

**Testimony before the Committee on Environment and Public Works
United States Senate
Hearing on Future Federal Role for Surface Transportation
June 25, 2008**

Bruce E. Seely
Chair, Department of Social Sciences
Michigan Technological University
Houghton, MI 49931-1295

I am deeply honored by the invitation to present a historian's viewpoint concerning the federal role in surface transportation. For more than 25 years, this topic has been one of my primary interests as a historian of technology, and I am pleased to have the opportunity to share with members of the committee some of what I have learned in the course of my research. As a historian, I would like to discuss what I see as patterns in the federal role in transportation over the last two centuries. I hasten to add that historians are not very comfortable projecting current trends into the future, but we do believe that attending to history helps us understand how we have arrived in the situation of the moment.

Let me begin with a basic point: The role of the federal government in the history of surface transportation has not been static or fixed. Rather, the federal position has evolved with the needs and demands of the nation and its people, and such evolution continues today. Yet amidst those changes, several primary elements of the federal presence in transportation have been long-lasting and remain highly significant as shapers of both the policy and the financing of surface transportation as this country moves into the 21st century. I propose to quickly examine features that emerged in the 19th century, then explore those elements of the federal role that took shape when highway construction began in earnest at the beginning of the 20th century, and conclude with a general comment about the federal government and transportation policy.

Nineteenth-Century Patterns

The beginnings of a federal role in transportation usually can be traced to a report prepared by Albert Gallatin, Thomas Jefferson's secretary of the treasury, and presented to Congress 200 years ago. In his *Report on Roads, Canals, Harbors, and Rivers*, Gallatin argued that a network of roads and a system of canals were needed to knit the country together economically AND politically. Most importantly, Gallatin proposed these public works as a coordinated national system, rather than piecemeal improvements. Gallatin's report stimulated a number of projects, such as the National Road from Cumberland, Maryland, through Wheeling and on across the midwest to Vandalia, Illinois. Inland waterways and canals also grew from this report, as Gallatin basically laid out the logic of a federal role. He adopted the assumption that the federal government must take the lead in transportation because other likely actors lacked the ability, the resources, and the scope of action to accomplish the task. Gallatin argued, "No other single operation, within the power of the Government, can more effectually

tend to strengthen and perpetuate that Union which secures external independence, domestic peace, and internal liberty.”

Gallatin’s approach was often challenged, for funding of public works often WAS piecemeal. The National Road, the Natchez Trace, and a number of harbor and river improvements projects were launched in the aftermath of the Gallatin Report. There was little inclination on the part of Congress to create a national system of roads and canals, yet Gallatin’s logic has usually been cited as the basis for federal involvement. Indeed, his articulation of the national goals of transportation that cut across state boundaries all but demanded federal leadership in this area. Gallatin had identified a key point – that transportation mattered for more than the movement of people and goods. Transportation systems met more than local purposes and advanced the prospects of the entire nation.

Such high-sounding logic, however, often got lost in another pattern of the federal involvement in transportation: the paramount importance of politics. Indeed, the entire question of public improvements became a hugely contentious political football in the 1820s and 1830s, pivoting on the question of whether the federal government possessed constitutional authority to undertake such projects. But while a constitutional issue was at stake, the feud over internal improvements also was a key definitional issue between the two leading political parties of the day. The situation came to a famous head in 1838, when Henry Clay successfully led the effort to have Congress end funding for the National Road. Since then, it is fair to say that politics have never been far removed from discussions and debates about the nation’s surface transportation needs.

A primary reason behind the change in public outlook in the 1830s concerning the federal government’s role in road building was the emergence of other ways of developing transportation. After 1820, for example, canal construction began on a large scale at the behest of several state governments, a situation that seemed to eliminate Gallatin’s argument about the need for a special federal presence. During the depression of the late 1830s, however, the interest payments on canal bonds drove a number of those states into bankruptcy and prompted state constitutional bans on state-sponsored internal improvements projects. Just at that time, however, another transportation mechanism was emerging – the railroads. Significantly, most railroads were private enterprises, which seemed a better organizational answer to many observers of transportation.

But if we look under the surface, it is clear that private rail corporations received significant assistance from governments at every level. Local and state governments offered pivotal assistance in the form of free land and stock purchases. Indeed, many communities did everything possible to lure railroads to their towns. The federal government also played a number of roles in the evolution of the railroads. Land-grants are the most widely known mechanism, one that proved pivotal to the construction of many western rail lines, but as important were the efforts of Army engineers to locate the routes of many early railroads and then to help design and oversee construction, often while on loan to the rail companies. By the 1850s, federal government surveys across the west located the routes used by every later trans-continental railroad. Again, the logic resembled that first laid out by Gallatin – the federal government undertook roles that no

others could, in order to advance the prospects of the country as a whole and complete a national system of railroads. This same logic later prompted the federal government to impose the first large-scale program of regulation on the railroads, beginning with the Interstate Commerce Act of 1887. In other words, even as the free enterprise ideal dominated the nation's economic and political landscape, the federal government retained a presence in the area of transportation as both encourager of projects in the national interest and a limiter of actions that seemed predatory and monopolistic. In every instance, the federal role rested upon the desire to achieve national systems and insure service that met national needs.

The Federal Role in the 20th Century: The Bureau of Public Roads

The federal role in surface transportation developed in new directions and became more extensive at the end of the 19th century. Beyond the rebirth of programs of waterway improvements and railroad regulation, a primary reason for an expanding federal presence was the revival of public interest in roads and highways. Since the 1840s, most roads had been the responsibility of local governments. Largely as a result, the nation's roads were terrible: dusty nightmares in summer and impassable mud holes in fall and winter. Pressure for improvements emerged in the 1880s from a combination of interests -- the safety bicycle craze, which first demonstrated the possibilities and the freedom of individual transportation; a growing desire among rural Americans for free mail delivery; and the railroad's support for improved farm-to-market roads. Congress acted in response to the growing pressure, creating the Office of Road Information (ORI) in the Department of Agriculture in 1891. The office soon grew into the Bureau of Public Roads (BPR), predecessor agency to today's Federal Highway Administration. A permanent federal presence in surface transportation had been created.

Between 1891 and 1916, members of Congress and the early leaders of the federal highway office established several approaches to federal involvement in surface transportation that have remained central features of the nation's transportation policy. First, a basic underlying assumption of federal involvement in surface transportation was the desire to advance the base of knowledge and level of expertise in the field of road construction. Here was something that no other agency at that time could do. Thus the primary purpose of the Office of Road Information was to gather data on road materials, construction methods, and maintenance systems; conduct tests on what worked; and demonstrate the results in a variety of ways for all users. A publications program began immediately, and a materials testing laboratory was in place by 1896. By 1900 federal officials were acknowledged as THE experts in the field of highway construction. Ever since, research has been a fundamental element of the federal role, even as the BPR encouraged the states, industrial trade and professional associations, and many universities to undertake research as well. Throughout, the federal government played the key role in encouraging and supporting such work. And because of their reputation as experts, federal engineers successfully developed widely-adopted model legislation for state and local road building agencies. They also taught local road officials the basics of good administration, just as they proposed standards for construction and materials. In short, federal engineers influenced all aspects of road construction, finance, and

administration. Indeed, this model of experts as policy makers became a fundamental feature of the federal role in surface transportation.

The emphasis upon technical expertise grew from a core assumption of the Progressive Era reformers at the turn of the 19th century, namely their desire for efficiency and the prevention of waste and corruption. To many middle class Americans, the way to achieve efficiency was to give scientists and engineers more authority and influence on the making and implementation of public policy. Indeed, technical experts who drew upon science were seen as the ideal problem solvers, since they acted not upon passion or emotion, but upon information, especially statistics. Indeed, some held that experts were immune to graft and corruption and their scientific training insured that they served only the public interest. The federal government's approach to road construction was not the only instance of this reliance upon, and trust in, engineers and experts, but the federal highway program proved an important and long-lived example. In 1900, Congress first mandated that the Bureau of Public Roads be headed by an engineer, believing that this step insured efficient management of road building efforts. From there, it was a small step to the conclusion that politics and politicians ought to be removed from all but large-scale decision-making about roads, so that engineers could make rational choices that served the entire country. This approach guided American highway policy—especially the federal role in building roads – until the late 1960s. Epitomizing the role of engineers was the leadership of Thomas H. Macdonald, an Iowa engineer who headed the BPR from 1919 to 1953 – an unprecedented period of service. And he was not the only engineer who provided the federal leadership of the nation's highway program because of the deep respect with which he was held by all parties involved in road construction.

A third element of the federal role in surface transport that emerged in the early years of the 20th century mirrored the ideals expressed by Gallatin and others, namely that federal transportation efforts should address national concerns. This point assumed even greater significance after the federal government began to provide funding for road building. Significantly, federal funding for roads came only after the BPR had established its reputation for neutral or apolitical expertise in the administration of road programs. Thus federal engineers were highly influential as members of Congress debated road construction funding. In 1912, congress approved a pilot program to explore federal support for roads that advanced rural mail delivery. The success of this effort led to the passage of the Federal-Aid Road Act of 1916, which provided the first funds, matched 50/50 by the states, for highway construction on roads for mail delivery. They provided a total of \$25 million. The work was interrupted by World War I and progress was slow, but the concept had caught hold.

In 1921, Congress renewed the highway legislation, but with a different logic for federal involvement, in large part because of the enormous popularity of the automobile. Funds increased to about \$50 million annually. More importantly, the development of a national system of primary and secondary roads became the main goal. The federal funds were limited to only 7 percent of each state's roads mileage, a network that became the U.S.-numbered highway system. These roads connected the nation's main cities and towns, but federal funds could not be used inside any urban area with more than 5,000

people. The principles here resemble some of the ideas broached during the 19th century, with the key point being that the federal government would help develop those roads that served the widest purposes. Not all roads were eligible for federal funds because states and local governments were expected to assume responsibility for the great majority of the road network that fed into the national system. In other words, from 1912 to 1921, the goal of federal involvement in highways had already changed. This would not be the last adjustment of purpose, but a basic pattern of federal involvement in surface transport was set in place .

A fourth element of that federal role emerged in the Congressional debates in 1915 and 1916 about the best way to administer and build the nation's road network. Should the federal government do the job itself, or should it do so jointly with the states? Eventually Congress accepted the federal-aid concept of shared authority and funding between the states and the federal government. Many, including the automobile industry and many motorists, supported creation of a federal highway agency. But the engineers of the BPR successfully pressed hard for a federalist system, in which state highway departments that met standards set by the BPR would design and build roads after federal inspection and approval of plans. Funding responsibility was equally shared. The states then maintained the completed roads. The partnership of the BPR and the state highway departments that resulted was not always perfect and at times could be inefficient. But it served a crucial purpose of enabling the federal highway engineers to use their superior expertise to bring along the states highway agencies, some of which were not formed until 1916. The federal-aid program rested upon cooperation rather than federal dictation to secure a sound road system, and over time state officials developed more technically expert and professionally managed agencies.

This process was sometimes slow and required enormous patience. During the 1920s, the federal government's highway engineers clearly stood at the center of the development of the nation's road system. Even though the federal-aid road system numbered only about 200,000 miles of the more than three million miles of roads in this country, federal engineers shaped and influenced the work of state and local road builders in terms of organization, administration, and technical processes. The federal engineers slowly persuaded state highway agencies to create testing laboratories that eventually grew into research laboratories. They instilled sound management practices and sought to prevent graft and corruption. But they used only sparingly the ultimate weapon at their disposal – the threat to cut off federal funds. The commitment to federalism embodied in the federal-aid partnership has remained a central aspect that governs the federal presence in surface transportation.

Importantly, the federal role during the 1920s also grew to include leadership in the field of planning. Federal engineers recognized that the demands for more roads outstripped the available funds, and they were determined to make the best use of scarce dollars. They pioneered vehicle counting and traffic projection techniques in order to determine where traffic growth was likely to be greatest, and sought to focus funds on those needs. Their approach tended to be narrowly economic in nature, summarized by Thomas MacDonald's oft-repeated comment that "we pay for good roads whether we have them

or not.” By the mid 1930s, the BPR mandated that every state highway department undertake a state-wide highway planning survey using a methodology it had developed. From this base emerged a picture of the nation’s road use and needs, a picture that was essential for the eventual creation of the Interstate Highway System.

But underlying that spectacular project, which took form at the end of World War II, was the fact that the federal role in surface transportation expanded and grew during the 1930s. Planning activities were not the only example of this larger role. In fact, the 1930s witnessed a growing reliance upon federal leadership and support in addressing the ever-growing problems of surface transportation. This was hardly surprising; during the Depression of the 1930s, the federal government’s role expand in many aspects of American life. But road work was one of the areas of greatest growth. Significantly, the various work relief programs proposed by Franklin Roosevelt and endorsed by Congress spent more money for roads than on any other form of public works. The beneficiaries included the national forest and national parks, in the form of famous roads still widely used, including Glacier’s Going-to-the-Sun-Highway, the Skyline Drive and the Blue Ridge Parkway, and the George Washington Memorial Parkway, to name a few. Similarly, PWA funds allowed many highway departments to and cities to attack the dangers of railroad grade crossings. At a more general level, the federal government loaned funds to the states in order to permit state highway departments to continue construction programs, even when the states could not provide their normal 50 percent matching share. But the most important step in expanding the federal presence was the extension of the federal-aid highway program to include roads into and through the nation’s cities, beginning in 1938. Most informed observer were aware that it would be an enormously expensive undertaking to accommodate cars inside cities. But the BPR’s planning survey of the 1930s left little doubt that cities faced the most pressing needs in terms of roads. Presidents Roosevelt, Truman, and Eisenhower all balked at the consequences of this finding, but the need could not be ignored, for the task was simply beyond the resources of the states and municipal governments. Detroit, for example, boasted when it opened a single mile of multi-lane, limited-access highway in 1940 – all that it could afford. New York City under Robert Moses made huge strides with its parkway system and bridges, but only because of the city’s access to federal work-relief funds. Chicago and Los Angeles also made pioneering steps, but these cities were exceptions to the general rule that cities could do little more than experiment with special roads for cars.

The Federal Role in the Interstate Era

The real implications of this need to pay attention to cities became apparent after 1944, when Congress authorized (but did not fund) the Interstate highway system. The original intent was to retain the federal-aid program, in which states would match ever larger federal appropriations, which passed \$500 million annually in the postwar period. Almost instantly, it became apparent that the states could not easily continue to match federal dollars. By 1949, an entire year’s worth of federal funds had accumulated, unmatched by the states. States explored toll financing, which worked for many arterials and main routes, but also had limitations. Congress wrestled with the funding question

from 1948 until 1956 before agreeing to create a Highway Trust Fund that would sequester funds raised by taxes on a variety of items (tires, gasoline, etc.) as a way to pay for the new road system. In this way, the federal government could pay 90% of the cost of the Interstate network. The federal presence in surface transportation had jumped enormously.

But that was not the only consequence of the development of the Interstate highway system. Traffic grew very fast after the war, as the number of registered vehicles exploded. The pressure for more roads of all kinds became enormous, even as the cost of materials accelerated in the postwar inflation. In addition, constructing the new Interstate network posed enormous technical challenges. Most states initially lacked the expertise and experience to design and construct these roads, although a few states (New York, California, and Michigan) began exploring techniques on their own. Most states relied upon design standards and construction specifications developed by BPR engineers. By 1960, most states were comfortable undertaking rural sections of the system, but work lagged in most cities, where the problems were more complex and the need was greatest.

Ironically, the effort to accelerate construction work in cities produced a number of highly significant and largely unintended consequences that significantly altered the federal role in surface transportation. Road builders initially believed that American motorists wanted the new road system opened as fast as possible. To meet that demand, they tried to move very quickly, often bypassing local officials and acting with little regard for the neighborhoods where swaths of houses were torn down to make way for the roads. Never before had roads sliced through cities in this way. Public complaints, then hostility and anger, and finally legal resistance was not long in emerging. The so-called “Freeway Revolt” that emerged in San Francisco, New Orleans, Boston, Philadelphia, Washington, DC, and numerous other cities represented the first serious opposition to road building in this country. As a result, the entire process of road construction changed in the 1960s. First, processes for public involvement (public hearings, etc.) and environmental protection (notably environmental impact statements) were legislated, with federal agencies leading the way in forcing a more deliberate pace and more deliberative processes. Second, engineers were displaced as the leaders of most state and federal road building organizations, bringing much more openly political calculus to the decision-making processes about roads for the first time since 1916. The final effects of this change are apparent in the growing number and importance of “demonstration projects” (earmarks) within the national highway program over the past 25 years.

I would suggest that the diminishment of trust and reliance upon expertise over this time period constitutes one of the most significant adjustments in the federal role in surface transportation. It should not be assumed that engineers were always right in the decision they made. Indeed, there are many ways in which their assumptions and approaches were flawed or too narrow, resulting, for example, in “China walls” through poor neighborhoods and the loss parkland and natural locations to provide rights of way for expensive automobile highways. Aesthetic considerations were not much of a factor until Lady Bird Johnson pressed for the Highway Beautification Act in 1965. Nor

should we assume the engineers naively ignored politics, for they knew instinctively that road building was an inherently political process. That is why I have referred to them as apolitical, not non-political. They sought to stand above traditional partisan politics and to serve the country, as they perceived it. It might seem hard to believe, but more than once members of Congress asked Thomas MacDonal to find the answer to particularly thorny problems that had vexed law makers. Crucial to this public and political willingness to defer to the experts was the ability of engineers to base their decisions on apparently neutral data and information in an effort to serve the public interest –words rarely used these days. I wonder if we might seek a recover a better balance between the roles of expertise and politics in working out the role of the federal government in surface transportation.

One reason I suggest this point is another lesson that emerges from the construction and operation of the Interstate Highway System. This network of roads exemplifies what we mean by the term *infrastructure* -- a term much in use since the Katrina disaster, the collapse of the constitutes I35W bridge in Minneapolis, and the flooding currently underway in the upper Mississippi River valley. One reason the federal government is involved in all of these areas is the fact that only it has had the resources and the expertise to contemplate, plan, and implement such systems on a national scale. The Interstate highway system is a perfect example of this point. The planning data on which Interstate network rests was first gathered by the BPR and state highway departments in the 1930s. The conception of the system was fine-tuned during the 1940s and passed into law in 1944, funded in 1956, and then constructed from the mid 1950s through the 1980s. Today, it remains an incredibly vital transport and economic artery, serving roles and meeting needs that none of the early designers and planners ever envisioned. One reason is that the developers of this network saw it as an investment in the future, not just a project of the moment. The results of this thinking become clear if we think about the case of Amazon. The company is celebrated for pioneering an e-commerce system that now delivers books, music, and much else to our doors. But Amazon depends every bit as much on the capacity to deliver those products over the Interstate road system as it does on fiber optics and computing. This accomplishment did not happen by accident, although it was not planned out in advance. What mattered most was the conception of that network of roads as a distinctly national system proved highly flexible, and that outlook, I would submit, is somewhat more likely to emerge from the federal side of the fence.

Conclusion

Let me close with a final observation concerning a simple fact about the federal government's role in surface transportation. This country has never really had "surface transportation policy." We have had highway policy, and policy governing railroads, aviation and airports, mass transit, for waterways. But all have operated in splendid isolation, indeed in serious competition with each other. Indeed, the entire structure of oversight and appropriations for transportation within the Congress reflects an idea that was current 100 years ago: each form of transportation technology needed to be completely independent and walled off from each other. This was a product more than

anything else of the fear of railroads as predatory monopolies – a fear that outlasted any real monopoly railroads held over the movement of people and freight. This nation paid a high cost for the survival of this mindset, to the extent that it shaped the nation's transportation policy until 1980.

There has been much talk for more than 15 years about the significance and importance of intermodal surface transportation. Indeed, the Intermodal Surface Transportation Efficiency Act of 1991 supposedly signaled a major shift in the orientation of transportation activities supported by the federal government. But just as the formation of the U.S. Department of Transportation in 1970 could not resolve the tensions and competitions between the different forms of transport, so ISTEA could not suddenly elevate intermodal programs into reality. It is fascinating to me that the Pennsylvania Railroad had sought as early as 1929 to become a transportation company that could use all modes of transport, but was prohibited from doing so by federal regulators and their supporters in Congress. Today, it is not an accident that the first genuinely intermodal companies are not railroads, airlines, or trucking companies, but rather parcel shipping companies like UPS and Fedex that do not care HOW an object is moved, only that it travels as cheaply and quickly as possible. History suggests that paying attention to a wider definition of transportation systems might well have resulted in better choices and more efficient use of usually scarce resources – especially money! In this instance, it may be time to contemplate how much our current thinking about transportation can be hobbled by the influence of ideas from the past.

In conclusion, I would note that the role of the federal government in surface transportation seems to have rested upon several enduring elements. It has often focused on providing expertise and knowledge. It has often emphasized the problems of widest national importance, especially by tending to focus upon the development of national systems serving broad needs rather than on isolated projects. In both cases, federal officials often had to provide leadership because of the scale of the problems and the costs involved. As a result, transportation infrastructure systems have been available for creative utilization by citizens as well as by companies like UPS. The challenge of the 21st century is to insure the continued availability of important and expensive networks of surface transportation. One need not dig far into the current literature of transportation to realize that in this global economy, strong transportation infrastructures that reach all Americans matter more than ever before. History does offer some guidance in thinking about how to achieve such networks. Through attention to the nation's transportation history, we find that in the areas of research, planning and conception of entire systems, oversight and accountability, and funding, the federal government played a vital leadership role. That does not mean that it was the only voice that should have been heard in the process – far from it. But often, the stance that the federal government has taken has been very important; sometimes, the input of federal officials and agencies has been absolutely essential. I doubt that this situation is going to change. The challenge is finding ways to blend the most useful elements of tradition and the past with the most useful changes of the present.

Thank you for this opportunity to present my comments.