highway Title of TEA-21 should be renamed and restructured as the “State and Local Bridge & Highway Program” (SLBHP).** The law should emphasize that the primary function of this new program is to provide federal financial support for roads, bridges, pedestrian and bicycle infrastructure not on the National Highway System. Ten percent of SLBHP funds should still be allocated for transportation enhancements and categorical safety programs as is the case under current law.

Planning & Environmental Issues—

- **Provide teeth to the TEA-21 mandate to streamline the environmental planning and approval process for highway projects and address problems created by extremist interpretation of NEPA 4(f) provisions.**
- **Eliminate the current federal requirement that state and regional transportation in-**

provement plans must be “fiscally constrained,” or limited to currently available funding.

- **Reform the transportation conformity requirements with the federal Clean Air Act** to eliminate loopholes that have been exploited to unnecessarily delay or stop approved and environmentally sound highway projects.
- **The addition of highway lane capacity should be made an eligible use of National Highway System and the newly-designated “State and Local Bridge and Highway Program” funds**, even if some “induced-travel” might occur, as long as the NEPA process evaluates its potential.
- **In recognition that gridlocked traffic causes increased emissions of harmful air pollutants, construction of single-occupancy vehicle (SOV) lanes should be made an eligible activity under the Congestion Mitigation & Air Quality Program (CMAQ)** as long as the proposed project does not increase emissions of criteria pollutants. As an alternative, Congress could shift the funding for CMAQ programs and activities to the Highway Trust Fund’s Mass Transit Account.
- **Consistent with the stated purposes of the CMAQ Program, use of CMAQ funds should not be allowed for programs and activities that occur outside of federal air-quality non-attainment and maintenance areas.**
- **The National Highway System (NHS) is critical to federal objectives and the national economy. To ensure that federal funding for the NHS is a priority, allow the transfer of highway program funds under state control to local or regional transit projects only if the state’s governor has certified that overall projected funding is adequate to meet all NHS capital needs outlined in the state’s long-range transportation plan.** A similar provision should be applied to the transfer of highway funds under the control of metropolitan planning organizations (MPOs).

Project Delivery & Procurement Process—

- **ARTBA continues to support and promote in TEA-21 reauthorization the:**
 - low-bid procurement process as the most favored delivery system for most publicly-funded transportation construction projects, with construction contracts going to the lowest responsible bidder; and**
 - the awarding of professional services contracts through the qualification-based selection process.**
- ARTBA also recognizes that there may be well-defined transportation projects that are suited for alternative procurement methods, offering the industry the opportunity to implement flexibility in project delivery methods. Such projects might include the need for unusual and/or innovative financing arrangements, certainty in pricing and/or scheduling, a need to address specific technical challenges, or other special circumstances. However, **Congress should not mandate the use of alternate procurement methods and state and local governments should be given maximum flexibility in determining their own procurement methods.**

Work Force Development—

- **Attracting and keeping talented young men and women to transportation development careers is a critical and growing challenge for both the public and private sectors. Without new talent, meeting public demand for quality transportation improvements will be increasingly difficult.** TEA-21 allows states to set aside not more than ½ of one percent of their Surface Transportation and Bridge Program funds for “On-the-Job Training Supportive Services” (OJT/SS). These funds may be used for pre-employment counseling, orientation to the highway construction industry, skill improvement, support for contractor recruiting, job site mentoring and other issues. Financing university and community college initiatives to train, educate and certify members of the transportation construction community should also be made eligible uses of these funds, provided that

the education institutions provide matching funds. While not all states are currently taking advantage of this OJT/SS opportunity, **Congress should give states that utilize “On-the-Job Training Supportive Services” more flexibility to expand funding for this program if it is warranted by demand and demonstrated results.**

- **To help address workforce demand challenges, Congress should provide properly documented non-U.S. residents employed full- or part-time in the transportation construction industry with a visa time-limit exemption.**

Regulatory Reforms—

- **TEA-21 should include regulatory reforms and encourage business conditions that achieve the dual objectives of ensuring prompt completion of high-quality transportation projects and continuation of the industry’s position as a responsible community member.** Areas for possible reforms and/or federal directives for which ARTBA has specific recommendations include: union-labor project agreements, the federal Disadvantaged Business Enterprise (DBE) program, Davis-Bacon, federal “hours-of-service” requirements for transportation construction industry truck drivers, and the use of owner-controlled insurance programs (OCIPs).

Research—

- **Ramp up federal support for highway research and technology transfer to \$1 billion per year.** To maximize the benefit of limited federal research dollars, research investments

should be merit based and consistent with an overall federal/state/industry developed strategic research plan. For this purpose, an advisory panel of federal, state, educational institutions and private-sector stakeholders should be created to make annual recommendations to Congress for the disbursement of federal highway and transit research funds.

- **Require that the U.S. Department of Transportation’s biannual reports to Congress on surface transportation conditions and investment requirements emphasize the *total cost of maintaining both current system physical conditions and service performance levels.*** U.S. DOT should also be directed to utilize the Congressional Budget Office’s most recent projections for future price inflation in projecting the future capital investment requirements.
- **Mandate a federal study that involves representatives of the transportation construction industry, public and private-sectors, and health agencies that examines the issue of roadway construction noise in urban areas** for the purposes of recommending best-practices for mitigating noise and providing a reasoned discussion of public health issues in this area.

Amtrak & High Speed Rail—

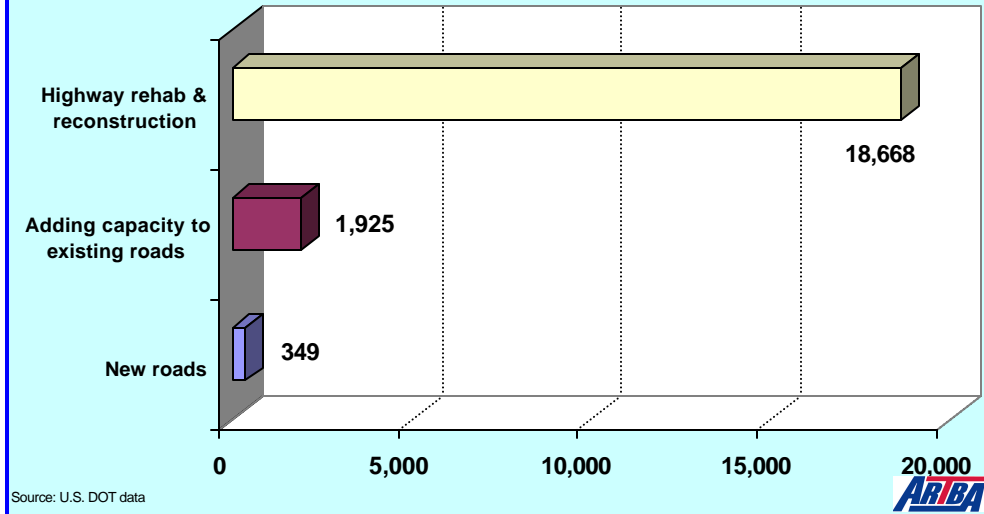
- Establish a dedicated funding mechanism for capital construction investments in intercity passenger rail *that does not utilize federal highway user fee revenues.* **This could include allowing tax-exempt bonds to be issued to finance high-speed rail capital improvements.**

Conclusion

As we enter the new century, the nation’s highway system is literally American business’ warehouse. The speed and efficiency promises of “e-commerce” will mean little without an efficient

surface transportation system. The same goes for emergency response and public safety services. The nation’s defense and emergency mobilizations—and

Fig. 12 - Miles of Road Under Construction in 1999 With Federal Funds, By Type of Improvement



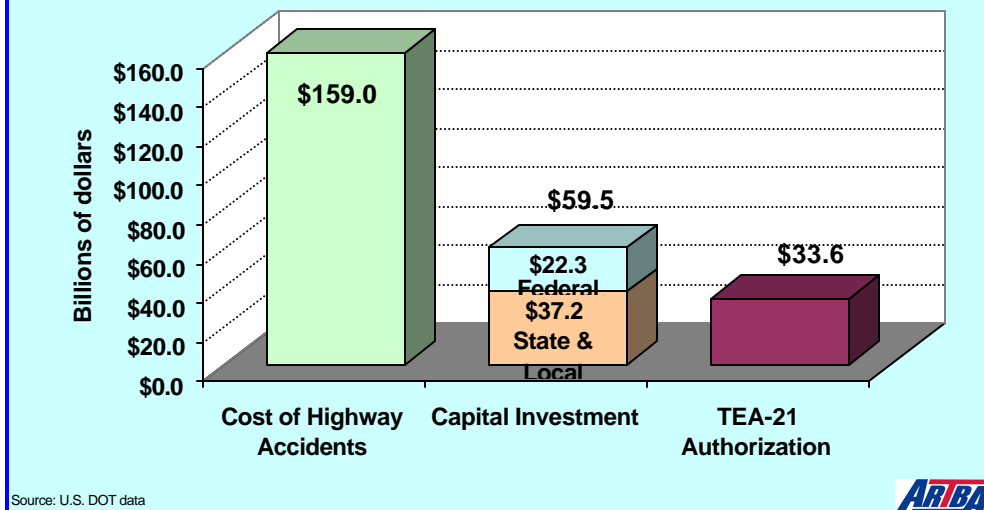
its two largest industries—grocery and travel—depend on good roads.

Both TEA-21 and its predecessor, ISTEA, significantly boosted overall federal investment in the Federal-aid Highway Program. The reality, however, as the U.S. DOT reports attest, is that the overall physical condition of the nation’s highway

and bridge system improved only slightly and its performance declined over the past 12 years. **ISTEA and TEA-21 did not trigger a surge in construction of new roads, highways or bridges that add significant system capacity** (Fig. 12).

These laws have supported a national highway rehabilitation and maintenance program.

Fig. 13 - Annual Cost of Highway Traffic Accidents vs. Total Highway Capital Investment in 1999 and FY 2003 TEA-21 Highway Authorization



They also created or expanded expensive transportation enhancement and environmental mitigation and advocacy programs that now are part of the “cost of doing business.” Some states are also using ISTEA and TEA-21 “flexibility” provisions to direct billions of Highway Trust Fund Highway Account dollars to mass transit expenditures.

While some may not want to hear it, it is clear that an increase in the federal motor fuels excise will be necessary just to maintain the nation’s surface transportation status quo. (Depending on the revenue options chosen by the Congress, any objective analysis would show that up to a 10 cents-per-gallon increase in the federal motor fuels excise—eight cents for the Highway Trust Fund (HTF) Highway Account and two cents for the HTF Mass Transit Account—may be necessary.) ARTBA supports increases in federal user fees to fund a minimum \$50 billion per year Federal-aid Highway Program.

“While some may not want to hear it, it is clear that an increase in the federal motor fuels excise tax will be necessary just to maintain the nation’s surface transportation status quo.”

This investment can be justified by:

- The thousands of American lives and billions in public health dollars it will save (Fig. 13) by making the nation’s roads and bridges safer and the nation’s air and water cleaner;
- The significant time and money it will save American families and businesses by helping to ensure that traffic congestion does not get worse; and
- The \$185 billion in U.S. economic activity generated annually by transportation construction.

Increased federal investment in transportation infrastructure is truly an investment in America’s future!



Appendix

ARTBA's Call for a Minimum \$50 Billion Per Year Federal Highway Program During FY 2004-09 is Based on U.S. DOT Investment Requirement Data: Understanding the Numbers

An Analysis prepared by Dr. William Buechner
Vice President, Economics and Research
American Road and Transportation Builders Association

Summary

When the Transportation Equity Act for the 21st Century (TEA-21) comes up for reauthorization in September 2003, one of the most important issues Congress will have to address in the new legislation is the appropriate level of federal highway investment for fiscal years (FY) 2004 through 2009.

Based on ARTBA's analysis of data from the U.S. Department of Transportation's (U.S. DOT) *1999 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance Report to Congress*, issued May, 2000, we conclude that:

- Federal, state and local governments need to invest a total of \$107.8 billion dollars per year on average in capital improvements on highways and bridges between 2004 and 2009 just to maintain current performance and physical conditions on the nation's highway system.
- A \$50.0 billion federal-aid highway program per year on average would provide the appropriate federal share of this, or a total six-year program of about \$300 billion.

This analysis is based on the following parameters, using data from the U.S. DOT report and the Bush administration's *FY 2002 Budget of the U.S. Government*:

- The minimum goal of TEA-21 reauthorization should be to maintain current highway system performance in terms of travel times and congestion, not just maintain the current physical conditions of the nation's roads and bridges as was highlighted in the U.S. DOT report. Failing to maintain current system performance will result in even longer travel times and greater congestion than exist today. Consequently, highway users will become increasingly frustrated and disappointed with the mobility and quality of life offered by our nation's network of highways and bridges. Actually improving system performance would be an even more desirable goal, although substantially more expensive.
- Highway travel, which has increased substantially over the last 20 years, is assumed to continue its long-term growth rate, not slow down as was assumed in the U.S. DOT report. While highway travel can fall during an economic slowdown, as happened in 2000, historic data shows that it returns to trend growth when the economy picks up again.
- Annual investment needs should be expressed in the actual inflation-adjusted dollars that Congress will have to provide in fiscal years 2004 through 2009, not in constant 1997 dollars as was done in the U.S. DOT report.

- The federal share of highway capital investment is assumed to remain at its traditional level of 43 percent of total highway investment¹.

An investment scenario based on these parameters would require an average annual capital investment in highways and bridges of \$107.8 billion per year from FY 2004 – FY 2009 and a federal investment averaging just over \$50 billion per year. Annual investment requirements for FY 2004 – FY 2009 and the federal share are shown in Figure 2 in the body of the appendix.

This analysis also examined the U.S. DOT report to determine the annual investment required to improve system performance by making all economically beneficial investments in highways and remove all bridge deficiencies. Based on data from the U.S. DOT report:

- Governments at all levels would have to invest an average of \$135.9 billion per year over the FY 2004 – FY 2009 period to make all economically beneficial improvements to highways and remove all bridge deficiencies.
- The federal share of this would average just under \$65.0 billion per year. Year-by-year needs are shown in Figure 3 in the body of the appendix.

While some may consider a \$50 billion federal highway program unrealistic in light of today's budget politics, this figure is based entirely on the U.S. DOT's 1999 conditions and performance report. And, as the discussion in the body of this appendix explains, it is a conservative target that is much more likely to understate than overstate the federal highway investment required for FY 2004 - FY 2009. The only question when TEA-21 comes due for reauthorization in 2003 is whether Congress will find the political will to do the right thing by authorizing

a federal highway investment of \$50 to \$65 billion per year for FY 2004 – FY 2009.

The remainder of this appendix presents a more detailed analysis of why a \$50 billion federal highway program is needed from FY 2004 to FY 2009.

¹ Since about 10 percent of federal highway investment each year goes for non-capital expenditures such as administration, environmental studies, transportation enhancements, etc., a 10-percent margin is added to assure that the federal share of capital expenditures is 43 percent.

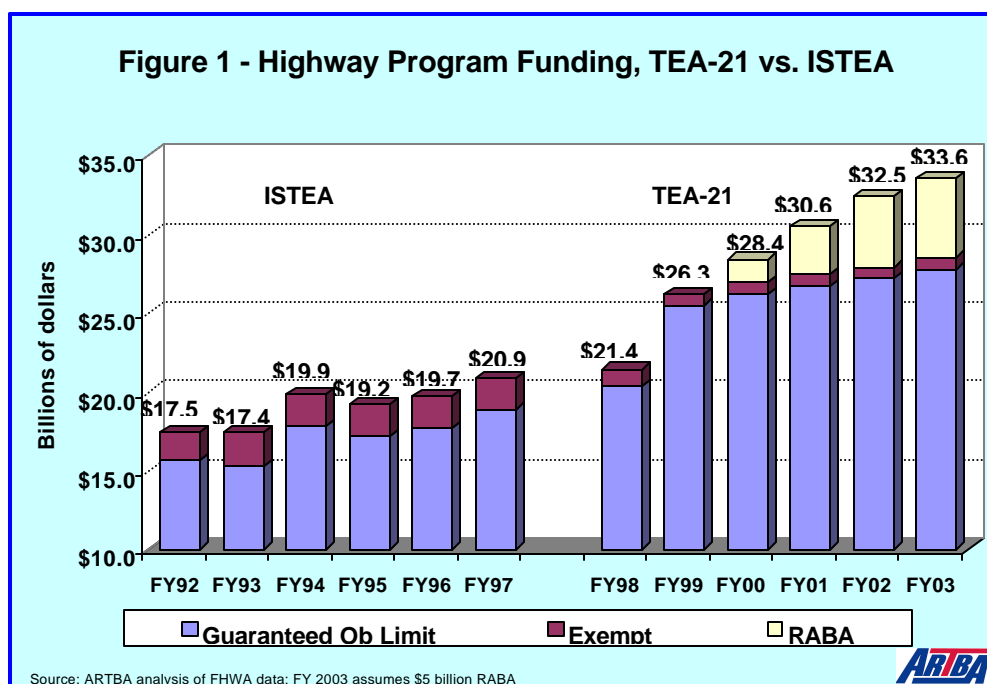
Introduction

When the Transportation Equity Act for the 21st Century (TEA-21) comes up for reauthorization in September 2003, one of the most important issues Congress will have to address in the new legislation is the appropriate level of federal highway investment for fiscal years (FY) 2004 through 2009.

Under TEA-21, federal highway investment will have averaged just under \$29 billion per year by the time the program expires. This represents a substantial increase over the funding provided under the Intermodal Surface Transportation Efficiency Act (ISTEA), as Figure 1 shows.

Investment has fallen far short of the amount needed to maintain current travel times and prevent congestion from getting worse, which are of equal, if not greater, importance to highway users.

There are a number of reasons why the increased federal investment under TEA-21 has accomplished little more than maintaining the current physical condition of the nation's highways and bridges. These include increases in wages and materials costs since TEA-21 was enacted, the rising cost of meeting environmental and other regulations, and the growing diversion of highway program funds to non-highway uses such as transit subsidies and trans-



Under TEA-21, however, investment by all government levels has barely been enough to maintain the physical condition of the nation's highways and bridges, according to the U.S. Department of Transportation's (U.S. DOT) 1999 report on the condition and performance of the nation's highways, bridges and transit systems².

portation enhancements—all of which cut into the amount of highway and bridge construction possible under TEA-21.

What level of federal highway investment should Congress provide during FY 2004 through FY 2009, the six-year period that will be

² U.S. Department of Transportation. *1999 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance Report to Congress*. Washington, DC; U.S.

GPO, May 2000. Exhibit 8-6, page 8-8. (Hereafter 1999 C&P Report).

covered, presumably, by TEA-21 reauthorization legislation?

This analysis's main finding is that a \$50 billion annual federal investment in the nation's highways and bridges from FY 2004 to FY 2009 is the bare minimum needed just to maintain the current performance and physical condition of the nation's highways and bridges. Any amount less than \$50 billion per year will continue to allow the system to deteriorate for highway users.

The analysis will also show that to improve the performance of our nation's network of highways and bridges—by making all cost-beneficial investments—would require a federal program of \$65 billion per year.

ARTBA's analysis is based primarily on the U.S. Department of Transportation's (U.S. DOT) *1999 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance Report to Congress*, which was issued in May, 2000, with supplemental data on inflation from the Bush administration's *FY 2002 Budget of the U.S. Government*.

The U.S. DOT's biennial report is the most comprehensive periodic survey of U.S. highway and bridge conditions and performance, and the basic source of data on highway and bridge investment needs.

Based on a physical survey of highway and bridge conditions and an economic model of investment options, the U.S. DOT report provides details on investment amounts needed during the next 20 years to achieve various performance goals, such as maintaining the current physical condition of the system or maintaining the current performance of the system in terms of travel times and congestion. A valuable sensitivity analysis in the report shows how investment needs would be affected by changing various assumptions, such as different projections of future traffic growth.

The major shortcomings of the U.S. DOT report include its emphasis on the investment

needed to maintain just the physical condition of the nation's highways and bridges rather than the amount needed to maintain the current performance of the system and its practice of reporting future investment needs in constant 1997 dollars. These shortcomings impair the usefulness of the U.S. DOT report to Members of Congress for determining the appropriate level of federal highway funding for FY 2004 – FY 2009. Both problems, however, are easily resolved with data from the report itself or from the U.S. government budget. This study addresses these shortcomings by developing an analysis of future investment needs based on the following parameters:

- The appropriate goal of TEA-21 reauthorization should be to provide a level of federal investment that will, at minimum, maintain the current performance of the nation's highways and bridges, in terms of travel times and congestion, as well as their current physical condition. The U.S. DOT report emphasizes the amount needed to maintain only the current physical condition of highways and bridges, which is far less than the amount needed to maintain current system performance.
- ARTBA's analysis assumes that highway travel will continue to grow at its historic rate. The U.S. DOT report assumes that the growth of highway travel will slow in the years ahead, an assumption the U.S. DOT admits has been wrong in prior reports in the series.
- ARTBA's analysis expresses investment needs in the actual inflation-adjusted dollars that Congress will have to provide in fiscal years 2004 through 2009, not in constant 1997 dollars as was done in the U.S. DOT report.

The remainder of the appendix documents how these parameters determine the appropriate federal highway investment for FY 2004 – FY 2009.

FEDERAL INVESTMENT TO MAINTAIN HIGHWAY PERFORMANCE AND CONDITIONS

Maintain system performance, not just physical conditions. For years, travel conditions on the nation's highways and bridges have deteriorated. Travel times have increased and congestion has consistently gotten worse for highway users in many parts of the country. Under TEA-21, the amount of federal investment in highways and bridges has just barely been sufficient to maintain the physical condition of our highways and bridges, which is far less than needs to be invested to maintain system performance in terms of travel times and congestion.

The goal of TEA-21 reauthorization should be a federal program that not only maintains physical conditions but travel conditions as well on our network of highways and bridges. Failing to maintain current system performance will result in longer travel times and greater congestion for highway users. Consequently, users will become increasingly frustrated and disappointed with the mobility and quality of life offered by our nation's highways and bridges.

Unfortunately, in terms of investment needed to maintain the system, the U.S. DOT report emphasizes only the amount needed to maintain the physical condition of the nation's highways and bridges—an annual capital investment of \$56.6 billion in 1997 dollars by all government levels over the next 20 years.

The report says achieving this investment level would have the following impact:

- Pavements: “Under this investment strategy, existing and accruing system deficiencies would be selectively corrected; some highway sections would improve, some would deteriorate, but overall, average pavement condition in 2017 would match that observed in 1997³.”
- Bridges: “The bridge investment backlog would be maintained at its current level. Under this scenario, existing deficiencies

and newly accruing deficiencies would be selectively corrected, to minimize the investment required to maintain the same backlog of deficient bridges in 2018 that exists in 1998.... It should be noted that the maintain backlog scenario focuses on deficient bridges, rather than on average bridge conditions. Average bridge conditions would not necessarily be maintained under this scenario⁴.”

A \$56.6 billion annual investment level in 1997 dollars, then, would maintain current average pavement conditions and the current backlog of deficient bridges for the next 20 years, while potentially allowing average bridge conditions to deteriorate.

But, according to the U.S. DOT report, this investment level would allow travel conditions to worsen. With an annual investment of no more than \$56.6 billion per year in 1997 dollars for the next 20 years, travel times will continually deteriorate and will be 2 percent worse in 2017 than today. The amount of travel under congested and severely congested conditions will continue to rise.

How much investment would be required to prevent current travel conditions from worsening? According to the U.S. DOT report, it would take \$19.7 billion more per year in 1997 dollars by all levels of government to maintain current system performance than it would take just to maintain the current physical condition of the nation's highways and bridges⁵.

Why the additional amount? Mainly because the investment needed to maintain physical conditions does not provide enough new capacity to accommodate the expected growth of highway travel. So at the \$56.6 billion annual investment level highlighted in the U.S. DOT report, congestion would get worse and travel times would suffer.

³ 1999 C&P Report, page 7-17.

⁴ 1999 C&P Report, page 7-23.

⁵ 1999 C&P Report, Exhibit 9-4 on page 9-7.

To prevent further deterioration of the nation's highway system for highway users, the goal of TEA-21 reauthorization should be at minimum to maintain current system performance in terms of travel times and congestion as well as current physical conditions. The investment requirements in this study are based on achieving that minimal goal.

Assume historic travel growth, not a slowdown. Future investment needs depend on the amount of travel that will occur on our nation's highways and bridges. The more travel, the faster highways and bridges wear out and the more investment will be required to keep them up.

The investment requirement projections in the U.S. DOT report are all based on an assumption that travel will grow more slowly in the future than it has in the past. During the past 20 years, the number of vehicle miles traveled (VMT) on highways and bridges rose at an average annual rate of 2.84 percent per year. The U.S. DOT report assumes that travel will grow only 2.16 percent per year for the next 20 years⁶.

This figure is not pulled out of a hat. It is an average of forecasts from state DOTs, which are based on the Federal Highway Administration's Highway Economic Requirements System (HERS) model. The HERS model assumes that as travel conditions worsen and user costs of highway travel increase, highway travel will slow as users choose other means of transportation. Investing just enough to maintain current physical conditions thus leads inevitably to a forecast of a slowdown in highway travel. This becomes a circular self-fulfilling prophecy, since less travel growth means less investment will be required to maintain conditions!

It should be noted that state DOT travel projections are also used to determine whether state transportation improvement plans are in conformity with Clean Air Act requirements. One way to show progress in improving air quality is to project more transit ridership and less auto travel. So "low-balling" forecasts of highway travel kills two birds with one stone.

Will growth of highway travel slow as the U.S. DOT report suggests? We don't know what the future will bring, of course, until we get there. But the report itself calls the assumption into question:

"The accuracy of these [investment requirement] projections depends in large part on the underlying assumptions used in the analysis. For example, the highway travel growth forecasts included in previous versions of this report have traditionally been understated. If the highway VMT projections included in this chapter turn out to be too low, then the investment requirements may be understated⁷."

The analysis in ARTBA's study assumes highway travel will continue to grow at its historical rate, especially since past slowdown projections have not materialized. While highway travel can fall during an economic slowdown, as happened in 2000, historic data shows that it returns to trend growth when the economy picks up again.

If highway travel continues to grow at its historical rate of 2.84 percent per year, the cost of maintaining the current physical condition of the nation's highways and bridges would increase by \$8.8 billion per year in 1997 dollars, according to the U.S. DOT report⁸.

Adjust investment requirements for expected inflation. It is not very helpful to report investment requirements for the next 20 years in constant 1997 dollars, as the U.S. DOT report does. For Congress to make intelligent funding decisions during TEA-21 reauthorization, investment requirements must be expressed in terms of the 2004 – 2009 dollars that Congress will have to authorize for the federal highway program for those years.

The amount of construction and repair work that a dollar bought in 1997 will cost more in 2004 - 2009 because of inflation. How much more? We won't know for sure until 2004 - 2009, but we can make a reasonable estimate by using the inflation projections in the Bush ad-

⁶ 1999 C&P Report, page 9-5.

⁷ 1999 C&P Report, page 7-1.

⁸ 1999 C&P Report, Exhibit 10-1 on page 10-3.

Table 1 - Calculation of Federal Highway Investment Required During FY 2004 - FY 2009
(in billions of dollars)

	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
I. Cost to Maintain Performance and Physical Conditions of Highways and Bridges						
Start with:						
U.S. DOT Cost to Maintain Physical Conditions ¹	56.6	56.6	56.6	56.6	56.6	56.6
Add:						
Additional Cost to Maintain Performance ¹	19.7	19.7	19.7	19.7	19.7	19.7
Cost of Assuming Historic Travel Growth Continues ¹	8.8	8.8	8.8	8.8	8.8	8.8
Total (in 1997 dollars)	85.1	85.1	85.1	85.1	85.1	85.1
Adjust for Expected Inflation:						
Inflation Index (1997 = 1) ²	1.19	1.22	1.25	1.28	1.31	1.35
Required Investment by All Government Levels	\$101.2	\$103.8	\$106.4	\$109.0	\$111.8	\$114.6
Required Federal Program	\$47.9	\$49.1	\$50.3	\$51.6	\$52.9	\$54.2
II. Cost to Improve Highways and Bridges						
Start with:						
U.S. DOT Cost to Improve Conditions ¹	94.0	94.0	94.0	94.0	94.0	94.0
Add:						
Cost of Assuming Historic Travel Growth Continues ¹	13.3	13.3	13.3	13.3	13.3	13.3
Total (in 1997 dollars)	107.3	107.3	107.3	107.3	107.3	107.3
Adjust for Expected Inflation:						
Inflation Index (1997 = 1) ²	1.19	1.22	1.25	1.28	1.31	1.35
Required Investment by All Government Levels	\$127.7	\$130.9	\$134.1	\$137.5	\$140.9	\$144.4
Required Federal Program	\$60.4	\$61.9	\$63.4	\$65.0	\$66.7	\$68.3
¹ From the 1999 Conditions and Performance Report, in 1997 dollars ² Calculated from the FY 2002 Budget of the U.S. Government and actual inflation for 1998 -2000						



ministration's FY 2002 budget, which was released in April 2001⁹. With prices expected to rise about 2.5 percent each year between 1997 and 2009, the cost of highway and bridge construction and repair work will also increase each year. The federal highway program in 2004 – 2009 will have to reflect those increased costs.

Total investment needs, 2004–2009. Based on the parameters discussed above and inflation projections in the FY 2002 budget¹⁰, it takes no more than simple arithmetic to calculate that it would take an average investment of \$107.8 billion dollars per year by all levels of government from 2004–2009 to maintain the current performance and physical conditions of our nation's highways and bridges.

Part 1 of Table 1 shows the arithmetic used to compute the investment required each year to maintain the performance and conditions on the nation's network of highways and bridges. Figure 2 illustrates the annual investment requirements for FY 2004 – FY 2009.

Federal share. Traditionally, the federal share of capital investment in the nation's highways and bridges has varied between 40 and 45 percent¹¹. The federal share generally goes up after enactment of an increase in federal highway funding and then gradually declines as states ramp up their own programs. This analysis assumes the federal share of capital investment from 2004-2009 will be 43 percent.

To compute the total amount of federal investment needed, the analysis recognizes that

⁹ Budget of the U.S. Government, FY 2002, Table 8-16, page 239. The FY 2002 budget forecasts that prices will rise about 2.5 percent per year through 2009.

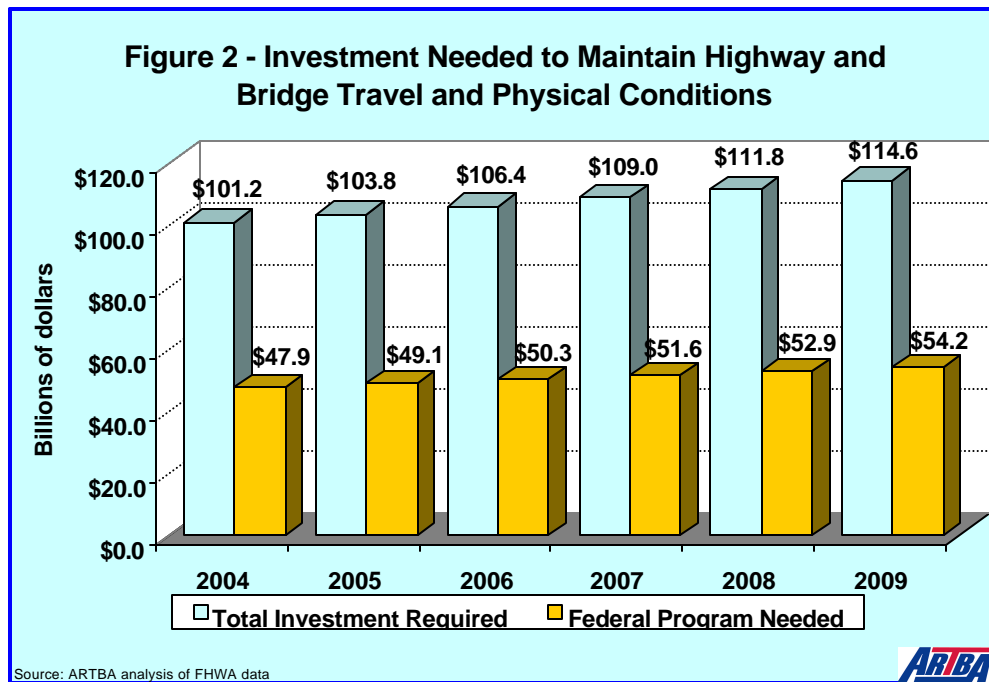
¹⁰ And actual inflation rates for 1998 – 2000.

¹¹ 1999 C&P Report, page 6-14 and Federal Highway Administration, Highway Statistics, annual reports, table HF-10.

about 9 to 10 percent of federal highway funding each year goes for non-capital investment in such activities as program administration, research, training, environmental mitigation and similar activities, so a margin has to be added for those purposes.

How large a federal highway program will be required between FY 2004 and FY 2009 to maintain current system performance and physical conditions?

If we assume an average federal share of 43 percent, and add a 10 percent margin for administrative and other expenses, a federal highway program averaging just over \$50 billion per year for FY 2004 – FY 2009 will be needed to maintain the current performance and physical condition of America’s highways and bridges. The target federal program on an annual basis is shown in Figure 2.



Federal Investment to Improve Highways and Bridges

In addition to reporting the minimum annual investment required to maintain current performance and physical conditions, the U.S. DOT report also includes an estimate of how much it would cost to improve the system by making all economically beneficial investments in the nation’s highways and bridges.

Under this approach, all highway projects would be undertaken where the benefits to highway users exceed the cost of the project and

the backlog of bridge deficiencies would be eliminated.

The U.S. DOT report’s figure of \$94.0 billion per year in 1997 dollars¹² to improve the system, however, suffers from two shortcomings similar to those that were addressed earlier—it assumes a slowdown in travel growth and is expressed in 1997 rather than 2004–2009 dollars.

¹² 1999 C&P Report, exhibit 7-2 on page 7-29.

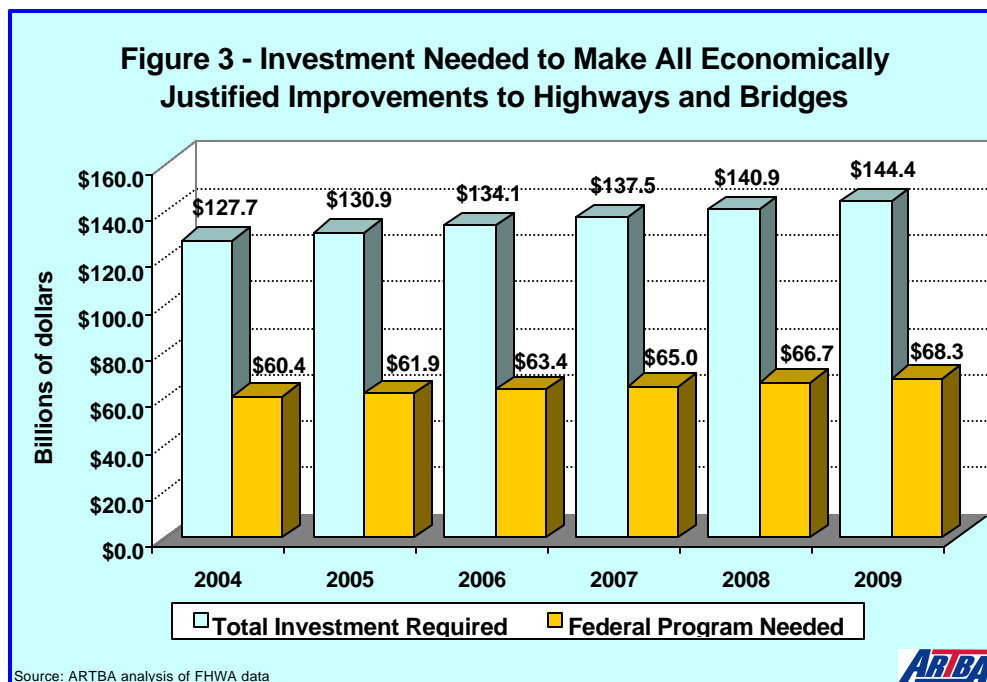
For this analysis, the following adjustments were made:

If highway travel grows at its historic rate of 2.84 percent per year rather than the 2.16 percent assumed by U.S. DOT, that would raise the amount needed to make all economically justified highway and bridge investments by \$13.3 billion per year, according to the U.S. DOT report.

Adjusting for inflation, as was done earlier, means that governments at all levels would have

to invest \$135.9 billion per year over the FY 2004 – FY 2009 period to make all economically beneficial highway investments and remove all bridge deficiencies. The arithmetic is shown in Part II of Table 1 and annual figures for FY 2004 through FY 2009 are shown in Figure 3.

The federal share of this would average just under \$65.0 billion per year, assuming a federal share of 43 percent and adding a 10 percent margin for administrative, research, training and other expenses.



Caveats

The \$50 billion annual federal investment to maintain the current performance and physical conditions of the nation's highways and bridges, and the \$65 billion to fund all economically beneficial improvements are forecasts of investment needs and, like all forecasts, involve uncertainties.

For various reasons, it is more likely that these investment need forecasts will prove to be

understated rather than overstated. These reasons include:

- Environmental and regulatory requirements have been raising highway and bridge construction costs for many years. This has eroded the amount of actual construction work that can be accomplished for any given investment level. For example, a recent requirement for cleaner diesel engines has

added as much as \$45,000 to the cost of asphalt plants for highway construction contractors. A requirement that quarries be restored to their original contour has raised the cost of aggregates used in highway construction. These requirements improve the environment, but they also raise the cost of building and repairing highways and bridges above and beyond general inflation. This may be one reason why TEA-21 has resulted in less growth of construction work than anticipated. If the trend continues after TEA-21, a \$50 billion annual federal highway program may not be sufficient to maintain the current performance of the highway system.

- State and local governments would have to continue to fund their historic 55-60 percent share of capital investment. Under TEA-21, some states appear to have cut their own programs in response to the increased federal funding. For example, between 1997 (the last year of ISTEA) and 1999 (the 2nd year of TEA-21) state and local capital outlays for highways and bridges fell by more than 10 percent in fifteen states. In nine of those states, the decline was 40 percent or more. This may turn around in the next few

years, but if it continues after TEA-21, the goal of maintaining travel times as well as pavement and bridge conditions in some states will not be achieved. That is why ARTBA has recommended that reauthorization legislation include a maintenance-of-effort provision.

- The HERS model used by the Federal Highway Administration to compute investment needs has two shortcomings that understate investment needs. First, the model cannot determine when or where new roads are needed. It can only evaluate investments in existing roads. New roads, even those with high benefit to cost ratios, thus will not be identified in the investment totals. Second, the model ignores improvements on roads where widening existing lanes or adding new lanes would be infeasible because of space limitations, even if the model identifies such improvements as having high benefit to cost ratios. Most such improvements would be in congested urban areas. If the cost of improving these corridors were included in the investment requirements computed for this study, the figures could increase by as much as 38 percent according to the U.S. DOT report.

Conclusion

ARTBA's analysis of the U.S. DOT's 1999 conditions and performance report leads unequivocally to the conclusion that a federal investment of \$50 billion per year from 2004-2009 will be required, at minimum, just to maintain current performance and physical conditions on the nation's highways and bridges. Anything less than a \$50 billion federal highway program would lead to increasing frustration and disappointment with the mobility and quality of life offered by our nation's system of highways and bridges. To improve the system by making all economically beneficial investments would require a federal highway program of almost \$65 billion per year.

While some may consider a \$50 billion federal highway program unrealistic in light of today's budget politics, this figure is based entirely on the U.S. DOT's 1999 conditions and performance report. And, as this report shows, it is a conservative target that is much more likely to understate than overstate the federal highway investment required for FY 2004 - FY 2009. The only question when TEA-21 comes due for reauthorization two years from now is whether Congress will find the political will to do the right thing by authorizing a federal highway investment of \$50 to \$65 billion per year for FY 2004 - FY 2009.