February 2004

Corridors for Toll Truckways: Suggested Locations for Pilot Projects

By Robert W. Poole, Jr. and Peter Samuel
Project Director: Robert W. Poole, Jr.

POLICY STUDY 316

Reason Public Policy Institute

A division of the Los Angeles-based Reason Foundation, Reason Public Policy Institute is a nonpartisan public policy think tank promoting choice, competition, and a dynamic market economy as the foundation for human dignity and progress. Reason produces rigorous, peer-reviewed research and directly engages the policy process, seeking strategies that emphasize cooperation, flexibility, local knowledge, and results. Through practical and innovative approaches to complex problems, Reason seeks to change the way people think about issues, and promote policies that allow and encourage individuals and voluntary institutions to flourish.

Reason Foundation

Reason Foundation's mission is to advance a free society by developing, applying, and promoting libertarian principles, including individual liberty, free markets, and the rule of law. We use journalism and public policy research to influence the frameworks and actions of policymakers, journalists, and opinion leaders.

Reason Foundation is a tax-exempt research and education organization as defined under IRS code 501(c)(3). Reason Foundation is supported by voluntary contributions from individuals, foundations, and corporations. The views are those of the author, not necessarily those of Reason Foundation or its trustees.

Policy Study No. 316

Corridors for Toll Truckways: Suggested Locations for Pilot Projects

By Robert W. Poole, Jr., and Peter Samuel

Executive Summary

America is facing a major shortfall in highway capacity to handle the projected growth in freight traffic, 90 percent of which is hauled by trucks. America has also been unable to realize the shipping cost savings which would be possible via nationwide use of double-and triple-trailer rigs (known as Longer Combination Vehicles or LCVs). At the same time, there is widespread concern about the dangers of big trucks and the 5,000 annual deaths in which they are involved. And there is growing congestion on many key Interstate routes.

All four problems could be addressed by a federal policy change to permit toll truckways to be added to Interstate highways. As defined in a 2002 Reason Public Policy Institute study, toll truckways would be heavy-duty, barrier-separated new lanes added to Interstates on which it would be legal to operate LCVs. Trucking companies indicate that they would be willing to pay tolls to obtain the productivity gains from expanded LCV operations, and the toll revenues offer serious potential as a funding source for such truckways.

In this new study, we sought to identify the most promising initial Interstate corridors where toll truckways could be implemented, as in a federal pilot program to test the concept. We made use of a large-scale federal goods-movement database, plus a survey of trucking companies that currently operate LCVs, and corridor-specific information obtained from state departments of transportation.

After identifying about four dozen possible corridors, we used projected (2020) truck volume to narrow the scope to 20 high-volume corridors between logical origins and destinations. The 20 routes were assessed first for potential ability to generate toll revenue if toll truckways were added to them, using a variety of factors. We then assessed the 10 corridors judged to have the highest revenue potential to determine the degree to which they have right of way available (generally in the median) to add truckways, and the nature of the terrain through which they pass. This led to the selection of what we consider to be the most promising corridors for pilot toll truckway projects.

The most important federal policy change necessary for toll truckways is permission for LCVs to use these new barrier-separated lanes in states where LCV use is now forbidden by federal law. Obviously, too, federal permission would be needed to charge tolls on these lanes in Interstate corridors. Because most toll truckways would traverse more than one state—and would be most viable and logical as multi-state facilities—federal law needs to include a mechanism to facilitate multi-state corridor planning and development.

The pending reauthorization of the federal surface transportation program in 2004 offers an ideal opportunity to create a pilot program for toll truckways. Doing so would permit a serious test of (1) a way of financing much-needed additions of highway capacity by using a new funding source, and (2) a way of making the U.S. economy more productive by reducing shipping costs thanks to greatly increased productivity in long-haul trucking.

Table of Contents

Figures and Tables

Part I

Introduction: America's Goods-Movement Problem

America's highly productive economy is critically dependent on efficient goods movement. And goods movement in the 21st century depends critically on trucks. Trucks deliver 90 percent of the value of U.S. freight every year[1], at a cost to shippers of $610 billion.[2] And trucking is increasingly an interstate phenomenon. Today 75 percent of road freight ton-miles and more than half the value of truck shipping crosses state lines.[3]

Several factors account for the high fraction of goods moved by truck today. First, the major expansion of the U.S. highway system after World War II was paralleled by a gradual reduction of the ubiquity of rail lines, as money-losing branch lines and competing main lines were closed down and torn out. Second, the pattern of production has changed, with a major dispersal of industry away from concentrated centers to very spread-out locations. These two factors alone made a far greater percentage of commercial and industrial locations reachable by truck, and often only by truck. There is virtually zero likelihood of these changes being reversed.

But perhaps of even greater significance for the future is the revolution in logistics. As the Federal Highway Administration puts it,

> *Businesses are in the midst of an evolutionary shift from inventory-based "manufacture-to-supply" logistics ("push" logistics) to replenishment-based "manufacture-to-order" logistics ("pull" logistics). The latter relies less on expensive inventory and more on accurate information and timely transportation to match supply and demand.*[4]

Rail freight has a role to play in this logistics revolution, on a select few heavily trafficked major routes. But the need for reliable, quick, door-to-door service between a whole constellation of origins and destinations means that trucking will remain the dominant mode.

But while trucking will obviously be a key player in 21st century goods movement, it suffers from four significant problems.

Inadequate Highway Infrastructure

Over the 20 years from 1980 to 2000, vehicle miles traveled (VMT) on the U.S. highway system grew by 80 percent, while lane-miles increased by only 4 percent. Truck VMT has grown even faster than automobile VMT since 1994.[5] And while total VMT is expected to grow by 2.5 percent a year through 2020, truck VMT

is projected to grow by over 3 percent a year during the same period. The Federal Highway Administration's (FHWA's) Freight Analysis Framework projects that about 46 percent of the National Highway System will be approaching or exceeding capacity during peak periods in 2020, compared with 28 percent in 1998.[6]

Interstate Traffic Congestion

Reflecting reduced highway investment and capacity shortfalls, congestion has reached serious proportions on many key Interstate routes, especially in and near urban areas. The FHWA's data show that in 2001, some 3,084 route-miles of urban Interstate were rated "severely congested" (defined by a volume/service-flow ratio in excess of 0.95), as were 523 route-miles of rural Interstate.[7] The same source reports less severe congestion (V/SF ratio between 0.8 and 0.95) on an additional 2,392 route-miles of urban Interstate and 1,299 miles of rural Interstate. Given projected traffic growth, these sections are likely to move into the severely congested category during the next 20 years, in the absence of lane additions.

Limited Productivity Gains

Both railroads and trucking were deregulated in the 1980s. As a result, both modes experienced increases in productivity and decreases in costs to shippers. Gains were far larger in the rail industry, where labor productivity has increased four-fold since 1980.[8] But in long-haul trucking, for the most part one driver still hauls one trailer, even though technology permits hauling two or three trailers. Trucking has significant potential for major productivity gains.

The efficiency of American trucking is important not only to truckers and shippers but to the economy as a whole. Freight costs get built into the cost of almost everything we buy, whether imported or made in the USA. Inefficiency in trucking produces higher than necessary costs in raw materials, parts, and final consumer goods, detracting directly from our national competitiveness, from our standard of living, and from our ability to defend ourselves. We badly need more efficiency, more capacity, and more redundancy in our highway networks, especially for high-value freight movement.

Continued Safety Problems

While large-truck fatality rates trended steadily downward between 1980 and 2000, the rate of decrease was significantly less than for total highway fatality rates. Figures for the year 2000 show that there were nearly 5,000 deaths resulting from highway crashes involving trucks.[9] This large death toll fuels continued organized opposition to expanded use of double- and triple-trailer rigs—the very trucks that hold the potential for large productivity increases in trucking.

The federal government began regulating truck size and weight in 1956 when it began funding the Interstate highway system. The original Federal Aid Highway Act of 1956 established the first uniform federal weight and size restrictions for Interstate trucking. However, it included a grandfather clause, which provided that the federal weight limits would not apply to trucks in states that permitted weights that exceeded the federal limits. In 1975 Congress increased the federal weight and width limits. And in 1982 it required states to adopt the federal weight limits on Interstates (except for the states grandfathered in with higher weight limits) and required them to allow what are now called "STAA doubles" or "short doubles" on a network of highways whose construction had been assisted by Federal Aid Primary grants. Designated by the U.S. Secretary of Transportation, after consultation with the states, this "National Network" of heavy truck routes

covers about 200,000 miles, about one-quarter of which is Interstate highway and the remainder surface arterial roads.

The last major change occurred with the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991. That measure froze state regulations with respect to Longer Combination Vehicles (LCVs) as of June 1, 1991. It prohibited any modifications of truck size and weight limits and prohibited extension of the highways on which LCVs were permitted to operate. Its provisions[10] froze weights on the Interstate system but froze cargo box lengths on the far more extensive National Network. This length limit in effect extends the weight limit to the whole of the National Network since greater weights on non-Interstate highways are usually of little use without the ability to provide more volume. If this were not enough, state legislation often reinforces the freeze in key states like California.

Trucks deliver 90 percent of the value of U.S. freight every year.

A Transportation Research Board (TRB) panel has called this frozen system a set of "fossils" explaining:

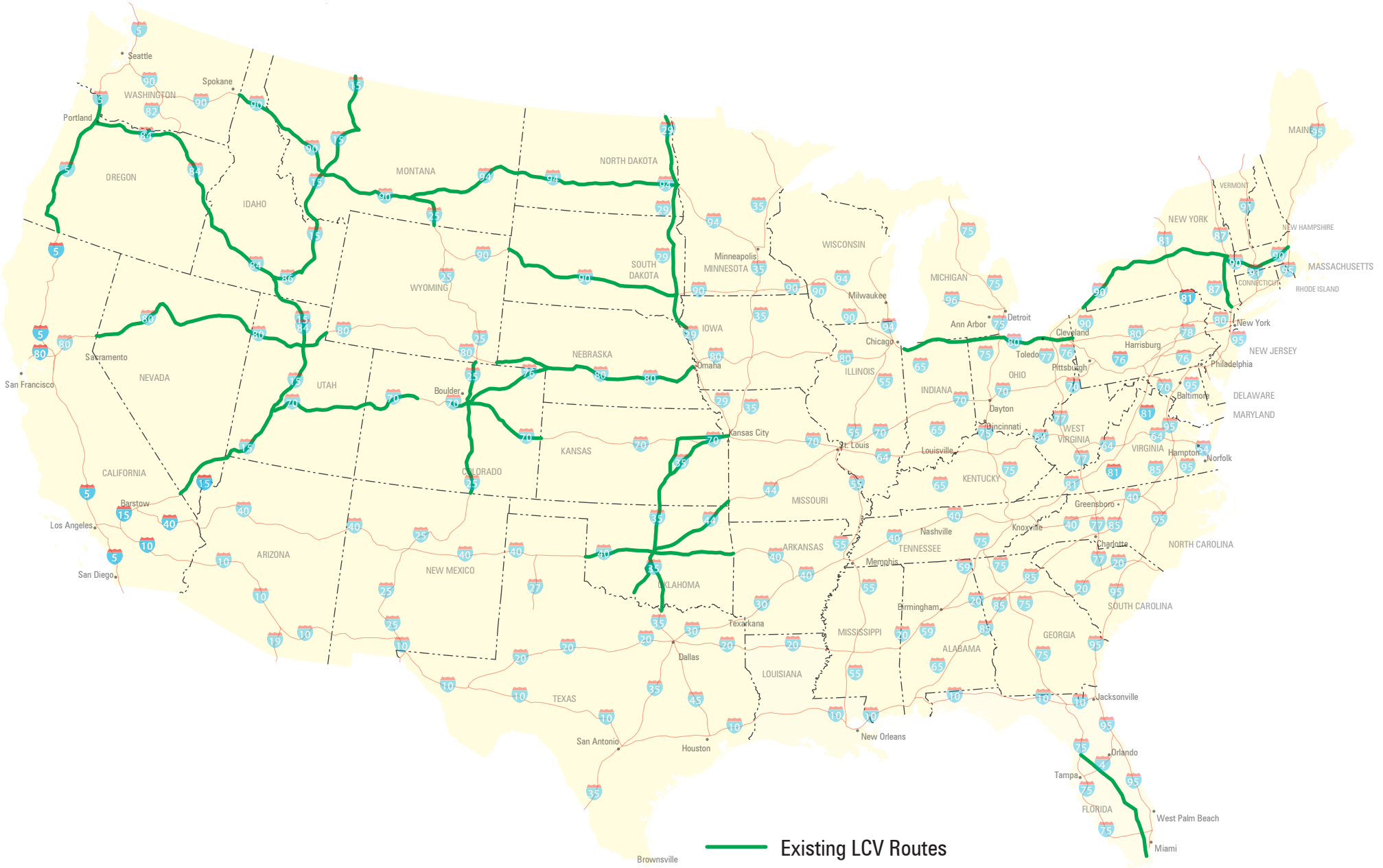
> *Present federal standards are for the most part the outcome of a series of historical accidents instead of a clear definition of objectives and analysis of alternatives. The regulations are poorly suited to the demands of international commerce; their effectiveness is being eroded by ever-expanding numbers and types of special exemptions, generally granted without evaluation of consequences; and freight traffic is bypassing Interstate highways, the safest and most efficient roads, to use secondary roads where the costs generated by that traffic are higher. The greatest deficiency of the present environment may be that it discourages private- and public-sector innovation aimed at improving highway efficiency and reducing the costs of truck traffic because vehicle regulations are inflexible, and because highway users are not accountable for all the costs they generate.*[11]

The TRB panel report followed two major U.S. Department of Transportation reports: the "Highway Cost Allocation Study"[12] and "Comprehensive Truck Size and Weight Study."[13] All three major works attempted to find schemes or approaches toward a reform process covering the highway system nationwide. Despite heroic attempts at forging a consensus, they have failed. No legislation incorporating their recommendations is moving. Public policy discussion has been dominated by arguments of simplistic rhetoric. On the one hand, highway safety groups and their ally on this issue, the railroad industry, have argued and lobbied for further restrictions on LCV operations. On the other side, the trucking industry has argued for lifting the LCV freeze to make possible increased use of LCVs in general-purpose traffic lanes. The issue has been presented as a conflict between highway safety and trucking productivity.

The figure on the next page is a map of the Interstate highway system. Overlaid on that map are the portions of the system where it is currently legal to operate two principal types of LCV: doubles (longer than the short STAA double) and triples. Instead of a network, it is more accurately dubbed a set of fragments. Missing links and extensions of existing routes that would lead to something of a network are fairly obvious.

In May 2003, heading off what had been shaping up as an epic battle over the LCV freeze in the latest reauthorization cycle, a truce on this issue was announced by the two principal modal associations: the American Trucking Associations and the Association of American Railroads. The two organizations agreed not to seek any changes in current federal truck size and weight limits. However, that industry truce should not prevent others from proposing creative solutions to the safety versus productivity dilemma—such as toll truckways.

Figure 1: Existing LCV Routes



Part 2

The Toll Truckways Solution

In a 2002 policy study, a Reason Foundation research team proposed a new approach to resolving the safety versus productivity dilemma: add specialized heavy-duty truck lanes on Interstate routes where LCV operations would make sense.[14] These lanes would be designed to take the heavier loads of long doubles and triples (up to 150,000 lbs. gross vehicle weight), so there would be no reason for state DOT concern about pavement damage from LCV operations. Double- or triple-trailer rigs would not be allowed on regular state highways in these new states. They would be made up and broken down at staging areas directly adjacent to the toll truckways at major trans-shipment points.

The new lanes would be barrier-separated from general-purpose lanes, and would have their own on-ramps and off-ramps; hence, LCVs would not be mixing with regular traffic, thereby alleviating safety concerns. And because these new lanes would provide trucking companies with large gains in productivity, it would be worth the companies' while to pay tolls to gain access to this more productive infrastructure. Hence, the truckways could be at least partially self-supporting from toll revenues.

The Reason team carried out a feasibility study of this concept, using simulation modeling. Data from an Interstate highway with significant truck traffic was used to model a hypothetical Interstate corridor with three existing lanes in each direction and average daily traffic of 40,000, of which 20 percent are heavy trucks. To this would be added a toll truckway facility (assumed to be located in the median), consisting of a single lane (plus breakdown lane) in each direction, with passing lanes every few miles. A heavy-duty pavement design was specified and costed out. Using a simulation model, the operating and maintenance costs of the highway (existing lanes plus new truckway lanes) could be estimated for various levels of truck traffic.

A further set of simulations ran numerous scenarios that explored varying rates at which truck traffic might be attracted to the truckway, using a variety of truck configurations that take advantage of the increased size and weight permitted. These results showed that significant gains in productivity could be realized—up to several hundred percent more payload in some scenarios. Making the assumption that trucking companies would be willing to pay tolls of up to one-half of the cost savings from using more productive LCV rigs, the modeling estimated the potential toll revenue that would be generated in each scenario. In turn, those results were used to assess the degree to which each scenario would lead to a positive return on investment, i.e., in which toll revenues would be sufficient to cover the capital and operating costs of the truckways plus a return on the funds invested. Positive results were obtained for many of the scenarios.

Hauling more freight using multiple trailers would reduce both fuel use and emissions, according to the EPA.

The first step toward realizing the potential of toll truckways would be to initiate pilot projects to test the predictions made in the Reason study. An obvious place to locate such pilot projects would be in corridors that would extend existing LCV routes (Figure 1) into new states; another would be to close gaps in the existing fragmentary LCV network. A third type of pilot would encompass a complete route, from a logistics origin point to a comparable destination point, along which LCV operations would make sense. Assuming that such initial pilot projects were successful, the initial legislative authority could subsequently be mainstreamed, allowing for the further development of a national network of toll truckways wherever justified by current and future truck traffic.

Part 3

Obtaining Market Data

The most important value driver for toll truckways is the productivity increase that trucking companies could realize by operating LCVs over a larger set of routes than those currently permitted by the LCV freeze. Because the 1991 freeze stopped the evolutionary development of trucking routes using long doubles and triples, what exists today is not a network of LCV routes but a set of fragments. Figure 1 showed the current Interstate routes where such rigs are allowed to operate. Actually, there is something of a network in the mountain states, but many of these routes stop abruptly at state borders, rather than continuing on to major freight hubs. And there are notable gaps, such as on I-70 in the middle of Colorado and on I-90 between the Ohio Turnpike and the New York Thruway.

Our current project did not have the resources to attempt to simulate trucking company behavior on hypothetical toll truckways. But a second-best approach was to contact trucking companies that already operate long doubles and/or triples in states where they are allowed and ask them which new corridors would be of greatest importance to their operations. We specifically told them that the new corridors would involve toll truckways as the means to bring about expanded LCV operations.

We contacted close to a dozen major national trucking companies and received responses from seven of them. The majority are so-called “less-than-truckload” (LTL) companies, which tend to use triples; five of these firms responded, four of which are among the country’s 10 largest national trucking companies. Two national truckload (TL) firms also responded, both of them operators of long doubles (often called turnpike doubles). The corridors suggested by these seven firms are listed in Table 1. As can be seen, most of these corridors involve more than one state, and several involve more than one Interstate route. Of these 17 corridors, six were proposed by only one company each; support for the others ranged from two to six companies.

As can be seen, several routes were favored by three or more companies, including I-81 from Knoxville to Harrisburg, I-70 from Denver to the Pennsylvania Turnpike, the Pennsylvania Turnpike itself, and I-80 from Chicago to Salt Lake City. Other projects with support from more than one company include the I-90 gap between Cleveland and Buffalo (which would permit seamless LCV operations from the western border of Indiana all the way to Boston), the Houston to Atlanta route making use of three Interstates, closing the gap in I-70 in Colorado to permit LCV operations from Denver to Salt Lake City, the important I-75 corridor from Detroit through Atlanta to Tampa and to the Florida Turnpike, and also the Florida Turnpike itself (which permits long doubles but not triples).

Table 1: Candidate Corridors Proposed by Trucking Companies

Corridor	Interstates	States affected	Proposed by
Cleveland-Buffalo	I-90	OH, PA	LTL-1, TL-2
Chicago-Minneapolis	I-94	IL, WI, MN	LTL-1
Gary-Nashville	I-65	IN, KY, TN	LTL-1
Nashville-Dallas	I-30, I-40	TX, AR, TN	LTL-1
Knoxville-Harrisburg	I-81	TN, VA, PA, MD, WV	LTL-1, TL-1, LTL-5
Houston-Atlanta	I-10, I-65, I-85	TX, MS, AL	LTL-1, LTL-3
St. Louis-Denver	I-70	MO, KS	LTL-1, LTL-2, LTL-4
Penna. Turnpike	I-70/I-76	PA	LTL-1, LTL-2, LTL-3, TL-1, LTL-4, LTL-5
Denver-Salt Lake	I-70	CO	LTL-1, TL-2
Chicago-Salt Lake	I-80	IL, IA, WY	LTL-1, LTL-3, LTL-4, LTL-5
Wyoming N-S	I-25	WY	LTL-1
San Diego-OR line	I-5	CA	TL-1
Detroit-Tampa	I-75	MI, OH, KY, TN, GA, FL	TL-1, LTL-5
Florida Turnpike	n/a	FL	LTL-2, LTL-5
Memphis-Los Angeles	I-40	TN, AR, TX, NM, AZ, CA	LTL-3, LTL-4
Atlanta-Phoenix	I-20, I-10	GA, AL, MS, LA, TX, NM, AZ	LTL-3, LTL-4
Los Angeles-Las Vegas	I-15	CA	LTL-5

Trucking companies proposed 17 routes on which they would consider paying tolls in order to operate long doubles and triples.

Next, the authors reviewed a map of the Interstate highway system, with the existing LCV routes of Figure 1 and the proposed routes of Table 1 superimposed on it. Looking for remaining gaps and logical extensions to form a possible national network of LCV routes produced an additional set of candidate corridors, shown in Table 2.

Not many of the add-ons listed above are major potential LCV routes in their own right, though some are. Laredo to Dallas (I-35) is already a major trucking route for United States-Mexico trade, and extensions of that route up I-35 to Kansas (where LCVs already operate) and then a Kansas City-Chicago direct truck route, we thought, were worth the preliminary scan. The same NAFTA trade plus improving Houston's connectivity to the Interstate system justified looking at a toll truckway built into future I-69 (US-77, US-59) Brownsville to Texarkana. East-west across Texas, I-10 carries significant long-distance traffic. Through the San Antonio and Houston metro areas (which cover considerable areas), it needs significant widening, providing an opportunity to add toll truckways. I-10 in Florida is the busiest truck route in the state after I-75, so we added a Mobile-Jacksonville link. The Carolinas are an area of major population growth and manufacturing, and they need improved freight highway links to Atlanta and to ports on the coast, as well as enhanced in-state connectivity, so we added sections of I-85 and I-40. We were also looking for links through the Appalachians into Tennessee and the mid-west as well as east to Atlantic ports and developing resort areas on the coasts.

Table 2: Additional Candidate Corridors		
Corridor	**Interstates**	**States affected**
Oakland-Reno	I-80	CA
LA-Phoenix	I-10	CA, AZ
Denver-El Paso	I-25	NM, TX
Seattle-Interstate links	I-5, I-82, I-90	WA
Minneapolis-Fargo	I-94	MN
Kansas City-International Falls	I-35	KS, IO, MN, MO
Kansas line-Dallas	I-35	TX
Kansas City-Chicago	new	MO, IL
Chicago-Detroit-Canadian border	I-94 or I-80/I-75	MI, OH
Indianapolis-Port Huron	I-69	IN, MI
St Louis-New Stanton PA	I-70	IL, IN, OH, PA
Harrisburg PA-H401 Ontario	I-81	PA, NY
Albany NY-A15 Montreal	I-87	NY
Nashville-Hampton Roads	I-40, I-85, US-58	TN, NC, VA
Harrisburg – NY/NJ ports	I-78	PA, NJ, NY
Atlanta-Greensboro	I-85	GA, SC, NC
Atlanta-Charleston	I-20, I-26	GA, SC
Nashville-Chattanooga	I-24	TN
New Orleans-Chattanooga	I-59	LA, MS, AL, GA,TN
Brownsville-Houston-Texarkana	I-69 (planned)	TX
El Paso-Houston, Mobile-Jacksonville	I-10	TX, AL, FL, LA, MS
Laredo-Dallas	I-35	TX

Los Angeles-Phoenix is already a key truck route serving the Phoenix metro area with some through truck traffic eastward on I-10 to New Mexico and Texas, and into Mexico, where the trucking companies suggested LCV operations. I-80 from the heights of the Sierra Nevada range at Emigrant Gap to Sacramento is a spectacular and vital highway linking the Bay Area to the rest of America. There are already LCV operations the breadth of Utah and Nevada on the high plains and in Colorado. We thought it worth adding a segment from Oakland to the Nevada line as a possible truckway. I-70 from St Louis through Indianapolis and Columbus to New Stanton on the Pennsylvania Turnpike is a moderate truck route we thought worth including. So were connections between Chicago and Detroit and the international border crossings into Ontario at Port Huron. The trucking companies proposed I-81 from Knoxville to Harrisburg in central Pennsylvania, but many trucks and other traffic also continue strong north of Harrisburg on I-81 right up through New York State into Canada. We thought at least one new link from I-81 into the huge ports and warehousing area of northern New Jersey should be included so we chose I-78 to Port Newark and Manhattan via the Hudson River tunnels. Similarly the Massachusetts Turnpike and New York State Thruway form a “T” of LCV routes centered on Albany. An extension north of Albany to link this system to Montreal seemed logical.

Part 4

Selection Criteria

Having selected a set of candidate routes, the next step was to attempt to quantify each one's suitability for a toll truckway. For purposes of this analysis, Wilbur Smith Associates provided us with a massive goods-movement database derived from the Federal Highway Administration's Freight Analysis Framework (FAF) and the longer-established Highway Performance Monitoring System (HPMS). Although the data reflect 1998 conditions, it was the only available source of consistent data for all Interstate corridors. This database was the primary source for our analysis, supplemented by data on terrain and right-of-way availability from state transportation departments.

What would make a toll truckway a successful project? In this context, success ultimately means that it would attract enough trucking customers to pay for itself. That would mean both a high volume of truck traffic, especially LCV traffic, and relatively low construction costs. In other words, our selection criteria relate primarily to the financial feasibility of a toll truckway project. Would a proposed truckway corridor generate relatively more revenue than other corridors, and be buildable at relatively low cost compared with others? A corridor that meets these criteria is more likely to be financially feasible than one that does not.

We first review factors affecting demand for a toll truckway, and hence revenue. Then we turn briefly to cost factors.

A. Revenue Criteria

1. Truck Volume

The database provided several measures of truck volume, both "current" (actually 1998) and projected for the year 2020. We judged that the most useful of these was projected truck volume in 2020. It is gross truck volume that potentially generates toll revenues, and the revenue performance of the truckways will depend on their ability to generate toll revenues in the early years following their initial "ramp-up" period. If such a project were authorized in 2004, it would not likely be built and in operation until sometime after 2010. Thus, truck volume in 2020 would be within the first 10 years of the truckway's useful life. To reduce the number of possible corridors to a manageable number, we selected all those whose gross rural truck volume in 2020 was greater than or equal to 10,000 per day over most of its length. This gave us a set of 20 candidate corridors, whose descriptive characteristics are provided in Table 3.

Gross truck volume is not the end of the story, however. Some of the corridors had high truck volume over nearly all of their length, while for others some relatively shorter stretches had higher than average volumes while other stretches had much lower volumes, with the overall result being an average of greater than

10,000 per day. But the latter type of corridor would produce much lower toll revenue than ones like the former. Therefore, we added a second measure: the fraction of all miles in the corridor with 2020 truck volume greater than 10,000.

Table 3: Descriptors for Candidates Analyzed

Corridor	Interstates	Rural Mi.	Avg. No. of Lanes	Avg. Daily Traffic (000) (1998)	Avg. Daily Traffic (000) (2020)	Rural Daily Truck Traffic (000) (2020)
Bakersfield-Sacramento	I-5	554	6.9	129	196	18.4
Los Angeles-Phoenix	I-10	444	5.9	80	121	8.1
Barstow-Las Vegas	I-15	172	7.0	103	163	20.1
Oakland-Reno	I-80	110	6.7	114	172	10.2
Iowa-Illinois	I-80	358	4.3	37	57	15.0
Chicago-Minneapolis	I-94	297	5.6	101	151	11.9
Chicago-Detroit	I-94	141	5.2	78	118	18.2
Toledo-Detroit	I-75	15	6.1	79	122	20.5
Cleveland-Buffalo	I-90	73	5.0	64	99	14.2
Phoenix-Dallas	I-10, I-20	966	5.2	55	83	10.9
Dallas-Atlanta	I-20	655	4.8	48	73	12.7
Toledo-Tampa	I-75	730	5.8	78	116	16.7
Dallas-Nashville	I-30, I-40	973	4.6	53	80	13.4
Knoxville-Harrisburg	I-81	481	4.1	40	63	14.6
Harrisburg-Canada	I-81	312	4.4	39	60	9.5
Harrisburg-NY City	I-78	78	5.5	70	105	13.4
Montgomery-Richmond	I-85	365	5.1	65	96	15.0
Nashville-Gary	I-65	305	4.6	62	91	17.7
St. Louis-Denver	I-70	963	4.7	50	74	6.0
Pennsylvania Turnpike	I-76	223	4.3	50	75	12.0

2. Congestion

Another factor that may lead trucking companies to use toll truckways is high congestion in the general-purpose lanes. The database included several measures of congestion, including the average speed expected in 2020, the fraction of all miles with speed below 65 mph, the average volume/capacity ratio in 2020, and the fraction of all miles with volume/capacity ratio (VCR) greater than one. For purposes of this analysis, we opted to use the average 2020 VCR projected for the (unexpanded) rural portion. A high value of VCR increases the attractiveness of adding a toll truckway, since it means that without capacity enhancement, the corridor in question will be heavily congested. High VCR also means that the state DOTs will be keen to provide additional capacity, in which case toll truckway lanes will be one way for them to do so.

3. Connectivity

Although we expect that some non-LCV trucks will choose to use toll truckways, especially where the regular lanes are congested, the most important selling point of these truckways is their ability to handle LCVs in states where these rigs would otherwise not be allowed to operate. Referring again to the map in Figure 1, those Interstate routes connecting to existing LCV routes would appear to be especially good

candidates for toll truckways. An isolated toll truckway may still make sense to trucking companies, if it goes from a sensible origin to a sensible destination, i.e., to and from major logistics distribution points. But since gearing up for LCV operations on an isolated route would generally require the acquisition of a new fleet, this is less certain to happen than the extension of existing LCV operations to adjacent states. Furthermore, a new toll truckway that fills in a gap in the LCV network would appear to be more valuable than a spur, other things equal.

4. Industry Input

As reported previously in Table 1, the LCV-oriented trucking companies we surveyed proposed 17 corridors as ones that at least one of them would be interested in using, if it offered toll truckways. The other possible corridors (Table 2) are ones that appeared to be logical routes, given the volumes of truck traffic on them and overall goods-movement patterns. We consider the industry input to be a proxy for more detailed (and more costly to obtain) survey data that would indicate some degree of relative willingness to pay and use such hypothetical routes. Hence, a corridor with such expressions of possible customer demand should be ranked higher, other things equal, than one without such an indication.

Putting all this information together, for the 20 candidate corridors from Table 3, gives us the specifics needed for analysis in Table 4.

Table 4: Data for Candidate Corridor Analysis

Corridor	Interstates (rural sections)	Daily truck vol. (000) 2020	Fraction truck vol >10K, 2020	VCR in 2020	Connectivity	No. of companies proposing
Bakersfield-Sacramento	I-5	18.4	0.81	1.02	alone	1
Los Angeles-Phoenix	I-10	8.1	0.91	0.75	alone	0
Barstow-Las Vegas	I-15	20.1	0.56	1.03	spur	1
Oakland-Reno	I-80	10.2	0.56	1.06	spur	0
Iowa-Illinois	I-80	15.0	0.92	0.83	gap	4
Chicago-Minneapolis	I-94	11.9	0.70	1.04	spur	1
Chicago-Detroit	I-94	18.2	0.86	0.84	alone	0
Toledo-Detroit	I-75	20.5	1.00	0.62	spur	0
Cleveland-Buffalo	I-90	14.2	1.00	0.82	gap	2
Phoenix-Dallas	I-10, I-20	10.9	0.61	0.67	alone	2
Dallas-Atlanta	I-20	12.7	0.66	0.76	alone	2
Toledo-Tampa	I-75	16.7	0.94	0.86	spur	2
Dallas-Nashville	I-30, I-40	13.4	0.73	0.73	alone	1
Knoxville-Harrisburg	I-81	14.6	0.96	1.01	alone	3
Harrisburg-Canada	I-81	9.5	0.52	0.75	alone	0
Harrisburg-NY City	I-78	13.4	0.96	1.03	alone	0
Montgomery-Richmond	I-85	15.0	0.80	1.02	alone	0
Nashville-Gary	I-65	17.7	0.93	0.88	alone	1
St. Louis-Denver	I-70	6.0	0.17	0.61	spur	3
Pennsylvania Turnpike	I-76	12.0	0.47	0.97	spur	6

B. Cost Criteria

1. Right-of-Way Availability

Reason's 2002 toll truckways study modeled the truckways as being added to wide, unused medians of existing Interstates. Hence, land acquisition costs were assumed to be negligible. Since only rural, long-haul routes are being considered in this exercise, that condition should apply to some of the corridors on our list. But in those cases where sufficient right of way is not already owned by a state DOT, the capital cost of developing the truckway will be higher by the amount of land acquisition costs. Also, such widening outward is inherently more expensive than widening inward, because more work generally needs to be done to create roadbed and realign ramps and overpasses. It is also more likely to attract litigation aimed at preventing the project from going forward.

There is no federal government source of right-of-way data for the Interstate system. Such information therefore had to be obtained from each state DOT through which a corridor passes. Such data are usually available only at the district office level within state DOTs. Because of the time and effort involved in obtaining such information, we did not seek to obtain it for all 20 of the initial candidate corridors. Rather, we first did the analysis based on revenue potential, using the factors discussed above. Then, for the 10 corridors with the greatest potential to generate revenue, we went to the relevant DOTs to inquire about right of way.

2. Terrain Factors

The other factor that can significantly affect the cost of a toll truckway project is the type of terrain through which it must be built. The Federal Highway Administration, in considering capital improvement costs for lane additions, divides terrain into three categories: flat, rolling, and mountainous. For the candidate corridors involved in this exercise, we also obtained a judgment from each DOT as to which type of terrain best characterized the corridor in question.

Part 5

Analysis of Candidate Corridors

As noted in the previous section, our analysis proceeded in two steps. First, we used quantitative data on revenue-related factors to create a revenue-potential score for each of the 20 candidate corridors. For those with the highest scores, we then contacted the relevant state DOTs to obtain right-of-way and terrain information.

A. Quantification of Revenue Potential

Before the private sector would provide capital for a toll truckway, it would undertake a detailed feasibility study, aiming to develop a well-supported model of usage by trucking companies, complete with estimates of toll rates and volumes of truck traffic (of various types), over at least the lifetime of the revenue bonds involved (typically 25-30 years). That kind of detail is not possible in a brief study like this one. Instead, we are simply seeking to estimate the *relative* revenue-generating potential of a set of possible toll truckway corridors, based on easily obtainable data.

A very rough rule of thumb, for a rural (2-lane) toll truckway with a capital cost of $2.5 million per route-mile, is that its toll revenues must produce about $365,000 per mile per year (which would support $250,000 annual debt service and $115,000 annual operations and maintenance expense). That equates to $1,000/day per mile. At a toll of 13 cents per mile (approximately what today's 18-wheel rigs pay in fuel taxes), that would require 8,000 trucks/day. Actual truckway tolls, especially for LCVs, would likely be much higher than this. At an average of 26 cents/mile, the same truckway would need 4,000 total trucks/day, and at 52 cents/mile, it would need 2,000 trucks/day to be self-supporting from toll revenues.

While the projected future traffic and congestion levels on Interstate routes have been developed by the FHWA and its contractors, even those numbers are only estimates of how things will turn out 16 years from now. We take these estimated numbers one step further, by combining them into a point score for each corridor that attempts to quantify its relative ability to generate toll revenue. This process necessarily relies on judgment, and is to that extent somewhat arbitrary. However, this report includes our methodology and data, so as to make the process transparent. Hence, it will be possible for those who differ with our judgment calls to re-do the analysis using different judgments.

Our quantification procedure uses the data in Table 4, weighted as follows:

- 35% for gross truck volume in the rural sections in 2020 (Rationale: The single most important factor in revenue potential is how strong of a truck route the corridor is, and gross truck volume best captures this.)
- 15% for the additional factor of truck traffic being high all along the corridor (Rationale: Long trips are significantly more likely to benefit from the toll truckway than short trips; hence, a corridor with a high fraction of long trips is a better candidate.)
- 15% for extent of congestion (Rationale: Due to the extent of observed diversion of trucks from existing toll roads, despite congestion on the alternate routes, we think congestion will be only a modest factor in most cases, in determining whether a truck will use the truckway.)
- 20% for connectivity to the LCV network (Rationale: As discussed previously, early LCV use is crucial to revenue generation, and that is more likely if the truckway connects directly to existing LCV routes.)
- 15% for LCV-using trucking company interest (Rationale: Although to some extent this category may overlap with LCV network connectivity, we assign points to this one based on the number of companies that expressed interest in using a particular corridor, which ranged from zero to six.)

Overall, as can be seen, our weighting puts 50 percent of the emphasis on the amount and consistency of overall truck traffic in the corridor, 35 percent on factors relating to LCVs, and the remaining 15 percent on expected congestion levels. We translated the absolute numbers into scoring points by taking the top scorer in each category and scoring it at or near the maximum points for that category, then scaled the rest down accordingly, rounding the numbers to whole numbers.

A basic toll truckway probably needs between 2,000 and 4,000 trucks per day to be self-supporting from toll revenues.

B. Taking Account of Cost Factors

We selected the 10 corridors that scored highest on revenue potential for further analysis, to determine which of them would be likely to have unusually high costs, and hence be relatively less attractive as pilot-project toll truckways. We used two indicators of higher costs: inadequate existing right of way (ROW) and difficult terrain.

1. Right-of-Way Adequacy

Our standard model, based on Reason's 2002 toll truckways report, assumes that the new truckway is added to the vacant median of an Interstate highway. Our nominal design is for a single lane, plus shoulder/breakdown lane, in each direction, with a concrete Jersey barrier in the center and similar barriers separating each side of the truckway from the general-purpose lanes. (There would also be passing lanes every several miles, requiring additional width.) Thus, this nominal design was estimated to require a

minimum of 48 feet of median width, based on a pair of 12 ft. travel lanes, 4 feet for the barrier in the center, and 10 ft. breakdown shoulders in each direction.

We recognize that there would be operational advantages to truckways built with two lanes in each direction, to facilitate passing (and ultimately greater volume). Such a truckway would require between 72 and 92 feet of ROW, which is seldom available on today's rural Interstates. One possible intermediate approach is a three-lane design, which would alternate passing lanes; other compromise designs are possible, given that professional drivers would be used. But for purposes of this analysis, we based the ROW requirement for initial pilot-project truckways on a minimum of 48 feet.

We therefore queried state departments of transportation in the states through which our top 10 corridors pass regarding the extent of median width on the relevant stretches of Interstate. In each case we asked for the number of route miles with less than 48 ft., 48 to 64 ft., and greater than 64 ft. Abbreviated results are presented in Table 6.

The two most attractive corridors would each fill a gap in the existing LCV network.

In some cases where we list right of way as available, the DOTs in question pointed out that their plans for the next decade or so call for adding new general-purpose lanes in that median. Across the country, many rural Interstates that were built originally with two lanes in each direction are now planning "third-laning" projects, due to projected traffic growth. Third-laning often takes many years, because budgets often permit only a limited number of miles to be done each year. The process often requires overpasses to be rebuilt, due to the need to change the location of supporting columns and/or to accommodate added or wider shoulders and breakdown lanes.

Should Congress authorize states to create toll truckways, state DOTs would have a new option for third-laning: develop the additional lanes as toll truckways instead of as general-purpose lanes. Among the advantages would be bond funding to do the entire widening project over the span of a few years, rather than a decade or more, and separation of at least the largest trucks from general traffic (safety and pavement-life benefits). Drawbacks would include the fact that the new capacity would not be available for use by cars. Hence, the decision to opt for toll truckways rather than general-purpose lanes would likely make sense only in corridors with a high level of current and future truck traffic (such as the corridors we are focusing on here).

2. Terrain Factors

Building highways in mountainous terrain costs more than building them in flat terrain.

We asked our state DOT contacts to characterize the relevant Interstate corridors in their state as primarily flat, partially hilly, or significantly hilly. Those results are reported in Table 6.

Table 5: Revenue Potential Scores of Candidate Corridors

Route	Gross Truck Volume 35 points	Proportion of Route with>10K 15 points	Congestion 15 points	Connectivity 20, 10 or 0	Trucking Company Interest 3 pts/vote	Total Score
I-80 Iowa, Illinois	26	14	8	20	12	80
I-90 Cleveland-Buffalo	25	15	8	20	6	74
I-75 Toledo-Tampa	29	14	9	10	6	68
I-75 Detroit-Toledo	35	15	6	10	0	66
I-76 Penna. Turnpike	21	7	10	10	18	66
I-15 Barstow-Las Vegas	35	5	10	10	3	63
I-81Knoxville-Harrisburg	26	14	10	0	9	59
I-5 Bakersfield-Sacramento	32	12	10	0	3	58
I-65 Nashville-Gary	31	14	9	0	3	57
I-94 Chicago-Minneapolis	21	11	10	10	3	55
I-94 Chicago-Detroit	32	13	8	0	0	52
I-85 Montgomery-Richmond	26	12	10	0	0	48
I-78 Harrisburg-NY City	24	14	10	0	0	48
I-20 Dallas-Altanta	22	10	8	0	6	46
I-30/I-40 Dallas-Nashville	23	11	7	0	3	44
I-81 Harrisburg-Canada	17	8	8	10	0	43
I-80 Oakland-Nevada line	18	4	10	10	0	41
I-10/I-20 Phoenix-Dallas	19	9	7	0	6	41
I-70 St. Louis-Denver	11	3	6	10	9	39
I-10 Los Angeles-Phoenix	14	14	8	0	0	36

If toll truckways are authorized, states would have a new option for "third-laning" of congested Interstates.

3. Analyzing Relative Costs

The final step was to use the information on right-of-way availability and terrain to quantify the relative costs of the 10 corridors. For each corridor, we focused on the percent of its length (route-miles) with less than 48 ft. of available right of way, given that 48 ft. is the minimum needed for a toll truckway inserted in the median. We assigned 25 points to the maximum extra ROW cost, where ROW needs to be acquired. And we assigned another potential 25 points to severe terrain. Thus, a toll truckway for which no extra ROW needed to be acquired and which passed through flat territory would score a total of 100 baseline points on cost. By contrast, a truckway which needed ROW acquisition along its full length and built entirely in mountainous terrain would have a cost score of 150. These factors are provided in the final columns in Table 6.

As can be seen, our 10 candidate corridors exhibit a wide range of higher-cost factors, from 101 to 145 (though the latter, for the Pennsylvania Turnpike, is something of an outlier). Most of the corridors are in the cost range of 102 to 118.

Table 6: High-Cost Factors for Top 10 Corridors

Route	State	Mileage	%<48ft	Miles <48ft	Terrain	ROW Cost 25 max	Terr. Cost 25 max	Tot. Cost Factor
I-5	CA	333	5	17	flat	1	0	101
I-15	CA	112	0	0	20% hilly	0	5	105
I-75	FL, GA to Tpk	125	100	125	flat			
	FL, Tpk-Tampa	59	10	6	flat			
	GA, I-75	355	83	295	part hilly			
	GA, I-285W	63	98	62	flat			
	TN	162	11	18	hilly			
	KY	193	13	25	hilly			
	OH	213	9	19	flat			
	MI	395	16	63	flat			
	Total I-75 Corr.	1565	39	613	30% hilly	10	8	118
I-75 OH-MI	OH	16	40	6	flat			
	MI	48	46	22	flat			
	Total I-75 short	64	44	28	flat	11	0	111
I-81	TN	75	0	0	flat			
	VA	325	23	75	hilly			
	WV	19	15	3	flat			
	MD	26	5	1	flat			
	PA	72	7	5	flat			
	Total I-81 Corr.	517	16	84	50% hilly	4	12	116
I-90	PA	49	2	1	flat			
	OH	85	9	8	flat			
	Total I-90 Corr.	134	7	9	flat	2	0	102
I-80	IA	306	7	21	flat			
	IL	163	24	39	flat			
	Total I-80 Corr.	469	13	60	flat	3	0	103
I-76 PA Tpk.	PA	359	100	359	80% hilly	25	20	145
I-65	TN	118	14	17	hilly			
	KY	137	21	29	hilly			
	IN	259	12	31	flat			
	Total I-65 Corr.	514	15	76	30% hilly	4	8	112
I-94	IL	44	80	35	flat			
	WI	353	18	64	flat			
	MN	18	75	14	flat			
	Total I-94 Corr.	415	27	112	flat	7	0	107

C. Suggested Corridors

The final step in the analysis was to compare the revenue potential scores from Table 5 and the high-cost factors from Table 6 to determine the most attractive corridors. To factor in both revenue potential and cost, we divided the index of revenue potential by the cost index, providing a single measure of financial attractiveness. It discounts the attractive but more costly corridors more than the somewhat less attractive but less-expensive-to-build ones, putting them more nearly on a level playing field. As can be seen, the

Pennsylvania Turnpike, which ranked quite high in terms of revenue potential, finishes lower when its higher costs are taken into account. By contrast, the two gap-filling corridors on I-80 and I-90—already attractive on revenue potential—become even more attractive when their lower costs are taken into account.

Table 7: Highest-Scoring Candidate Corridors

Route	States	Revenue Potential	Cost Score	Revenue Potential / Cost score
I-80	IA-IL	80	103	.78
I-90	OH-PA	74	102	.73
I-15	CA	63	105	.60
I-75	OH-MI	66	111	.59
I-75	FL-OH	68	118	.58
I-5	CA	52	101	.51
I-94	IL-MN	55	107	.51
I-65	TN-IN	57	112	.51
I-81	TN-PA	59	116	.51
I-76	Penn Tpk	63	145	.45

The two most attractive pilot corridors stand out starkly from the others. They would each fill a gap in the existing LCV network.

(1) I-80 from Chicago west through Iowa would make a connection between the major logistical hub of the country in Chicago and the western Great Plains and Rocky Mountain states where Longer Combination Vehicles already operate. This route would enable the big rigs to operate all the way from Boston and New York to as far west as Denver.

(2) I-90 between the Cleveland area and the New York state line on Lake Erie would allow the two biggest existing LCV operations in the country to be linked. These are the Midwest LCV corridor on the Indiana Toll Road and the Ohio Turnpike in the Midwest and the operations on the New York State Thruway and the Massachusetts Turnpike in the northeast. With appropriate connections the trucking centers of the Midwest could be linked to Boston and New York-Northern New Jersey.

These two corridors achieved the highest scores on revenue potential and among the lowest cost scores. Both run over largely flat terrain and have sufficient right of way along most of their length to add the toll truckway lanes. And because they are already on major trucking routes and fill in critical missing links on a future LCV network, they scored very high on potential revenue.

Three corridors form the next cluster by our ranking:

(1) I-15 in California would link the major intermodal logistics center in Barstow to the existing LCV operations of the High Plains and the Rocky Mountains. Moreover, the Southern California Association of Governments plans an urban-area toll truckway that would extend from the ports of Long Beach and Los Angeles up I-15 as far as Barstow, where it would link up with the I-15 route proposed here.

(2) I-75 Toledo to Detroit is a spur off the nation's largest existing LCV operation on the Indiana Toll Road and the Ohio Turnpike that would connect these to the major manufacturing areas of Detroit and Ontario, Canada.

(3) I-75 from the Ohio Turnpike near Toledo south through Cincinnati, central Kentucky and Tennessee, and Atlanta to the northern end of Florida's Turnpike and Tampa would provide a major north-south trucking route of high efficiency and safety. Since there are LCV operations at each end (on the Florida

Turnpike at the southern end), we could have rated this as a "bridge" but due its great length we rated it only a spur in character.

Next we have a grouping of four corridors that score equally on our revenue/cost ranking:

(1) I-5 in the Central Valley of California is the most truck-intensive portion of this major west coast north-south artery. An I-5 Valley toll truckway has the potential to interface with proposed urban toll truckways in the greater Los Angeles area, such as one being considered over the Grapevine that divides greater Los Angeles from the Central Valley, beginning near Bakersfield.

(2) Chicago to the Twin Cities via I-94 scores well since it links two major centers and is on a relatively flat route with a lot of central median to exploit. We also scored it as a spur, due to the potential to link it with the Indiana Toll Road at its southern end.

(3) I-65 from Tennessee to Chicago is obviously strong because it links the Midwest to the South. To some extent this route provides an alternate north-south route to the slightly higher scoring I-75 route.

(4) I-81 has become the major trucking route between the hub states and the mid-Atlantic. This route would link major logistics centers in Knoxville and Harrisburg, which is the portion of I-81 with by far the heaviest truck traffic.

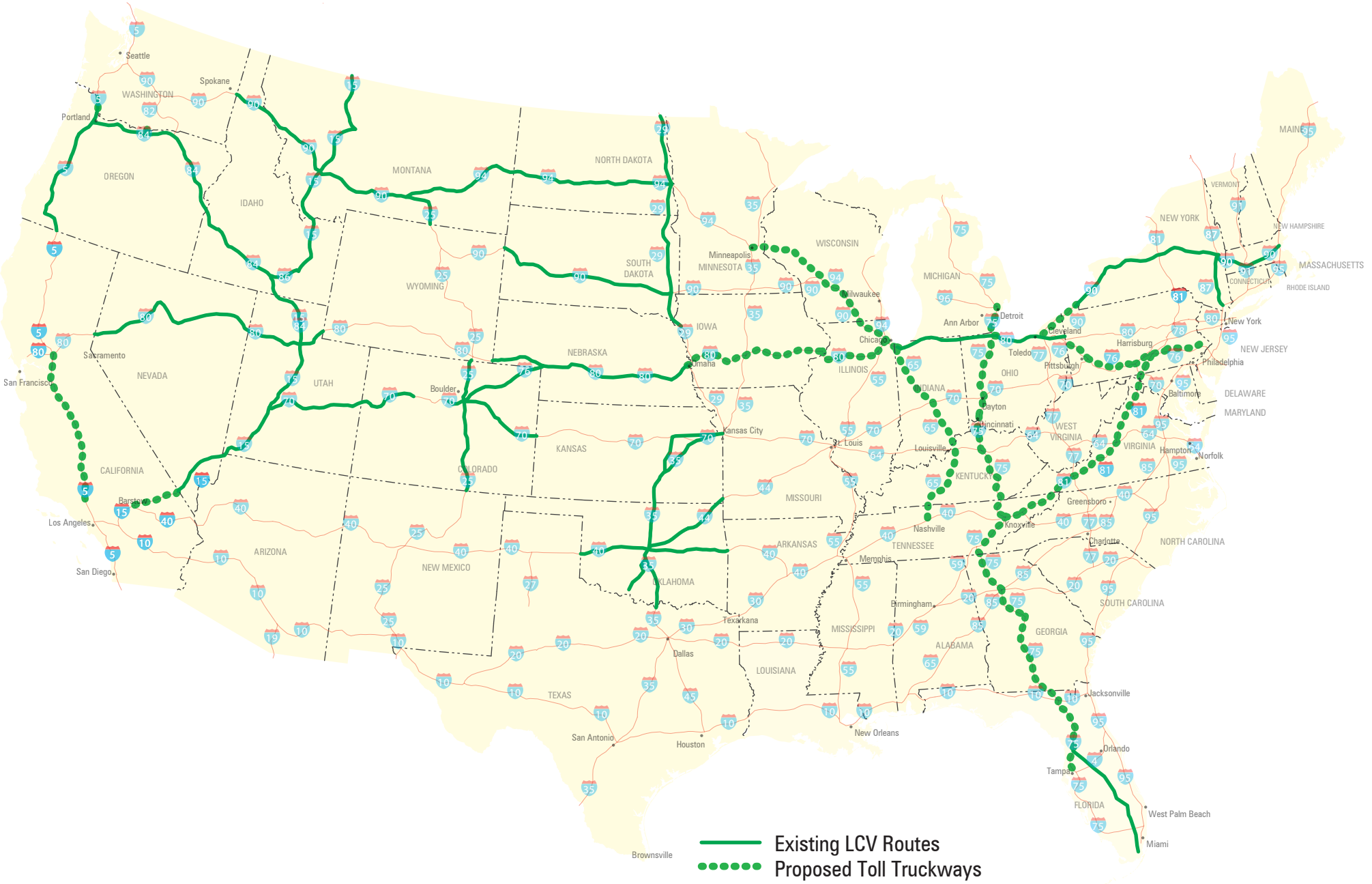
These attractive corridors would cost somewhat more, due to more rolling terrain and not as much available right of way. But both I-81 from Knoxville to Harrisburg and I-65 from Nashville to Gary achieved respectable scores on revenue potential, in the same ballpark as I-15 and I-5. The I-65 truckway would connect to the Indiana Turnpike, where LCVs already operate. The I-81 truckway would be a stand-alone project, but because it would connect two major trucking logistics centers and has significant industry support, it appears to be a very viable candidate.

Finally we have the Pennsylvania Turnpike. Already an important trucking route, it connects directly with the Ohio Turnpike, where LCVs already operate, and could bring these rigs to the major trucking logistics center of Harrisburg. Although its hilly terrain gave it a high score on relative cost, it has the (unquantified in our methodology) additional advantage of already being a toll road, and one that has recently announced a 44 percent toll increase to facilitate reconstruction.

Figure 2 shows these 10 potential pilot corridors and their relationship with existing LCV routes and the remainder of the Interstate highway system.

One apparently obvious omission from our set of toll truckway corridors is the gap in I-70 in Colorado. This gap reflects the difficult and environmentally sensitive terrain of Glenwood Canyon, where a 12-mile widening (to four lanes) in the early 1990s cost in excess of a billion dollars. While that factor alone would have led to a very adverse rating on our higher-cost factor, it is also the case that truck traffic on western I-70 is far less than that on I-40 and I-80, which would have produced a relatively low score on revenue potential, as well. Thus, the I-70 gap did not even make it into our initial set of 20 corridors for analysis.

Figure 2: Existing LCV Routes and Proposed Toll Truckways



Part 6

Conclusions and Policy Recommendations

A. Findings

Reason's 2002 policy study defined the concept of toll truckways and carried out general economic and financial feasibility modeling to suggest that this kind of truckway would produce large cost savings in U.S. goods-movement. Toll truckways would offer such large productivity gains for trucking companies that many would be willing to pay tolls to obtain these gains. The present study, using routes largely suggested by the trucking industry, has identified corridors that look very promising for such truckways. They are Interstate routes with high levels of current and projected truck traffic. Most of the promising corridors connect directly to the existing fragmented network of LCV routes, making it into the beginning of a real network

Over the next 20 years, large segments of many Interstate highways will experience significant increases beyond the already high volume of trucks they now carry. Many of these corridors will experience significant congestion without lane additions. Yet many state transportation budgets are hard-pressed to keep up with proper levels of maintenance and repair to prevent existing highway infrastructure from deteriorating. Many may have difficulty implementing desired lane additions, unless a new source of funding comes along (such as truck tolls).

Hence, the case for going forward with toll truckways appears to be strong. A federal pilot program, permitting states to move forward with corridors such as those identified here, would permit this promising concept to be tested during the next six years.

B. Support for Toll Truckways

The importance of increasing highway capacity to accommodate goods movement was highlighted by a special committee of the Transportation Research Board. In this report, the Committee for the Study of Freight Capacity for the Next Century acknowledged that because trucking accounts for the majority of freight transportation, "no federal activity has greater significance for freight capacity than the federal-aid highway program."[16] The report endorsed continued reliance on the principle of user financing and urged that support for this principle be sustained "by funding projects that fee payers recognize as having value."

It specifically recommended that Congress call for study of the costs and market potential of exclusive truck facilities.

As noted in part 2 of this study, the 2002 Reason Foundation report that examined the feasibility of toll truckways was endorsed by two organizations with a strong interest in highway issues. The National Safety Council endorsed it, because it calls for separation of LCV operations from general-purpose lanes. And the American Trucking Associations (ATA) endorsed it because of the potential for major productivity gains to the trucking industry.

Both the National Safety Council and the American Trucking Associations have endorsed this approach to toll truckways.

Since that time, the highway construction community has also embraced the concept. The strongest statement of support has come from the American Road & Transportation Builders Association (ARTBA). Its position paper recommends that "the federal government should encourage state and local governments to construct and maintain new, self-financed 'truck-only' lanes."[17] It further recommends that the reauthorization legislation should:

- Encourage and allow the use of Interstate Highway System median, air and tunnel rights of way for construction of "truck only" lanes;
- Change federal law to allow for the imposition of tolls on the Interstate Highway System to fully cover the cost of right-of-way acquisition, design, construction, and maintenance of "truck-only" lanes;
- Capitalize on public-private partnerships by allowing "truck-only" lanes projects to qualify for federal tax-exempt bond status;
- Meet a minimum 50-year design life under heavy truck traffic for "truck-only" projects; and
- Make "truck-only" lane projects eligible for federal highway funds through both the National Trade Corridor and Border Infrastructure Development Program and the Congestion Mitigation and Air Quality (CMAQ) Program (assuming project conformity with the Clean Air Act).

ARTBA and the Associated General Contractors (AGC) are leading a broad industry coalition called the Transportation Construction Coalition (TCC) in support of their overall agenda for reauthorization, including "separate highway lanes for commercial trucks . . . financed through the collection of tolls." In addition, two existing corridor coalitions, the West Coast Corridor Coalition (I-5) and the I-10 Coalition, have seriously explored toll truck lanes in their efforts to expand freight capacity in their respective corridors.

As noted previously, the principal trade organizations of the railroad and trucking industries recently called a truce on the issue of LCVs.[18] More specifically, the two organizations agreed that neither ATA nor the Association of American Railroads would advocate any changes to current federal truck size and weight regulations, and will oppose proposals to modify the current federal provisions.

But there is another side to this coin. First of all, a number of individual trucking companies—including some of the nation's largest—support toll truckways and may be willing to lobby in support of a pilot

program. Second, since the AAR-ATA truce kills any chance of a broader liberalization of truck sizes and weights, the *only* path toward increased trucking productivity for this reauthorization cycle lies with enactment of a toll truckways pilot program.

C. Federal Policy Recommendations

We recommend that the pending legislation to reauthorize the federal surface transportation program include provisions to make toll truckways possible, at least on a pilot program basis. The single most important policy change needed is to permit trucks categorized as LCVs to operate on toll truckways built in states now covered by the LCV freeze. It is specifically the ability to haul two or three trailers in such new corridors that creates the economic value for which trucking companies are willing to pay tolls. Without that large productivity gain, trucking companies' willingness to pay tolls would be drastically reduced, and the new truckways would be impossible to finance. Thus, the core policy change would be granting exemptions from the LCV freeze for LCVs operating solely on new toll truckways authorized by the pilot program.

Other key policy provisions include the following:

- Exemption from the current ban on the use of tolls on currently non-tolled portions of the Interstate system, for the new toll truckways;
- Permission for states to use Interstate right of way for the construction of toll truckways;
- For those toll truckways projected to be fully self-supporting from tolls, an exemption from federal and state diesel fuel tax for miles driven (and electronically tolled) on toll truckways (to prevent "double taxation").

The single most important policy change is to permit LCVs to operate on new toll truckways.

A number of other provisions could be included in a federal toll truckways pilot program. There could, for example, be specific provisions regarding staging areas for make-up and break-up of LCVs. There could be provisions requiring truckstop-type facilities at specific intervals. Another provision could require that all toll collection be done electronically, on an open-road basis, thus avoiding all the costs and inconvenience of old-fashioned tollbooths and toll plazas.

Some other issues should clearly be left to state and local transportation policymakers. One such issue is competing uses for available right of way in the median of Interstates in or near urban areas. Some of the possible toll truckways in our analysis originate in or near, or bypass, large metro areas, using Interstate routes that also serve as regional or local commuter routes. Thus, some of the "available" right of way in the median may be planned for use as high-occupancy vehicle (HOV) lanes. We take no position here on whether such right of way is better used for toll truckways, for a set of HOV lanes, or for a set of HOT lanes. That is a decision best made at the level of the state DOT and the relevant Metropolitan Planning Organization (MPO), and should not be decided for them by federal law.

One other important *federal* issue is multi-state corridors. Nearly all the high-scoring corridors in our analysis involve two or more states. Planning large transportation projects in a single state is complex and time-consuming; doing so in multiple states is even more fraught with difficulties. Yet to make sense as a productivity increaser for trucking companies, a toll truckway must connect a logical origin (typically a major freight logistics center) to a logical destination, irrespective of state borders. These projects cannot simply be built up to a state line (unless LCVs are already legal on the Interstates of such a neighboring state).

The pilot program needs to facilitate multi-state corridor planning and development.

Thus, the pilot program legislation needs to include a mechanism to facilitate multi-state corridor planning and development mechanisms. Several "corridor coalitions" already exist—for I-95, I-10, and I-5 in particular. These tend to include the relevant state DOTs and MPOs and a variety of private sector organizations, especially in the goods-movement field. Such coalitions can be very useful in developing political and institutional support for a corridor improvement such as a toll truckway project. But in their present form, they are not entities that can authorize a project, make right of way available, and issue toll revenue bonds (or arrange for a private-sector entity to do so).

One possible mechanism is the Intergovernmental Agreement (IGA), which many states authorize and which some (such as Texas) specifically authorize to be created with neighboring states. The Administration's SAFETEA bill includes a useful provision, Sec. 1806, Multi-State Corridor Planning Program, under which FHWA would encourage state DOTs and MPOs to plan and develop multi-state corridors, by making available planning grants for this purpose. The language suggests that priority be given to, among other things, projects that increase freight productivity, which toll truckways would certainly do. It would be useful to amend this language to explicitly include planning grants for toll truckway multi-state corridors, formed as IGAs. Such IGAs would have the authority to initiate and serve as the lead agency for multi-state toll truckway pilot projects. They would provide a single point of contact for those who might compete for the authorization to finance, build, and operate such projects.

About the Authors

Robert W. Poole, Jr. is Director of Transportation Studies at the Reason Public Policy Institute. He received B.S. and M.S. degrees in engineering from MIT and worked in aerospace and for several consulting firms before launching Reason Foundation in 1978. He has advised the U.S., California, and Florida Departments of Transportation as well as the Reagan, Bush, Clinton, and Bush White Houses on transportation policy issues.

Peter Samuel received his B.Comm. (Honors) majoring in economics from the University of Melbourne, Australia, where he also studied city planning. He taught economics at Monash University, then moved into journalism with the *Canberra Times* and later with the newsweekly, *The Bulletin*. Based in the United States since 1980, he founded and edited *Toll Roads Newsletter*, now replaced by the comprehensive Web site, www.tollroadsnews.com. He has been a contributing editor to *World Highways* and *Intelligent Transport Systems International*.

Acknowledgements

The authors gratefully acknowledge the assistance of Arno Hart of Wilbur Smith Associates who made available a comprehensive truck freight database for use on this project. We also appreciate the helpful suggestions of a dozen anonymous peer reviewers. Needless to say, the authors alone are solely responsible for the information, analysis, and conclusions presented in this report.

Other Relevant Reason Foundation Policy Studies

Robert W. Poole, Jr. and C. Kenneth Orski, *HOT Networks: A New Plan for Congestion Relief and Better Transit*, Policy Study No. 305, February 2003.

Peter Samuel, Robert W. Poole, Jr., and Jose Holguin-Veras, *Toll Truckways: A New Path Toward Safer and More Efficient Freight Transportation*, Policy Study No. 294, June 2002.

Robert W. Poole, Jr., *Commercializing Highways*, Policy Brief #19, August 2001.

Peter Samuel, *Putting Customers in the Driver's Seat: The Case for Tolls*, Policy Study No. 274, November 2000.

Peter Samuel, *How to "Build Our Way Out of Congestion": Innovative Approaches to Expanding Urban Highway Capacity*, Policy Study No. 250, January 1999.

Endnotes

1 U.S. Department of Transportation, Federal Highway Administration, *Our Nation's Highways* (Washington, D.C., 1998) p. 3.

2 DRI WEFA,*U.S. Freight Transportation Forecast to 2013* (Waltham, MA, 2002) p. 11.

3 U.S. Department of Transportation, Bureau of Transportation Statistics, *Truck Movements in America: Shipments From, To, Within, and Through States* (Washington, D.C., BTS/97-TS-1, May 1997) p. 1.

4 U.S. Department of Transportation, Federal Highway Administration, *The Freight Story: A National Perspective on Enhancing Freight Transportation* (Washington, D.C.) p. 7.

5 Ibid, p. 11.

6 Ibid, p. 12.

7 U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2001* (Washington D.C., 2002) Table HM-42.

8 Ibid., p. 6.

9 U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States: 2000* (Washington, D.C., 2001) Table 1029, p. 635.

10 23USC127 US law supported by regulations 23CFR658.23

11 Transportation Research Board, *Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles* Special Report 267, May 2002, pES-2.

12 U.S. Department of Transportation,*1997 Federal Highway Cost Allocation Study*(Washington, D.C., 1997).

13 U.S. Department of Transportation, *The US Department of Transportation's Comprehensive Truck Size and Weight Study* Washington, D.C., August 2000.

14 Peter Samuel, Robert W. Poole, Jr. and Jose Holguin-Veras, *Toll Truckways: A New Path Toward Safeer and More Efficient Freight Transportation*, Policy Study No. 294 (Los Angeles: Reason Public Policy Institute, June 2002).

15 Cheryl Bynum email to the authors, Jan. 22, 2004.

16 This quotation is from a summary article about the report, "Freight Capacity for the 21st Century," Joseph R. Morris, *TR News* 227, July-August 2003, p. 32. The report itself is *Special Report 271: Freight Capacity for the 21st Century*, (Washington, D.C., National Academy of Sciences, Transportation Research Board, 2003).

17 American Road & Transportation Builders Association, *Use of Interstate Highway Median, Air and Tunnel Right-of-Way for Development of Self-Financed 'Truck-Only' Lanes and High-Speed /Freight Rail*, (Washington, D.C.), 2003.

18 Don Phillips, "Truckers, Railroads Call Truce, Will Join to Lobby Congress," *Washington Post*, May 26, 2003.









Reason Public Policy Institute
3415 S. Sepulveda Blvd., Suite 400
Los Angeles, CA 90034
310/391-2245
310/391-4395 (fax)
www.rppi.org