

RAIL Solution Comments on the new Draft Final Report

Background

RAIL Solution conceived the legislation, H-1581, which came to be known as the "I-81 Freight Rail Study". H-1581 passed the 2006 General Assembly regular session unanimously. We pushed implementation of the legislation and have tracked progress of the Study through contact with both the Strategic Planning Office of Norfolk Southern and the Department of Rail and Public Transportation, sometimes making use of the Freedom of Information Act. RAIL Solution is a private, not-for-profit citizens group working to bring the advantages of 21st Century freight and passenger rail service to the I-81 Corridor.

Overview

The new Draft Final Report dated October 27, 2009 [*Feasibility Plan for Maximum Truck to Rail Diversion in Virginia's I-81 Corridor*] is improved over the earlier versions of the Study RAIL Solution reviewed in January and February, 2009. The two biggest enhancements are: 1) the new trucking volume forecast that for the first time takes into account the effects of higher fuel prices and the onset of economic recession in 2008; and 2) consideration of open-intermodal rail concepts that can carry all trucks, not just shipping containers.

In the first case we, and many other groups, have long contended that the aggressive truck demand forecast driving the work in the I-81 Tier I EIS was inappropriate because it was extrapolated from growth trends during decades prior to the rapid rise in fuel costs, chronic driver shortages, and onset of severe congestion on many of the nation's roads. So the new revision is welcome. As noted in the detailed comments that follow, we have some reservations as to the size of the downward adjustment, which seems poorly documented given its pivotal importance to all that follows in the Study.

In the second case of open-intermodal technologies, the increased attention is also welcome. We and others have also criticized earlier versions of the Draft Final Report (DFR) for not considering alternatives beyond conventional intermodal strategies such as the Norfolk Southern Crescent Corridor. It is unfortunate that the current open intermodal analysis is burdened with so many unrealistic assumptions, as we note in more detail below. The analysis continues to ignore our earlier feedback that the population of truck diversion candidates going into the open intermodal analysis needs to be all through-trucks, not just those rejected as non-divertible by conventional intermodal.

However, because the researchers failed to implement numerous provisions of the H-1581 legislation as a base for its analysis, all the open intermodal strategies are found to be of only "potential" or "unknown" feasibility. Particularly conspicuous by its absence from the scope of work of the study is

the requirement that the DFR fails to investigate “the performance criterion of 60% diversion rate for through-state freight to rail” achieving “truck-competitive transit times and reliability between terminals” as specifically written into the implementing legislation by the General Assembly¹. It is exactly this need for better information that gave rise in 2006 to the comprehensive scope of work in H-1581 that started this Study. Unfortunately it is still needed because the Study has done no research on the open intermodal strategies. Along the way the Study has been diverted from its intended purpose to be little more than a ratification of the NS Crescent Corridor, the only strategy to be found “feasible”.

DFR assumptions are made without justification, and elements that should make up part of the analysis in achieving correct figures are ignored. “Filters” to screen out non-divertible trucks are inappropriately applied, sometimes contradicting explanations in other sections in the report. The statistical analysis and basis for conclusions are so thoroughly distorted by these machinations as to make the Report conclusions useless. Further, the DFR shows that the analysis failed to consider options for rail upgrades, and how those might fare in comparison to the alternative costs and environmental consequences of major capacity increases along I-81.

Inexplicably, DFR contractor, Cambridge Systematics assumes that all “dry van” truck traffic is compatible with the crane-lift operation of the NS Crescent Corridor conventional intermodal proposal. In fact, approximately 70% of dry van truck trailers currently being hauled on I-81 would collapse for lack of structural reinforcement if lifted by a crane². Consequently, the DFR vastly overestimates the impact of the Crescent Corridor on diversion rates for current through-state truck traffic. The impact is already anemic: “the Crescent Corridor aims to divert the year 2008 equivalent of at least 1,300 trucks per day from I-81” [p.3-18; 1,300 x 365 = 474,500/year]. It would almost disappear altogether if adjusted for only 30% of dry vans on the road today that are crane-lift compatible.

In sum, the DFR cherry picks subjects of analysis and adopts assumptions to produce a report designed to validate the Crescent Corridor project at the expense of other approaches.

¹ Most significantly, the Study as summarized fails to address these three key provisions of H-1581 [2006-regular session]: “(A-4.) *Achieve truck-competitive transit times and reliability between terminals*; (B-1.) *Capital cost of upgrading and construction for rail line as determined in subsection A as well as cost of terminals, rolling stock, and other equipment or infrastructure*; (B-2.) *Operating cost for the level of rail service needed to achieve truck-competitive speed and reliability*; (B-3.) *Include comparative return on investment analyses between the rail option(s) found to be most effective in meeting the performance criterion of 60% diversion rate for through-state freight to rail.*” The entire act is appended to this document.

²Reebie Associates, *The Northeast-Southeast-Midwest Corridor Marketing Study Examining the Potential to Divert Highway Traffic from Interstate 81 to Rail Intermodal Movement*, a study conducted for the Va. Department of Rail and Public Transportation, December 15, 2003, p. 26

In the spirit of helping the DFR be as good as it can be, RAIL Solution offers some constructive comments. It would be extremely helpful if the various offices of the Commonwealth involved in this Study would see that these are addressed prior to release of the Study.

These are presented below in chronological page order of the new DFR under two headings, Major Comments, and Minor Comments. The latter are unimportant, but since we read through the DFR in detail, they might as well be included.

Major Comments

p. ES-1 - "According to year 2008 Commonwealth vehicle counts, I-81 carried an average of...9,284 trucks per day in both directions..." This 9,284 number is used after that throughout the DFR without further attribution or elaboration. Though pivotal to everything that follows, it is never subject to a specific footnote reference. The forecast of truck volumes on I-81 has been adjusted downward to reflect the prolonged recession and the upward thrust in fuel prices throughout 2008.

No doubt an adjustment is justified for the recession and high fuel prices. In fact, we and others have argued consistently that the earlier forecasts, both the base level and the 2.8% annual growth, were unrealistic

As a result, the new Draft starts with a new "base forecast". Current truck volume is set at 9,284 per day, vs. 13,846 used in the February draft, 11,805 used in the 2005 *Virginia Statewide Multimodal Freight Study*, 12,010 used in the Tier I EIS (*I-81 Corridor Improvement Study*) and even 10,587 used as the 2008 number in the Cambridge Systematics' PowerPoint dated October 5, 2009.

An indication of the difference this makes can be seen from the fact that in the February 28 version, 8,570 trucks were considered through-trucks to Virginia ($13,846 \times 62\%$). Now the total trucks are only 9,284, so when multiplied by .62, through trucks drop to 5,756. *In the new case both the total trucks and the through truck component are only two-thirds of what they were in the February version.*

This one-third drop is huge! We can find no basis in the FHWA data on monthly Traffic Volume Trends for year over year drops anywhere this large. Virginia is not listed separately, but is combined with other southeastern states in a grouping called South Atlantic. Year to year changes in the 2008 months for this group ranged from a high of -7.4% in August (about the time fuel prices peaked) to a low of -0.8 in December, when the adjustment had pretty much run its course compared to a year ago. The cumulative change for 2008 vs. 2007 for

the South Atlantic group was -3.5% and the cumulative national average for the same period was -3.6% .

So if the whole Study is now to be rebased on a drop as large as now indicated, great care needs to be demonstrated to derive this number carefully and footnote it rigorously. On its face, the one-third downward adjustment seems unrealistically large.

Page 1-3 – Study Objective

Conforming the study to the cited paragraphs of the Appropriations Act implies that such summary descriptions trump the detailed language of H-1581 unanimously passed by the 2006 Virginia General Assembly and agreed to in the letter agreement between Pierce Homer and James Hixon. This is an untenable and unrealistic interpretation. Following this logic, any time an appropriations bill alludes to a funding need, albeit in brief summary form, that abbreviated language would totally supplant the provisions of the original enabling legislation. Would the House of Delegates or Senate take the time to debate and hammer out often lengthy and detailed provisions if they were later to be undone or overridden so readily by simplistic summary language in a companion funding measure? Such an interpretation is absurd as it would nullify the careful work of the General Assembly in many areas.

Page 2-19 – Table 2

The fuel price sensitivity work shown here, and the resulting demand elasticities, are based on the inappropriate assumption that diesel fuel prices ($\$3/\text{gal.}$ used here) are the same for both rail and truck. Of course they are not. Railroads pay far less than trucks. They buy their diesel fuel in huge wholesale quantities governed by competitively bid long-term supply contracts. Truckers buy their diesel fuel at retail stations, one tankful at a time. Furthermore, railroads do not pay state and federal highway taxes. We have no inside knowledge on what Norfolk Southern pays for diesel fuel, but we would venture to guess that if a trucker were paying $\$3/\text{gal.}$, NS would be paying somewhere in the range of $\$1.75 - \$1.90/\text{gal.}$ at the same given time. Failure of the DFR to consider these differences skews the rail/truck competition work later in the report.

Pages 3.2 – 3.6 – Filtering

As in earlier versions of the DFR, the filtering logic is flawed. The effect of the filters, which may well be justifiably applicable to conventional intermodal, is to reduce the population of potentially divertible trucks. But using that reduced population, then, as the starting point for the open intermodal analysis is wrong.

The only filter equally applicable to both conventional and open intermodal analysis is distance, so logically that should be applied first. Local trucks (entirely within Virginia or with total trip length under 500 miles) could be removed from further consideration at the outset. The DFR *considers* a distance filter first (Tables 6 & 7) but does not apply it. (“...at this stage of the analysis, we would not exclude any of these trucks from further consideration solely on length of haul.”)

There is no basis whatsoever for filtering open intermodal candidates for Geography (compatibility with the national rail network) or Commodity (a screen related to current rail competitiveness in high value and certain other goods). In fact the DFR itself states on Page 3-21, “With ro-ro, [roll-on/roll-off open intermodal technology] it does not matter what the truck is or what it is carrying.” So to apply a commodity filter to these candidates is also internally inconsistent.

Table 11 (mis-labeled Table 10) at the top of page 3.6 is the jumping off point for all the other diversion analyses to follow. The 4,813 trucks shown on the first two lines of this table are divided into conventional technology (3,209) and open technology candidates (1,603), and comprise the populations from which all the diversions in Table 12 on page 3-9 are tallied. They have been filtered for routing and commodity. So, in the end, there are only 1,603 potential truck diversion candidates for open intermodal whereas the top two lines in Table 7 show 5,711 through trucks with hauls over 500 miles.

There is no reason *all of these cannot be potentially diverted using open intermodal technology*. Use of only 1,603 candidates where 5,711 should be considered, unfairly and arbitrarily biases and discredits all the open intermodal strategies that follow.

Page 3-4 – Dry vans automatically divertible

The DFR says that dry van trucks “are excellent candidates for truck to rail diversion” and “are transferred easily between truck and rail using conventional equipment at a network of intermodal rail terminals throughout North America.” While this is true of shipping containers, it is not for dry vans. Only roughly 30% of dry vans have the structural characteristics to permit crane loading in today’s intermodal terminals. Continued failure of the Study to adjust for dry van crane-lift incompatibility overstates significantly the diversion potential for conventional intermodal, e.g. the Crescent Corridor. In contrast, the earlier Reebie Associates study for Virginia dated December 15, 2003 [*The Northeast-Southeast-Midwest Corridor Marketing Study Examining the Potential to Divert Highway Traffic from Interstate 81 to Rail Intermodal Movement*, p. 26] observed this incompatibility and properly adjusted traditional intermodal diversion potential as a consequence. As noted above (see p. 2), “the Crescent Corridor aims to divert the year 2008 equivalent of at least 1,300 trucks per day from I-81” [p.3-18; 1,300

x 365 = 474,500/year]. It would almost disappear altogether if adjusted for only 30% of dry vans on the road today that are crane lift compatible.

Page 3-6 and following – Mode Selection and Business Strategy

Shipper interviews are irrelevant to open intermodal, as are shipper business strategies relative to factors affecting allocation of their business between rail and truck modes. *Open intermodal handles business that has already been selected by shippers to move by truck.* It does not matter why the shipper gave his business to the trucker. *The trucker has the business, so haul the truck. That's the key to open intermodal growth opportunity for the railroads.* Why does the theoretical 50% limitation imposed in the DFR matter? Even if a shipper has awarded 100% of his business to trucks, they are *all* still open intermodal candidates. The shipper is not involved in any decision by a trucker or logistics dispatcher to use rail; the modal choice is *invisible* to the shipper. The trucker is the railroad's potential customer at this point.

Page 3-9 and following – Diversion Strategy #1

Conventional intermodal analysis in the DFR is burdened by the implicit assumption that it must ratify and agree with the Norfolk Southern Crescent Corridor proposal. Accordingly, the work that is presented is not the result of original inquiry or empirical research, but a careful manipulation of the data to comport with the NS TIGER grant application. In a number of places, the Cambridge Systematics work on the TIGER application is footnoted as the source of data. This is unhelpful, as the TIGER application is confidential and not available to the public, so the sources for the cost and benefit work in the new DFR remain unverifiable through any kind of independent review. This practice also smacks of conflict of interest, tarnishing the independence and credibility of the Study.

For all practical purposes Strategy #1 *is* the Crescent Corridor. In e-mails³ Alan Meyers, of Cambridge Systematics, makes substantial claims to have *conformed*, even *derived*, the Strategy #1 numbers from the TIGER application:

Oct. 3 – “The I-81 report is being reworked for consistency with the NS TIGER application...”

Oct. 6 – “The new work ...includes the new work from the Crescent Corridor TIGER grant application.”

³ Alan Myers, Cambridge Systematics, Study email correspondence obtained by RAIL Solution by Freedom of Information Act request. Copies of the relevant correspondence are available on request to RAIL Solution.

Oct. 9 – “Cost and diversion numbers for Crescent Corridor merge completely with the TIGER application – I got them from the TIGER benefit-cost analysis, which CS performed.”

This arrangement seems to us very unusual for a professional services firm. Typically consultants would be careful not to take on an advisory task of any kind that infringed or overlapped on similar work already being done for another client. Here we have Cambridge Systematics basically supplying the same work to the Commonwealth that it has already been hired to do for NS, *in lieu of the study originally envisaged under H-1581*. That appears to represent a substantial conflict of interest and stands in the way of citizens and taxpayers getting the thorough and independent feasibility study we are entitled to under the scope and language of H-1581.

Page 3-14 – Business Strategy

This section reveals an unsubstantiated or arbitrary use of statistics regarding diversion rates. Rates appear to be “chosen” rather than derived from a research-based application of data. Note, for example, footnote eleven’s explanation for increasing a diversion from 33% to 50% is obscurely stated as “further work.”⁴

Page 3-21 and following – Open intermodal Strategies #2 – 4

Some trucks can be divertible *both* in conventional and open intermodal service. A huge and persistent logic flaw afflicts the Cambridge product, where open intermodal eligibility is only considered for the *rejects* from conventional intermodal assessment, not the total through truck population. So a truck is considered a diversion candidate under *either* one but not both. While this may be correct for a tank truck, which is only an open intermodal candidate, it is incorrect for a dry van, which might be equally divertible in conventional and open intermodal service.

Of course, a truck cannot be diverted more than once, so in a maximum feasibility calculation, only the larger number would be used. Yet Cambridge Systematics’ internal correspondence⁵ shows that Strategy #1, Crescent Corridor, has been preordained in the DFR to be the primary and most important

⁴ The DFR states.

⁴Footnote 11: Earlier drafts of this report used 33 percent for competitive corridors. Further work suggested that 50 percent would be a more appropriate business target.” (p. 3-14)

⁵ Alan Myers, Cambridge Systematics, Study email correspondence obtained by RAIL Solution by Freedom of Information Act request. Copies of the relevant correspondence are available on request to RAIL Solution.

diversion strategy, and the only one determined to be feasible, to which all others are secondary and subservient, even though it in no way represents a strategy for maximum truck diversion. Cambridge seems to feel that maximum feasible diversion needs to be the *cumulative* results from all strategies. This is not necessarily the case. One strategy alone could represent maximum feasible diversion, in the sense that it could out-perform all others. Even if Crescent Corridor is implemented first, because of its more limited cost and scope, it is nevertheless important to know *that other diversion strategies could do more*.

Page 3-27 -- Strategy #4: Introduce Higher-Speed Open Technology

The researchers ask the wrong question: “How can we potentially divert shorter-haul trucks moving less than 500 miles from I-81? The recommended strategy is higher-speed open technology. If the train can provide end to-end performance comparable to trucking, it may be competitive at distances less than 500 miles.” The purpose of the open intermodal concept is to divert time-sensitive and crane-lift incompatible *long-haul* freight that the Crescent Corridor cannot divert.

It’s not surprising that by asking the wrong question, the researchers come to the wrong conclusion: “The distance between Knoxville and Harrisburg is around 540 miles, which is over the 500-mile threshold, and is considered divertible by conventional speed service.” This conclusion presumes incorrectly that all of the divertible freight traffic is crane lift-compatible, that none of the freight might be diverted only if faster, time-sensitive service is offered, or that independent truckers would not have the open intermodal option of riding the rails with their loads.

Page 3-35 and following – Strategy #5

Only Strategy #5B attempts to evaluate open intermodal potential on a stand-alone basis and not incremental to other projects. But such oppressive assumptions are attached that its costs and benefits are made to look outlandish.

First it is capped at a capture rate of only 50%. Then a multiplier of .18 is used to reflect random arrivals at the initial terminals by truckers with two hours or less left on their duty day. This is unrealistic because drivers would *plan* their operations to coincide with use of the train. So the capture rate of 9% (50% x 18%) is completely unwarranted.

Second, it is based on the fully-filtered through-truck total of 3,190 per day. Open intermodal assessment should be based on the full, unfiltered through-truck total of 5,177, adjusted to remove only distances under 500 miles and origins or destinations within Virginia.

Third, it is burdened with capital cost estimates needed to obtain a ridiculous average speed of 140 mph. It makes no sense to move at such excessive speed and arrive before the drivers' rest period is up. The 600-mile Knoxville to Harrisburg rail distance, covered at an average speed of 50 mph, will be accomplished in 12 hours and accommodate the driver's 11-hour mandated rest period. It is also comparable to driving time. The DFR uses 9 hrs. for trucks to drive this leg, as did earlier versions, but that would rarely if ever occur. Truckers stop voluntarily for fuel, food, bathrooms, showers, sleep, and other services along the way. They stop or are delayed involuntarily for accidents, bad weather, legally required rest periods, need to do paperwork, road construction, and traffic congestion. The hilly I-81 terrain is also a factor. Detailed research would be needed to pinpoint average drive time between Knoxville and Harrisburg, but it would certainly be greater than the 9 hours assumed in the Study.

Fourth, the analysis is beset with numerous pejorative statements that have no supportive basis provided:

"This requires several large leaps of faith...and that such a service might someday be legal." [p.3-29] Is there any basis to conclude the proposed service is illegal today? Nothing is presented here beyond innuendo.

The trucker would need "a compelling reason to hand off the cargo to the railroad for what might be a relatively small share of the end-to-end trip." [p. 3-32] Under open intermodal technology the trucker does not have to hand off his cargo to anyone. He keeps everything the same exactly as if he were making the full trip over the road. The truck, driver, and cargo continue moving as a unit.

"The main drawback is loss in productivity savings." [p.3-33] In fact productivity savings are the main inducement for over-the-road, independent truckers to want to use the described rail shuttle service. The truck continues to move while the driver sleeps, which enables him to accomplish more round-trips per month with the same equipment.

Page 3-36 – Maximum Feasible Diversion

It was precisely because no one had good data to evaluate open intermodal rail strategies in the I-81 Corridor that H-1581 was passed. Its detailed scope of work⁶ called for research into the costs and benefits, both economic and environmental, of initiating such a multi-state service between logical endpoints such as Knoxville and Harrisburg.

Because the letter of the law has been ignored and the Study has been allowed to wander off in different directions, these data have not been gathered. The DFR winds up presenting its assessment of the open intermodal options as

⁶ See the full H-1581 language, appended to the end of this document.

either “Potentially Feasible” or “Feasibility Unknown”. So we’re right back where we started in 2006, with none of the vital information decision makers need to weigh transportation infrastructure investments in the I-81 Corridor across modes; no way to determine whether capacity additions are more or less costly in dollars and to the environment when allocated to rail or to highway.

This outcome would be laughable were it not so tragic. We have had five earlier studies of truck diversion in the Commonwealth that all failed for one reason or another to assess adequately and objectively the full potential of rail. Now it seems we will have a sixth; this one directly counter to the will of the General Assembly.

Page 4-5 – Recommendation #2

That the Commonwealth should undertake more detailed follow-up investigations of the open intermodal strategies is an example of the irony above. H-1581 sought to do this over three years ago. More recently the Federal study supported for the Corridor by Congressman Boucher, but refused by Commonwealth transportation officials, would also have moved us in that direction and at relatively little expense to Virginia.

Page 4-5 – Recommendation #4

This paragraph suggests goodness of fit between the results of the work in the DFR and the earlier rail work in the I-81 Tier I EIS. Because the October 27 DFR rebases truck volumes on I-81 to year 2008, a level much lower than that used in earlier analyses in previous years, results are not directly comparable at all with earlier studies, and any such comparison is totally lacking in statistical rigor. Economists and statisticians routinely encounter this problem and use percents or indexing to facilitate such relative measurements. That has not been attempted here, so we wind up with very much of an apples and oranges comparison that is completely meaningless.

Of course we have known for some time that the objectivity of the current research was undermined by not wanting to threaten the findings of the I-81 Tier I EIS and of having to make the results conform. Nevertheless, we find the description in Recommendation #4 of the rail evaluation potential in the I-81 Tier I EIS troublesomely at odds with any documentation we can locate in the EIS or the Technical Appendices.

RAIL Solution introduced the multi-state concept in the scoping process. That became Option #4, later rejected altogether because of VDOT and FHWA decisions to confine the NEPA analysis to Virginia. By default, then, rail Option #3 became the one used to weigh against all the multi-billion dollar highway options in the EIS.

Option #3 involved improvements on 13 short segments of railroad within Virginia, ranging in length from one-half mile to 10 miles, averaging less than two miles in length. With these few capacity improvements, six additional trains per day in each direction were said to be possible, with an increased average train speed to 33 mph. Projections of truck diversions were virtually useless based on such meager rail enhancements, and, quite frankly, it was amazing that any truck diversion at all could realistically occur from such minimalist rail measures, most of which were not in the I-81 Corridor at all.

Having embraced the grossly suboptimal Option #3, all because of lower cost and location entirely in Virginia, it was an easy next step for the EIS to reject rail altogether, which the EIS in fact did in the final version advanced to FHWA for Record of Decision.

So it gilds the lily for the DFR to say that the Tier I EIS examined five scenarios including several levels of improvement to the NS Piedmont line and improvements to the NS Shenandoah line, both including open technology options. The claim is not footnoted and we find no record to support that this detailed examination of multiple rail scenarios was part of the Tier I EIS.

Minor Comments.

The dates inside the report and on the cover do not agree.

Page ES-5 – Truck diversion number shown in the 4th and 5th bullets is exactly the same.

Page 2-23 – The double-stack definition under “Containers” is inaccurate (“one container stacked on a railcar”)

Page 2-24 – Use of “chemicals” as an example of “lower value commodities” handled by railroads in bulk is inappropriate. Revenues on chemical traffic are typically among the highest of rail-hauled commodities.

Page 2-24 – While discussion of passenger trains is purely tangential to the analysis of this report, the datum of 128 passenger trains per week in 2006 on the NS Piedmont Line seems large. There was one Amtrak train daily in each direction over the entire line, and one three times per week in each direction north of Orange, which amounts to $14 + 6 = 20$. If the datum comes from Virginia Railway Express commuter trains north of Manassas, it is misleading because I-81 Corridor freight trains do not go to Washington.

Page 3-6 – The table at the top should be labeled Table 11 not Table 10.

Page 3-12 – The statement, “significant gains can be made by reducing the frequency of rail service” seems wrong.

Page 3-16 – Canadian Northern in the first paragraph should read Canadian National.

Page 3-17 – The last line on the page has “trucks” once too often

Page 3-18 – Proofread the last paragraph going over onto the next page. It contains redundant words and phrases.

Page 3-21 – The Canadian Pacific Expressway service does not carry entire “trucks”; it is limited to transporting trailers.

Page 3-27 – Reference to feasibility of Strategy #2 (2nd paragraph) should say Strategy #3.

APPENDIX

CHAPTER 934

An Act to determine conditions necessary to divert truck freight from Interstate Route 81.

[H 1581]

Approved May 18, 2006

Be it enacted by the General Assembly of Virginia:

1. *§ 1. That the Commonwealth of Virginia, through the Secretary of Transportation and the Rail Advisory Board, shall cause to have completed a comprehensive feasibility plan to define the conditions that would be necessary to divert the maximum amount feasible of the long-haul, through-truck freight traffic to intermodal rail in the Interstate Route 81 Corridor.*

Such a plan shall be completed as quickly as reasonably possible and the finished plan provided to the Governor, members of the General Assembly, and the public. The plan may be developed as part of a statewide multimodal freight study or other study conducted by the Rail Advisory Board, the Intermodal Office or the Virginia Department of Transportation. It shall include, but not be limited to, evaluation of the following with the objective of maximizing diversion potential to rail and minimizing future Interstate Route 81 highway capacity construction needs:

A. Operating Characteristics.

1. Utilize existing VDOT or Norfolk Southern Shenandoah line right-of-way wherever possible;

2. *Extend at least 500 miles, creating or expanding logical termini in Tennessee and Pennsylvania or New York with at least one intermediate terminal in Virginia;*
3. *Utilize suitable "roll on/roll off" and other efficient rail technologies and service concepts;*
4. *Achieve truck-competitive transit times and reliability between terminals;*
5. *Consider alternative ownership, management, and service operational options and requirements; and*
6. *Consider the option of a new rail right-of-way from Front Royal to Culpeper to expedite more efficient use of the Norfolk Southern Piedmont line.*

B. Financial Evaluation.

1. *Capital cost of upgrading and construction for rail line as determined in subsection A as well as cost of terminals, rolling stock, and other equipment or infrastructure;*
2. *Operating cost for the level of rail service needed to achieve truck-competitive speed and reliability;*
3. *Include comparative return on investment analyses between the rail option(s) found to be most effective in meeting the performance criterion of 60% diversion rate for through-state freight to rail;*
4. *Evaluate project financing alternatives, including funds available through SAFETEA-LU, the Federal Railroad Administration's \$35 billion "Railroad Rehabilitation and Improvement Financing" loan program, public and private sector bond financing, and public-private partnership capital investment;*
5. *Include truck direct and indirect cost savings from using rail compared to over-the-road driving;*
6. *Include analysis of a full range of future fuel price scenarios, in determining potential diversion rates to rail, and the capability to meet debt service and operate profitably; and*
7. *Estimate the construction schedule for completing track upgrades and grade crossing separation, including but not limited to, the rail corridor from Front Royal to Manassas.*

