



June 4, 2008

Mr. Vincent Valdes
Associate Administrator for Research, Demonstration, and Innovation
Federal Transit Administration
United States Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Dear Mr. Valdes:

I am pleased to transmit this letter report of the Transportation Research Board's Transit Research Analysis Committee (TRAC). This is the fifth such report since the committee was established in early 2004 to advise the Federal Transit Administration (FTA) on the federal role in transit research and development (R&D) and on processes in place to promote this role.¹ Our membership includes general managers of urban and rural transit properties, as well as U.S. and international experts in transit research and technology drawn from the private sector and academia (see enclosure).

As we have in earlier reports, we emphasize the leading role that FTA should play in conducting and championing transit R&D. From its national vantage point, FTA can frame and support research that furthers transit's role in addressing many national concerns and interests. FTA's R&D goals are to (a) increase transit ridership, (b) improve transit safety and emergency preparedness, (c) improve capital investment and operating efficiencies, (d) protect the environment and promote energy independence, and (e) provide transit research leadership. Underlying these goals is an understanding that efficient and effective public transit confers benefits that are national in scope. Among them are reductions in urban traffic congestion; improvements in mobility; and reductions in energy use, local air pollution, and greenhouse gas emissions.

In previous letter reports we have advised FTA on the content of its R&D goals and urged strategic planning to ensure that its goals and resources are well aligned. Like earlier reports, this report is focused on helping FTA define and implement its R&D role. Accordingly, we do not examine specific research needs, critique individual projects, or recommend topics for R&D. We believe that FTA should have the planning and consultation capacity to make such determinations. In this regard, we are disappointed in FTA's progress in developing that capacity. In the 3 years since FTA issued its first strategic R&D plan, we observe a planning process that is proceeding slowly while exerting limited influence on decision making both within FTA and elsewhere in the executive and legislative branches. As the federal transit program undergoes reauthorization in the year ahead, many important policy decisions will be made that will have large and lasting effects on FTA's R&D role. Hence, if the tone of this report is at times insistent, it is because we are growing impatient as we see an emerging window of opportunity to elevate transit R&D within the federal transportation program.

We understand that FTA faces serious challenges in furthering its R&D goals, including an eroding R&D budget and constraints on its ability to program the limited funds that are provided for research. We point to and are highly critical of these constraints, including the proliferation of earmarking. Nevertheless, we continue to emphasize the importance of FTA's engaging in strategic R&D planning. We believe that a carefully developed and articulated strategic plan is essential for FTA to make a convincing case for its R&D role, to demonstrate how it will use its discretionary resources effectively, and to explain how R&D can contribute to the betterment of public transit and to furthering key national interests cited above.

The central messages of this report are distilled below. We highlight these messages because we wish to see marked progress in addressing them as we confer with FTA in the months ahead in anticipation of our next report.

¹ Electronic versions of TRAC letter reports can be found at <http://www.trb.org/TRB/publications/PolicyStudyLetterReports.asp>.

1. FTA must do more than express a desire to be a national leader in transit research. It must define how it intends to lead and how it will follow through with these intentions. By “a national leader,” we mean that FTA should be at the forefront of a broad-based R&D response to advance its R&D goals. It must envision and define a broader role for itself—one that transcends the limited and constrained resources it has available to sponsor individual research projects. Transit research is carried out by a number of entities besides FTA, including state departments of transportation, transit agencies, universities, and industry. For each of its R&D goals, FTA should articulate how it intends to lead an effective R&D response that not only brings to bear its own R&D resources and expertise but also draws on and invites vital contributions from others.

2. Because of legislative earmarking, federal transit R&D funds are routinely used for activities that have little connection to research or to the goals of the federal transit program. These uses can misrepresent the true extent of the national R&D program while consuming financial, management, and planning capacity. Although FTA has no direct control over earmarking, it can take actions to discourage its proliferation and encourage useful outcomes. FTA should communicate the extent and consequences of earmarking in all reporting of the federal transit R&D program’s status, progress, and plans. It can inform recipients of its R&D goals, set expectations for high-quality and relevant research, and reward those who meet these expectations by promoting their work and engaging in future collaboration.

3. FTA’s strategic R&D plan should be explicit in delineating how research needs will be identified and addressed to further its R&D goals. It should explain the strategies that will be pursued to identify and prioritize research needs for each goal—for example, whether and how special studies will be undertaken, databases examined, and stakeholders consulted. Because resources are limited, the plan should identify where and how the agency can make the greatest contribution to furthering each of its R&D goals. For example, it should explain when its focus will be on sponsoring and conducting research and when it will be on coordinating and disseminating the research

of others, including R&D from private industry and abroad. The specific strategies and approaches that will be pursued to fulfill such roles should be well articulated in the plan.

BACKGROUND

TRAC typically meets twice per year. At each meeting we receive briefings from and hold discussions with officials and staff of the Office of Research, Demonstration, and Innovation (TRI). We met most recently in December 2007. In setting the agenda for the meeting, TRI staff asked that we examine and discuss the federal role in transit R&D in anticipation of a letter report to inform program reauthorization. They briefed us on the major components of the federal transit research program, including funding levels, statutory requirements, and relevance to FTA's strategic goals for R&D. They also updated us on the R&D planning process and provided a draft of the FY 2008–FY 2012 multiyear program plan that links federal transit program goals with specific research programs and projects in the federal R&D portfolio. In reviewing the multiyear plan and R&D portfolio, TRI staff drew attention to the large number of projects that are not aligned with the program goals. They observed that many of these unaligned projects are earmarked in legislation. They expressed concern that earmarking is reducing the funds available for goal-oriented R&D and that administering earmarked projects is taxing the agency's research management capacity.

Anticipating that earmarking would be an important topic of our meeting, we invited participation by University of Virginia Professor James Savage, an expert in research earmarking in the federal government. In his presentation, he described the extent and effects of earmarking in federal research programs generally and proposed ways to moderate them. We thank Professor Savage for joining the meeting. The information that he presented, as well as our discussions with TRI staff, influenced the findings and recommendations in this report.

The advice in this report stems not merely from one meeting, but from 4 years of reviewing the federal transit R&D program. During this time, we have learned much about the functioning of the program, how it is guided and funded, and the constraints faced by FTA research managers, both in administering projects on a daily basis and in carrying out longer-range R&D planning. Even as we become more cognizant of these constraints, we remain confident of the continued relevance and validity of our earlier advice. Indeed, much of the advice in this report builds on the messages and themes of our previous letter reports. We continue to emphasize the importance of FTA's exercising national leadership in transit R&D, taking positive actions to overcome the constraints on its R&D resources, and engaging in long-range R&D planning to explain and guide its leadership role.

THE CASE FOR FTA LEADERSHIP IN TRANSIT R&D

In our first letter report issued in June 2005, we urged FTA to exert national leadership in transit R&D and to explain this leadership role in a strategic plan. Accordingly, FTA amended its R&D plan by adding the goal "to provide national transit leadership" to the other stated program goals to increase transit ridership, improve transit safety and security, improve capital investment and operating efficiencies, and protect the environment while promoting energy independence. This response was an important first step. However, our view is that national R&D leadership is not an outcome in itself but rather the basic posture that FTA should take to ensure that R&D furthers all of the goals of the program. That is, for each of its program goals, FTA should ensure that key R&D needs are identified, that needed research is being performed and performed well, and that important results of research are being disseminated and applied. FTA must define and plan a course for furthering each of the R&D goals—in essence, it must determine how it can best ensure that desired progress is being made.

FTA can contribute in a number of ways to the advancement of its program goals through R&D. Yet, FTA must recognize where and how it can have the greatest impact, especially given its limited R&D resources. FTA may be in a good position to help in

identifying and prioritizing research needs. It may fulfill this role by analyzing data, conducting special studies, reviewing the literature, and consulting and working with a wide array of stakeholders.² Alternatively, where key research needs are well known, FTA may be the logical entity to conduct the research, encourage others to do so, coordinate the results of research, and aid in dissemination. In all cases, FTA must decide where and how it can make the greatest contribution.

As a practical matter, FTA cannot fulfill all R&D roles needed to further its program goals. Given its limited resources, it cannot, for example, be the primary elicitor of research needs while also being the primary sponsor, coordinator, and disseminator of R&D. Accordingly, the agency must carefully consider how it can use its resources in the most productive manner, commensurate with its R&D goals. To illustrate, the volunteer committees of the American Public Transportation Association (APTA) develop scores of standards for the transit industry in areas ranging from operations, safety procedures, and maintenance to procurement and the design and implementation of intelligent transportation systems. FTA currently provides APTA with funds from its R&D accounts to defray the cost of developing these industry standards, since they are vital for safe, efficient, and secure operations. Research should help inform such standards development. A strategic plan could therefore define strategies for using some of these funds to identify and perform the needed R&D.

Targeted R&D in support of APTA standards development is one example of how FTA can leverage and integrate its R&D resources into a national effort to further its R&D goals. APTA, like FTA, has a national-level perspective on the R&D needs of the transit industry. It is therefore essential that FTA consult and work with APTA and its transit industry members in developing strategies to advance the goals of the federal transit program. APTA's Research and Technology Committee develops a strategic plan outlining the research needs of the transit industry. It would make sense, therefore, for

² TRAC's fourth letter report describes specific means for identifying research needs.

the two organizations to consult when developing their respective plans and to seek opportunities for collaboration. At the same time, we recognize that the two national organizations differ in their missions and priorities. It would be impractical to expect APTA or any other transit research organization to defer to FTA in setting R&D priorities, but there may be instances in which slight modifications to research activities can achieve multiple goals. While we urge FTA to exercise leadership with respect to its R&D goals, we recognize that APTA and other organizations must take a similar lead with respect to their own goals and interests.

PRESERVING FTA'S ABILITY TO CONDUCT AND PROGRAM R&D

Even as we urge FTA to take a leadership role in transit R&D, we recognize that the agency faces many practical challenges in exercising it. Chief among them are the related trends of increased earmarking and designation of national transit research funds and a dwindling base of discretionary resources for FTA to sponsor, conduct, and coordinate research.

In previous letter reports, we have expressed concern over the large share of federal transit R&D funds earmarked and designated for specific projects and programs. This concern persists as we observe the continued withdrawal of FTA's discretionary funds for R&D. In FY 2007, more than 70 percent of the R&D budget was earmarked or designated for specific programs. Among the earmarks in the national research programs are \$3 million for a transit security training facility, \$2 million for trauma care research, and \$2.7 million for an advanced lead acid battery consortium.³

These projects may be worthwhile, but they have little relation to public transit R&D. TRI officials explained to us that the management of such earmarked projects consumes inordinate staff time and hinders the agency's ability to attract, motivate, and retain research personnel. TRI research managers must administer large numbers of earmarked projects, many of which are outside their fields of expertise and concern

³ FTA Multiyear Research Program Plan (FY 2008–FY 2012), October 2007 draft.

topics with little, if any, relevance to public transportation. Consequently, the program provides fewer opportunities for FTA personnel to develop and utilize their research expertise.

The proliferation of earmarking has coincided with a long-term decline in the funding of FTA's R&D activities and an increase in FTA's program responsibilities. In 1982, the national transit research program account exceeded \$60 million,⁴ equivalent to \$115 million in 2007 after adjusting for inflation. At the time, FTA could use nearly all of these funds in a discretionary manner. In comparison, discretionary funds for R&D totaled about \$30 million in FY 2007. But even this differential is misleading. In 1982, FTA administered 14 programs. In 2007, it administered 53.⁵ The expansion of programs has led to more demands on FTA, while national research program funds are one of the few means available to FTA officials to meet these demands. Because there are few statutory restrictions on the use of these funds, more of FTA's R&D discretionary funds are being used by the agency for general programmatic and planning activities at the expense of R&D.

TRI administers about half of the discretionary research funds available to FTA. The other half is divided among other FTA offices, such as the Offices of Planning and Environment, Budget and Policy, and Program Management. Some of the funded projects concern topics that are clearly research oriented, such as developing the biennial *Transit Conditions and Performance Report*, gathering transit safety and security statistics, and studying the effects of transit on local air quality. Other funded activities, however, appear to be outside the realm of research, such as grants for state transportation planning, funding for the reporting of worker drug and alcohol testing results, and grants for private transportation providers to join in regional transportation planning processes. A review of the titles and descriptions of projects in the portfolio funded through the national transit research account reveals many expenditures that

⁴ Transportation Research Board. 1987. *Special Report 213: Research for Public Transit: New Directions*. National Research Council, Washington, D.C.

⁵ Information obtained from FTA presentations during the December 2007 TRAC meeting (M. Welbes slides).

are potentially valuable and meet statutory requirements but that are not R&D, such as funding for workforce development, public education, capital investments, and program planning.

On October 29, 2004, the Transportation Research Board convened a special workshop to examine the earmarking of R&D in all modal agencies of the U.S. Department of Transportation.⁶ In our opinion, such efforts to document and communicate the incidence and impacts of this phenomenon can be an important step toward curbing its deleterious effects on the research enterprise. FTA has been making important strides in the accurate reporting of how funds from the national transit research accounts are used, distinguishing among activities that are aligned with federal transit program goals and those that are not. We believe that such transparent reporting is essential in preserving FTA's discretionary R&D, and we urge FTA to continue developing and publicizing this information. Such information can also be helpful in identifying earmarked projects that have research merit and that can, if appropriately adapted, be modified to align with the agency's R&D goals.

Although we are concerned about earmarking in general, our underlying interest is in ensuring that sufficient R&D resources remain available to further FTA's R&D goals. Ultimately, the preservation of these resources may require a more precise and circumscribed statutory definition of what constitutes research, development, and innovation. Even if the result of such a definition is a smaller R&D account overall, we believe that such an outcome is preferable to one in which R&D is increasingly squeezed out by other resource demands.

STRATEGIC R&D PLANNING TO GUIDE NATIONAL R&D LEADERSHIP

FTA's current strategic R&D plan was issued in September 2005. It is based on the five broad goals of the federal transit program cited earlier: (a) increasing transit ridership, (b) improving capital and operating efficiencies, (c) improving safety and emergency

preparedness, (d) protecting the environment and promoting energy independence, and (e) providing national transit research leadership. As FTA was developing the plan, we urged it to articulate these goals more precisely, particularly the goal of increasing transit ridership. We observed that the goal of increasing ridership is often linked to other societal goals such as congestion relief, access to jobs and housing, and air quality improvements. We recommended a more precise statement of this goal and are disappointed that none was offered. In general, however, we have commented positively on the incipient planning process, convinced that it demonstrated FTA's desire to exercise a prominent role in transit R&D. Three years after our first report on the planning process, how the process has progressed and whether it has had a meaningful effect on decision making are questions meriting consideration.

Since issuing its strategic R&D plan in September 2005,⁷ FTA has produced annual multiyear program plans (the most recent for FY 2008–FY 2012) that link ongoing and planned R&D activities to the goals set forth in the 2005 plan. We believe that the annual multiyear plans can be helpful in decision making by revealing how FTA's own R&D portfolio is balanced with respect to broader program goals. Moreover, by listing FTA research priorities, the annual plans could channel some of the earmarks in annual appropriations legislation to these priority areas. As mentioned earlier, FTA has made important strides in using these plans to characterize how discretionary, earmarked, and designated research projects align with the program goals articulated in the 2005 plan.

The uncertainty that surrounds FTA's R&D budget undoubtedly hampers its ability to execute its multiyear R&D plans. In light of this uncertainty, we commend FTA for maintaining its commitment to strategic planning. At the same time, we are concerned that the planning process focuses too narrowly on FTA's own R&D activities and portfolio. In this report, we call on FTA to exercise its R&D leadership role to further its program goals. In our view, the strategic planning process should be construed more

⁶ Brach, A., and M. Wachs. 2005. Earmarking in the U.S. Department of Transportation Research Programs. *Transportation Research Part A: Policy and Practice*, Vol. 39, No. 6, pp. 501–521.

⁷ FTA Strategic Research Plan, September 30, 2005.

broadly. The plan should lay out the strategies that FTA will pursue to influence the national goals of the federal transit program and to ensure that FTA and the transit community support them.

The following statement illustrates how the current plan falls short in providing such direction. On page 4, the plan states:

FTA will develop an effective and innovative approach to conducting and promoting transit research. This approach will be strategic in that it will identify selected research that promises to have high payoffs in terms of achieving national goals.

The stated desire to be “strategic” in identifying high-payoff research has little meaning on its own. A fully formulated strategic plan should explain *how* the agency intends to be strategic in selecting high-payoff research. It should explain how stakeholders will be consulted to identify national research priorities. It should explain when and how FTA will serve as sponsor, conductor, coordinator, disseminator, and implementer of research. It should identify specific tactics and strategies that FTA will use to leverage its role in transit research and to shape research beyond that which it contracts for. For example, the plan should explain the steps that will be taken and strategies that will be pursued to invite and encourage the federally funded University Transportation Research Centers, Intelligent Transportation System Program, Transit Cooperative Research Program, and National Transit Institute to help in furthering some of the R&D priorities of FTA. In doing so, it may call for FTA personnel to attend research forums, workshops, and conferences and to participate in research oversight and dissemination activities where permissible. Indeed, we advocate this strategy since a stronger agency presence in these activities may influence research decisions while giving FTA personnel the opportunity to develop and utilize their subject area expertise.

The plan should also be realistic and constructive with regard to earmarking. While excessive earmarking can be harmful, earmarks may inspire support on the part of

Congress and thus be a source of R&D funds that would otherwise not be available. The plan should recognize the potential to obtain value from earmarked projects, viewing them as opportunities for meeting research needs that might otherwise go unattended for lack of resources. The plan should therefore explain strategies that will be pursued to inform the recipients of earmarks about FTA's R&D goals and collaborate with them in refining the nature and scope of their projects in a manner consistent with the agency's R&D goals. It is reasonable to expect that some recipients of earmarks will be interested in collaboration out of a desire to see their research results applied and to forge sustainable relationships with FTA and the transit community. Faced with the prospect of continued constraints on its R&D resources, FTA must recognize all opportunities for achieving its R&D goals and find ways to exploit them.

CLOSING REMARKS

We have previously commended FTA for engaging in strategic R&D planning and continue to support its commitment to this process. In this report, we stress the importance of such planning in articulating and guiding FTA's national leadership role in transit R&D. We have offered suggestions concerning the content of a strategic R&D plan, which we hope will prove helpful.

We are pleased to learn that FTA is engaged in strategic planning for the entire agency. Agencywide planning presents an opportunity for FTA to elevate and champion R&D as a core component of the federal transit program. This is vital in supporting FTA's interests in ensuring that transit makes valued contributions to national interests such as reducing urban congestion, curbing emissions, and conserving energy.

Legislation reauthorizing the federal transit program will be introduced and debated in the months ahead, and many important decisions affecting FTA's R&D roles and capabilities will be made. An agencywide strategic plan that emphasizes R&D leadership can influence these decisions and highlight the need to strengthen the agency's R&D capacity. The national transit research program dates back to the first

Urban Mass Transportation Act of 1964.⁸ Research and technical assistance have therefore always been core responsibilities of FTA. We wish to see these responsibilities elevated in practice.

After 4 years as chair of TRAC, I am rotating off the committee and will be succeeded by Barry Barker, who has served with distinction as the committee's vice chair. Advising FTA on its R&D role and program has given me great pleasure and a sense of accomplishment. On behalf of the other members who will be rotating off TRAC, I express our gratitude for the opportunity to interact and offer advice. FTA's continued support for TRAC is indicative of a sincere commitment to research as a means of bettering public transportation. I fully expect that under Mr. Barker's leadership, TRAC will continue to offer advice in a constructive spirit.

I welcome the opportunity to discuss this report with you and other FTA officials and look forward to progress in this important area.

Sincerely,

A handwritten signature in black ink that reads "Michael S. Townes". The signature is written in a cursive, flowing style.

Michael S. Townes, Chair
Transit Research Analysis Committee

cc: Mr. James S. Simpson, FTA Administrator
Enclosure: committee membership

⁸ Public Law 88-365, Section 6.

ENCLOSURE

TRANSIT RESEARCH ANALYSIS COMMITTEE

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