



Asset management: remedy for addressing the fiscal challenges facing highway infrastructure

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Abstract

In recent years, increasing claims have been advanced for asset management as a promising new approach to infrastructure management. If these claims are seen in the light of past management fads, such as zero-based-budgeting (ZBB), management-by-objectives (MBO), total quality management (TQM), and business process reengineering (BPR), asset management may be considered the latest in a long line of management fads being marketed by consultants to transportation agency managers. However, asset management can be an effective response to the fiscal challenges confronting the United States' highway infrastructure.

This paper explores asset management in light of recent developments in the funding, condition, documentation, and management of the US highway infrastructure. The paper begins with a discussion of capital biases associated with traditional US federal highway funding programs. It then describes the advent of innovative financing approaches that have evolved in response to the inability of the Federal Highway Trust Fund to meet burgeoning highway renewal and replacement needs, caused in part by widespread deferred maintenance of the highway system. The paper suggests that public sources of funding for the highway system will not be adequate to renovate or replace current highways and build new capacity. Closing the expected shortfall in public highway funding will require sustained infusions of private sector funding. However, the financing of highways through public-private partnerships will require state and local transportation agencies to radically change the ways in which the highway infrastructure is managed.

Within the context of gradual changes in highway management and financing, the paper suggests a critical role for asset management – in demonstrating prudent stewardship of highway infrastructure and facilitating private sector confidence in highway investments. The paper examines the implications for innovative highway financing resulting from recent developments in asset management:

- further devolution of highway program and funding responsibilities to state and local levels of government;
- developments in asset management processes and practices; and
- the infrastructure reporting requirements recently developed by the Governmental Accounting Standards Board (GASB).

The infrastructure reporting requirements of GASB's Statement No. 34 are intended to increase accountability for publicly owned infrastructure and promote improved management of long-lasting capital assets. GASB 34 also provides a basis for enabling public agencies to finance implementation of asset management techniques and renewal of infrastructure assets through securitization. Covenants associated with securitized highway bonds would provide the fiscal discipline needed to ensure that responsible agencies abide by the terms of the bond agreements – thereby assuring preventive asset maintenance and freeing up resources for debt service payments. Shadow tolling provides a useful mechanism for generating a positive revenue stream to support securitized highway bonds.

The paper concludes that asset management is a proven and essential process for helping the US rebuild and expand its highway infrastructure. © 2002 Elsevier Science Ltd. All rights reserved.

1. Introduction

In recent years, increasing claims have been advanced for asset management as a promising new approach to infrastructure management (McNeil et al., 2000). If

these claims are seen in the light of past management fads, such as zero-based-budgeting (ZBB), management-by-objectives (MBO), total quality management (TQM), and business process reengineering (BPR), asset management may be considered the latest in a long line of management fads being marketed by consultants to transportation agency managers. However, asset management can be an effective response to the fiscal challenges confronting the US highway infrastructure.

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This paper explores these issues in light of recent developments in the funding, condition, documentation, and management of the US national highway infrastructure. The paper suggests:

- Public sources of funding for the US highway system will not be adequate to renovate or replace current highways, and build new capacity.
- Closing the expected shortfall in public highway funding will require sustained infusions of private sector funding.
- Financing of highways through public–private partnerships will require state and local transportation agencies to radically change the ways in which highway infrastructure is managed.
- Asset management has a critical role in demonstrating prudent stewardship of highway infrastructure and facilitating private sector confidence in highway investments.

The paper concludes that asset management is a proven and essential process for helping the US's rebuild and expand its highway infrastructure.

2. Background

Since its inception in the mid-1950s, the Eisenhower System of Interstate and Defense Highways has vastly exceeded the expectations of its creators in promoting enhanced mobility, population decentralization, and economic stimulus nationwide. However, a number of flaws in the system has produced certain unintended consequences. Disregard for the environmental and community impacts of massive highway development led to the disruption of many environmentally sensitive areas and urban neighborhoods, particularly in less affluent communities. The absence of federal funding for highway maintenance created an inherent bias towards capital projects, with state and local transportation agencies limiting maintenance efforts to conserve local resources. In addition, a lack of accountability for highway infrastructure management and preservation resulted in state and local decision makers perceiving highway infrastructure as merely a “sunk cost”.

Environmental and social justice issues are now considered whenever highways are planned, as a result of subsequent legislation and regulations. However, the problems of deferred maintenance and lack of highway program accountability persist. Most highway program stakeholders do not acknowledge these deficiencies, perhaps for fear environmental and social activists may use these issues to undermine efforts to promote further investments in highway infrastructure. As a result, the US highway system has prematurely deteriorated at a time economic growth has spurred public demands for additional highway and bridge capacity.

A major challenge for highway officials is finding adequate funding to rehabilitate the US highway system, add new lanes, and provide for new highways. Despite the past decade's growth in public funding of highways,² available public resources are not expected to be adequate to fully address these needs. Given the persistence of these issues and the potential consequences for the economic well being of the US, this paper explores three related issues:

1. The need for private sector financial resources to leverage available public funding to rehabilitate and create needed highway infrastructure.
2. The need for public sector transportation agencies to demonstrate prudent stewardship of their highway assets over the long-term before the private sector commits funding for highway infrastructure.
3. The ability of asset management to provide public agencies with proven ways to demonstrate prudent stewardship of infrastructure assets when applied throughout the highway development and preservation life cycle.

2.1. Capital program bias of traditional highway funding

For over 40 years, the US federal highway program focused on infrastructure development and construction, while largely disregarding long-term maintenance and preservation. The Federal-Aid Highway Act of 1956 set the pattern for highway financing by establishing a “pay-as-you-go” plan that placed receipts from federal excise taxes on fuel, tires, and trucks into a Federal Highway Trust Fund to pay for the Interstate System of Highways. The resulting funds were paid back to the states as eligible highway projects were completed. In subsequent reauthorizations of the Act, Highway Trust Fund moneys were allocated back to the contributing states on the basis of formulas that took into consideration the relative population levels of the state and other transportation and demographic data (including lane-miles and vehicle-miles of travel).

Federal funds were restricted to pay for most of the capital costs associated with designing and constructing Interstate highways and other portions of the National Highway System. State and local gas taxes, motor vehicle registration fees, and driver license fees were used to match available federal funds for new construction, and to pay for the costs of operating and maintaining the resulting highway infrastructure.

² Spurred by Congressional funding authorizations of the National Transportation Trust Fund under the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) – signed December 18, 1991 as PL 102-240; and the Transportation Equity Act for the 21st Century (TEA-21) – signed June 9, 1998 as PL 105-178.

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