



May 30, 2008

Mr. Robert Atkinson, Chairman
National Surface Transportation
Infrastructure Financing Commission
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

Dear Mr. Atkinson:

Thank you for the opportunity to offer the views of the Intelligent Transportation Society of America to you and your fellow commissioners as you deliberate on your final report. ITS America is a 501(c)(3) membership organization involving all aspects of the transportation industry—local, state and federal government agencies, private providers of intelligent transportation systems (ITS) products and services, auto manufacturers and suppliers, research and academic institutions and transportation associations. Since 1991, we have encouraged policies and programs to stimulate the use of technology as a tool to improve transportation services to the American public. Our vision for America's transportation system matches the one you cited in your interim report—a system that is safe, effective, efficient, fair and sustainable. The use of technological advances is an important means of achieving this vision, and we urge you to give this approach serious consideration as you frame your recommendations for funding and financing the nation's surface transportation system.

In your preliminary report, you spell out certain observations about the state of the system, and it is our belief that appropriate use of ITS solutions will help address the issues you raise and provide effective tools to progress. Recapitulating your observations, you stated that

- System demands are outpacing investment
- System maintenance can be so costly and necessary that it becomes difficult to address necessary expansion of the system
- The fuel tax is no longer sufficient at current rates.
- More direct user charges should be explored
- We need not only more investment in our system, but more intelligent investment complemented by better system operations.

These observations essentially restate the case that we have been making for ITS solutions over the past two decades. I believe some examples of the relevance of ITS to the issues you and your fellow Commissioners are facing will be helpful, and we would be happy to meet with you if you require further information.

Demands Are Outpacing Investments

Anyone who has studied our national transportation system and its conditions will come to this conclusion, and it is also likely that no Commission or legislative body will come up with all of the resources to meet all of the demands on the system, even if one could contemplate carrying out such a massive development program. Even with an increased level of investment from a variety of sources, it will be necessary to get maximum performance from the system we have and from all increments that are added. This is, as well, an important and appropriate measure to gain public confidence that the goal of all levels of government is to get maximum effectiveness from the funds that are invested.

Making this happen has been a significant focus for practitioners in the ITS world for many years, supporting a philosophy that the effective maintenance and operation of our system is a task of equal importance with the task of new capital construction. Those who focus on maintenance of operations look to ITS as an important tool in squeezing every drop of capacity out of the system, recognizing that the ultimate test is satisfying the needs of users, not simply providing for major new public works.

An entire branch of ITS deals with the *management of our freeway system assets*. Cost-effective investments such as ramp metering systems and lane controls can adjust traffic in a way to maintain smooth flow, under the monitoring of surveillance centers. Studies have shown increases in speeds, greater throughput and decreased accident rates when lanes are managed, with costs well below those incurred for added capacity. *Responding quickly and effectively to incidents on the roadway* is another very effective strategy for getting maximum performance out of our existing facilities. Studies of congestion show that a significant portion, perhaps as much as half, of all congestion is not simply the result of physical bottlenecks. It comes about as a result of roadway incidents such as crashes or breakdowns. Responding quickly and effectively to such incidents based on surveillance data allows the basic capacity of the system to be restored quickly. In Maryland, for example, where there is a well developed surveillance and response system, there was a reduction of incident duration of 57%. And even as responses are taking place, data developed through ITS technology supports the dissemination of good advisory information to route traffic around these chokepoints. Even simpler approaches, such as the better *management of arterial roadways* through traffic light synchronization show demonstrable results in terms of time savings and reduced congestion in our urban areas.

Information to the public so that they can make informed decisions about their travel is a well-tested strategy for coping with demand. The traveler who knows where he or she is headed and

knows the best routing to perform their trip will put much less stress on the system. ITS technology is the backbone of both collecting and effectively disseminating useful knowledge to the system user as they both plan and execute their trip.

Technologies and applications developed through ITS research have been the basis on which we can intervene in the system and attempt to manage demand. The issues and opportunities for pricing are discussed below, under your category of direct user charges, but it is important to keep in mind that pricing of our system is not simply a means of financing but a means of rationing its use in a sound economic fashion. We will come back to this issue later.

System Maintenance is Costly but Necessary

Again, this observation is one that all students of the transportation system are led to. The costs associated with simply maintaining our current investment grow as the size and age of that system increases, and a rational response from states and localities is to allocate an increasing share of their resources to these issues, even though it means forgoing needed capacity enhancement and paying a price in terms of system performance. Bringing greater efficiency to the necessary task of system maintenance is another way in which ITS can play an important role in the future of the transport system.

The maintenance task is perhaps not as exciting as providing for new capacity. As the saying goes, "no one shows up to cut the ribbon on a repainted bridge", even though the repairs may have extended the bridge's life by many years. But just as ITS can squeeze out capacity from the existing system, it can contribute to control of its maintenance costs. The results of *smart maintenance* achieved through better knowledge of facility conditions, through better control of the maintenance workforce and vehicle fleet, and through better management of work zones, is better performance at lower costs.

ITS tools are a key element in achieving this result, recognizing that effective maintenance and operations must be a data-driven effort. Collection of roadway condition reports, automated measurement of stresses in bridges and structures, timely and useful weather data, and effective controls on the deployment of maintenance teams can contribute significantly to productivity of the maintenance force and stretch the O&M dollar further.

There is, as well, a feedback loop in this element of ITS deployment. The well maintained roadway or the safely protected work zone will reduce the number and severity of crashes and incidents, with positive effects on system capacity and a reduction in unproductive time and costs for the operator. Better information about weather, such as advance predictions of snowfall or other weather conditions not only allow for better deployment of the workforce but a better level of safety and service for the public. A valuable speed limit control along a stretch of Interstate 75 in Tennessee, for example, almost entirely eliminated a long term problem of

crashes and fatalities. A better snow forecasting approach in Wisconsin added as much as four hours productivity per person in significant storms.

The Federal Fuel Tax is No Longer sufficient and More Direct User Charges should be explored

These two related observations by your Commission point directly to the kind of change that ITS technology has brought to the transportation world. The viability of the fuel tax has been under review for the past several years, as it has become apparent that fuel economy measures and changes in the fuel mix have decoupled the relationship between system use and system finance that existed in earlier years. These trends are only expected to continue, with the likelihood of both more fuel efficient vehicles and more diversity in type of fuel over the next few decades.

The policy options both for the possible replacement or revision of the fuel tax, as well as its supplementation by forms of direct user fees have been significantly expanded over recent years, essentially as a result of ITS initiatives. As your interim report comments, "New technologies appear to enable new tools that make direct user charges easier to administer and more user-friendly."

While there is still a long way to go in gaining public acceptance of new forms of payment for our transportation facilities and services, there is no doubt that the availability of ITS tools has made it possible to contemplate such a change. *Electronic fare and toll collection* has been a mainstay of federally sponsored research and development efforts. Deployment and consumer acceptance of these methods has moved with extraordinary speed and with constant improvement in technological effectiveness.

Moving from simple applications like the replacement of some toll collectors with E-Z pass lanes to the realization that in fact it is possible to have high-speed, non-stop, toll collection on major facilities has changed people's thinking on the efficacy of toll finance. Without these advances, it would hardly be possible to engage in debate over new user financed facilities. Much of the convenience and effectiveness of these systems has come about through national efforts to encourage compatibility and interchangeability of tags and readers. Carrying over from the highways to other modes of transportation, similar results have been achieved for transit, with the ubiquitous smart card now the preferred means of payment for most riders, as well as being the flexible tool for pricing and management of transit benefits.

Moving beyond the simple collection of tolls as a financing mechanism, we now see real world application of policy options that again were not realistic a few years ago. Variable pricing, cordon pricing and similar options for better *management of travel demand* remain controversial,

as witness the New York decision not to pursue congestion pricing. But technological feasibility is no longer the chief constraint to consideration of pricing based on economic principles. The recent test in Oregon of a potential vehicle mile of travel fee to replace the fuel tax is another example of how technology permits testing of ideas not previously on the table.

We Need Not Only More Investment in Our System, But More Intelligent Investment Complemented by Better System Operations

As discussed above, this issue is well addressed by some of the ITS tools that improve on the utilization of capacity through system operations, but it is also the place where ITS capabilities to treat *transportation as a system* rather than as a collection of individual modal silos comes to the forefront. Early in the development of these technologies, the mission and reach of the program was deliberately broadened from “Intelligent Vehicle and Highway Systems (IVHS)” to “Intelligent Transportation Systems (ITS).” Under this umbrella, the powers of technology have been put to work in a way that helps people and freight move seamlessly from origin to destination across whatever transport facilities best serves their needs.

In the area of public transportation, for example, the deployment of efficient bus transportation is enhanced through technologies to offer *transit vehicles priority* at intersections and to monitor the performance of transit fleets through *GPS-based vehicle locator systems*. These technologies improve productivity, offer travel time savings and an improvement in customer service by focusing on the system as a whole, vehicle and guideway alike, in order to get maximum performance for the largest number of users.

In the world of goods movement, the logistics revolution that has occurred over the past two decades is traceable in no small part to the availability of technology. Sophisticated shippers have married the ubiquitous cargo container to the capability of computers in order to track and manage shipments on an end-to-end basis. Whether a container is moving by ship, barge, rail or truck, it is under constant surveillance, allowing the shipper to guarantee “*just-in-time*” delivery at destination points, and even to re-route shipments en route to match changes in manufacturing strategies or consumer demands. In the aggregate, these technological and managerial advances have enabled a reduction of nearly half in the share of America’s GDP consumed by transportation and logistics costs.

Within individual freight modes, ITS applications have been equally powerful drivers of business change. A concerted effort by government and industry has brought a variety of technologies to the field of *commercial vehicle operations (CVO)*. Applications of tracing and measurement technologies have removed barriers and simplified movements of cargo and vehicles. Trucking operators are no longer plagued by the need to be registered, credentialed and

checked at multiple waypoints along their journey, thus improving service and profit. Border clearances have been simplified, enhanced safety screening implemented and fleet tracking enable for the benefit of the industry and all those they serve. Again, this is a function of the systems view that ITS technology supports.

In your Commission's vision of a national transportation system, safety led the list of attributes by which the system's performance should be judged. ITS technology has enable major strides in a safer system, and offers even greater promise in the future. Providing better information for those who *manage emergency response vehicles* has made a traditional strategy for highway safety more effective. The increasing use of *mayday systems*, including those that can automatically report a crash and its location offers significant opportunity to reduce the death toll from crashes that have occurred. But the real promise for ITS is in its potential to prevent the crashes from ever occurring. Simple steps such as better *weather information* provide the basis for informed safety decisions by motorists. On-board systems such as *automated cruise control and lane keeping* allow for safer operations through better separation of vehicles and avoidance of risky maneuvers. Future on-board technologies now in test will diagnose and warn the *drowsy driver* of an auto or truck before they lose vehicle control.

Looking to the future, there is great promise for a more close integration of the vehicle and its infrastructure with a greater sharing of information. The *Vehicle Infrastructure Integration (VII) initiative* could empower communication between the vehicle and its full environment, calling attention to potential intersection collisions or roadway departures in a way that prevents the crash from even occurring. As we measure the performance of our system in terms of outcomes, we know that great strides have been taken through vehicle improvements to mitigate the results of crashes through air bags and other devices. Effective strategies are in place to reduce the impact of impaired driving and excessive speed. These proven approaches have held down the rate of fatal accidents and severe injuries, but no one is satisfied yet with the overall performance of the system, and the VII initiative could be the key towards a new level of safety improvement. As scoped, it could also offer substantial support to the issues described above, including better system performance and improved ability to collect economically rational charges from system users.

Funding Mechanisms and Evaluation Criteria

You had recently shared with us and others stakeholders the Commission's candidate list of potential funding mechanisms and criteria for evaluation. While we are not as an association in a position to evaluate the entire matrix, the items identified are thought provoking as they relate to ITS potentials. On your very comprehensive list of potential funding sources, several broad categories could barely be in the range of consideration were it not for ITS, yet they are likely to be among those ideas that best meet your evaluation criteria.

- The entire class of *tolling and pricing mechanisms*, whether of individual facilities or of broader networks would likely be ruled off the table were it not for the new realities of electronic means of collection. There will be many issues involved in the feasibility and acceptability of these methods, but they would not pass a threshold test if we were to look at old-style mechanical toll collection. As a variety of new mechanisms come into consideration, whether for facilities, networks or areas, there will be a premium placed on the ITS capabilities, and this will entail continuing research and development to improve, standardize and deploy the technology.
- Similarly, the consideration of taxation of any forms of *freight movement* will require capability beyond what exists today to assess and collect revenues from a wide variety of users and beneficiaries. It is likely that this cannot be done except as a byproduct of the goods movement tracking systems now in use by the shipping and carrier communities as keys to their productivity.
- Lastly, similar comments can be made with respect to some of the “*other*” measures that you identify for consideration. Collection of parking, transit or passenger rail related fees must be simplified and made near invisible if the public is to support their use as mechanisms to support transportation investment and operations.

With respect to your preliminary evaluation criteria, the opportunity to use ITS technology will be a critical factor in identifying and resolving constraints against the use of potential revenue sources, as noted below:

- *Flexibility*—Use of ITS technology with respect to certain of these sources makes it possible to vary costs and allocate revenues on a dynamic basis without major administrative problems. The success to date with flexible tolling shows how this can work and more importantly how it is accepted by the public.
- *Implementation and Administration Considerations*—in each of these areas (public acceptance, ease of administration, and costs of compliance), the ability to utilize ITS technology will be a key differentiator. Careful review of what has already been accomplished will give some indication of what is possible, but there is also the potential for greater improvement as more and more systems are implemented, pushing the envelope on technology and gaining economies of scale.
- *Efficiency Considerations*—we have already discussed the potential for various ITS technologies to add efficiency to the transportation system. A greater use and deployment of ITS-based financing mechanisms will be an important platform and enabler for many of these technologies. A vehicle equipped with transponders for revenue collection can easily be included in the base for safety improvements under the VII, for example.

- *Equity Considerations*—the fundamental consideration with respect to equity is the ability to tailor charges for the system more directly to individual users, including potential measurement of direct and indirect costs that they impose on other users. This is something that would have been impossible in the absence of ITS. Similarly, if as a matter of income equity there is a desire to subsidize specific users, such as through toll or fare abatement, this can be done with relative ease and without negative implications for the subsidized individual.

Consideration of Public-Private Partnerships

Your recent outreach document indicated that the Commission will be giving separate consideration to financing mechanisms and related public-private partnership approaches. In this regard, it will be useful for you to look separately at the issues surrounding technology investments. There are some interesting factors that differentiate the public-private potential for these investments from those that provide for long-term physical infrastructure.

In many ways, the PPP approach is tailor-made for partnerships. What the public sector is seeking is definable as outcomes rather than as specified deliverables. The opportunity exists for the private sector to show innovation and gain efficiencies through competition in supporting these outcomes. The track record of the public sector in developing, maintaining and upgrading technology investment is, frankly, not all that good. Even some very sophisticated public agencies find that their rigid processes for procuring and implementing technology-based systems work against them, leaving them with systems that are too often obsolete on the day they are delivered and prove to be a disappointment in terms of their effectiveness and sustainability. Taking advantage of PPP approaches will match the capabilities of the private sector with the needs of the public sector.

Experience with the toll-collection partnerships now in place bears out these observations. The successful cases have involved a strong private role within the framework of public policy considerations dictated by the agencies. In other ITS applications, there has been a mix of projects, some with more public involvement, but the success stories are again those in which the private sector has been empowered to do what it can do best.

Conclusion

The array of benefits from ITS described above, and their key relevance to your Commission's interests is self-evident. The opportunities for the future are even greater than what has been achieved to date. We need to reflect, however, on how this has come about and what the issues are for the future. The results to date, and the realization of future opportunities, are not simply a product of letting nature take its course and reaping the benefits of technological advances through the marketplace.

This revolution in the use of technology to improve transportation has come about in large measure through the cooperative and focused work of industry and government. Key results such as definition of an architecture under which the many ITS functions can be mutually reinforcing and draw on available and consistent data, the development of technical standards, the growth of professional capacity and the promotion of public understanding are the product of this collaboration. The availability of federal funding to support both development and deployment of technology has been, and will continue to be critical to progress.

As you work towards final recommendations in the area of program design and financing, we stand ready to work with you on their implications for the future of ITS as a tool to move in the directions you want to go. Whatever direction you may move within the broader sphere of transportation, we hope you will keep in mind the importance of a central focus on ITS technologies and the availability of appropriate resources, both financial and technical, in order to realize their promise.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott F. Belcher", written over a horizontal line.

Scott F. Belcher

President and CEO