

**REPORT OF THE  
SECRETARY OF TRANSPORTATION**

**PERSONAL ELECTRIC  
RAPID TRANSIT  
SYSTEM TECHNOLOGY**

**TO THE GOVERNOR AND  
THE GENERAL ASSEMBLY OF VIRGINIA**



**SENATE DOCUMENT NO. 6**

**COMMONWEALTH OF VIRGINIA  
RICHMOND  
2003**





# COMMONWEALTH of VIRGINIA

## Office of the Governor

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November 30, 2002

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The Honorable Mark R. Warner  
Governor, Commonwealth of Virginia

Members, Virginia General Assembly

Dear Governor Warner and Members of the General Assembly:

Senate Joint Resolution Number 80 of the 2002 Virginia Acts of Assembly requests the Secretary Transportation to conduct a study to determine the desirability and feasibility of establishing Personal Electric Rapid Transit System Technology (PERTS), currently housed at Virginia Polytechnic Institute and State University. This resolution suggests that the PERTS technology might be useful in decreasing Virginia's highway traffic volumes on Interstate Route 81 through shifting travelers to a passenger rail or transit facility.

The findings of the report suggest that the Personal Electric Rapid Transit System developed by the Virtual Corporation at Virginia Tech, appears to provide an excellent learning experience for students in a number of disciplines. However, while the Personal Electric Rapid Transit System is an interesting new concept in transportation technology, it is currently in the very early stages of research and development and therefore cannot appropriately be included in an alternatives analysis for improvements to the I-81 corridor.

I am pleased to submit this report for your consideration.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Whittington W. Clement".

Whittington W. Clement

WWC/kt  
Enclosure



# Personal Electric Rapid Transit System Technology

## Senate Joint Resolution No. 80

Senate Joint Resolution No. 80, passed by the 2002 Session of the Virginia General Assembly, requested the Secretary of Transportation to determine the desirability and feasibility of supporting the development of Personal Electric Rapid Transit System (PERTS) technology, currently housed at Virginia Polytechnic Institute and State University. This resolution suggests that the PERTS technology might be useful in decreasing Virginia's highway traffic volumes on Interstate Route 81 through shifting travelers to a passenger rail or transit facility. This resolution expresses a concern that many of the Commonwealth's highways are experiencing a decrease in safety because of significant increases in traffic. Of apparent particular concern to this resolution are the current and projected levels of traffic on Interstate Route 81 (I-81). The objective of this study was to determine if the PERTS technology is a viable alternative to expanding the number of lanes on I-81.

Personal Electric Rapid Transit System (PERTS) is one of the two product groups formed under the Virtual Corporation at Virginia Polytechnic Institute and State University. The Virtual Corporation is a student managed corporate enterprise whose purpose is to provide students with the opportunity to gain hands-on professional business experience within the campus environment. PERTS is a conceptual transportation system that would use electromagnetic levitation (MAGLEV) to move vehicles along a steel or concrete track. The envisioned PERTS system would allow individuals to drive their personal automobile onto a "pod" (pallet on demand). The vehicle would be secured to the pallet, then the pod would ride using magnetic levitation on an elevated guide way. At the appropriate exit, the vehicle would be driven off the pod and then to the final destination. In its current state of development, the Virtual Corporation students have demonstrated the Maglev technology with a 1/40 – scale prototype that operates on a 16-foot long track. PERTS is a technology that is still in the early conceptual research and development stage and one of many interesting new transportation technologies that are being studied at engineering colleges across the United States. Additional information regarding the PERTS project can be found on the project website at: [www.perts.ece.vt.edu](http://www.perts.ece.vt.edu).

Regarding the applicability of PERTS as a transportation alternative in the Interstate 81 corridor, its consideration as an alternative mode would be premature. For a transportation system to be included as an optional mode in a transportation alternatives analysis, it must be a proven technology and not an experimental technology still in the research and development stage. Until a new system has undergone extensive operational testing, the performance, safety and reliability of the system as well as the actual cost to build and operate the system cannot be determined with any accuracy. It is not possible to include a transportation system among alternative systems being evaluated without an accurate estimate of the systems the performance and cost. For this reason,

any study of transportation alternatives in a corridor will limit the transportation alternatives considered to proven technologies.

## CONCLUSIONS

- The Personal Electric Rapid Transit System developed by the Virtual Corporation at Virginia Tech, appears to provide an excellent learning experience for students in a number of disciplines.
- While the Personal Electric Rapid Transit System is an interesting new concept in transportation technology, it is currently in the very early stages of research and development and therefore cannot appropriately be included in an alternatives analysis for improvements to the I-81 corridor.
- The Virginia Department of Rail and Public Transportation, in cooperation with the Virginia Department of Transportation, currently is evaluating rail passenger and freight improvements that can help solve the congestion problems on I-81. This evaluation will focus on the innovative application of proven technologies.

## RECOMMENDATIONS

- The PERTS team should consider developing a business plan and seek out venture capital, from the private sector, to fund the development of a full-scale model and test track.
- The Virginia Transportation Research Council is developing a set of milestones that a new technology must pass in order to be considered a proven technology. The PERTS team should use these as a guide for the further development of their project.
- Transportation policy makers should use caution when considering investment in untested, high-risk new technologies. The appropriate role of the public sector and the risk to taxpayer dollars of supporting conceptual transportation technologies should be carefully examined – especially in difficult economic times.

On January 15, 2003 at the workshop meeting of the Commonwealth Transportation Board, the Department of Rail and Public Transportation will be conducting a presentation on public transportation technologies. This presentation will examine the functionality, state of development and appropriate applications for existing and new technologies in the public transportation industry. This meeting will be held in the Central VDOT Auditorium at 1401 East Broad Street in Richmond and is open to anyone who would like to learn more about the state of public transportation technology.

## 2002 SESSION

ENROLLED

### SENATE JOINT RESOLUTION NO. 80

*Requesting the Secretary of Transportation to study the use of Personal Electric Rapid Transit System (PERTS) Technology.*

Agreed to by the Senate, March 6, 2002

Agreed to by the House of Delegates, March 5, 2002

WHEREAS, safety is a primary goal of the Commonwealth's transportation program; and

WHEREAS, many of the Commonwealth's interstate highways are experiencing an erosion of safety as the result of staggering increases in traffic; and

WHEREAS, one acute example of this situation is Interstate Route 81, whose facility design was intended to carry a load of no more than 15 percent truck traffic, but whose current traffic volume indicates close to 50 percent truck traffic load; and

WHEREAS, the widening of Interstate Route 81 alone is estimated to cost in excess of \$3 billion and take at least 10 years to complete, with similar improvements to other highways with high traffic volumes costing comparable amounts and requiring no less time; and

WHEREAS, it may be both desirable and feasible in the short-term and long-term to alleviate excessive traffic on Interstate Route 81, and other highways in Virginia, by shifting these same vehicular occupants to passenger trains on the railroad network; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Secretary of Transportation be requested to study the use of Personal Electric Rapid Transit System (PERTS) Technology. In conducting the study, the Secretary shall determine the desirability and feasibility of establishing PERTS technology, currently housed at Virginia Polytechnic Institute and State University, in an effort to decrease Virginia's highway traffic volumes through shifting occupants to the passenger rail or transit facility.

All costs for this study shall be paid by private industry or from other nonstate sources.

The Department of Transportation and the Department of Rail and Public Transportation shall assist the Secretary in the conduct of the study. Other agencies of the Commonwealth shall provide assistance to the Secretary, upon request.

The Secretary of Transportation shall complete his work by November 30, 2002, and shall submit his written findings and recommendations to the Governor and the 2003 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

