

**Statement to Sound Transit Board of Directors on the  
Safety of the Seattle Link Light Rail Initial Segment  
by John Niles  
Coalition for Effective Transportation Alternatives  
April 10, 2003**

Mr. Chairman, I come before you and your Board colleagues for the third time on the issue of Link Light Rail Safety. It is quite distressing for me to make these appearances, since I am forced to challenge safety conclusions of Sound Transit and your partners in City of Seattle, King County, State of Washington, and Federal Transit Administration. I have great respect in general for elected leaders and their professional staffs. I know how hard you have worked to make the decades-long dream of light rail for Seattle a reality.

That said, motivated by the failure of engineers to speak out about the known problems with the booster O-rings and the heat resistant tiles on the Space Shuttle before these components failed in 1986 and 2003 to cause astronaut fatalities, I am going to continue to present evidence indicating that you and the Board, even at this late date, need to reconsider the basic design of the Link Initial Segment. There is certainly a problem with the at-grade, mixed-mode guideway design in the Rainier Valley. There is likely also a similar problem in the Bus Tunnel. The problem of designed-in opportunities for intermodal collisions is going to haunt this Board and the City of Seattle for as long as the basic at-grade, mixed-mode design is being pursued toward implementation.

I have been especially motivated to explore the safety issue since a ride I took on a relatively new street-running light rail train while on vacation in Salt Lake City, Utah last summer. During this trip on a bright summer day, I was looking over the train operator's shoulder out the front. Watching motorists make left turns in front of this train under what I presume is state-of-the-art signalized control did not seem to me to be a safe addition to that urban environment. In fact, that light rail system has killed several people in collisions in the early years of operation.

Within minutes of my last testimony to you on March 27, 2003, Sound Transit staff made the claim (in a well-stated professional presentation by Safety Manager Hamid Qaasim) that Central Link Initial Segment will be safe because "the probability of a single system failure resulting in a critical **chargeable** accident is once in 131 to 13,000 years." The number 131 years is a Sound Transit restatement of one million operating hours, an expected mean time between fatal events that is the passing standard for hazard resolution in a fixed-guideway transit system.

"Chargeable" in the above claim for light rail's safety means that an accident could have been prevented by Sound Transit action, such as installing signs and signals, or having Zap Gridlock deliver educational lectures in the public schools. Collisions between trains and motor vehicles are hazardous, and may seriously injure or kill people, whether they are "chargeable" or not. In order to meet the million hour standard, Sound Transit is forced to declare that some of the statistically-expected collisions that may result from the Central Link Initial Segment grade-crossing design are deemed "not chargeable" to the agency, not Sound Transit's fault. Here, Sound Transit and objective observers must part company.

Here's why: given the right-of-way design choices made by the Sound Transit Board for the Rainier Valley and the Downtown Tunnel, the distinction between chargeable and non-chargeable intermodal collisions is spurious. It is clear that if the light rail tracks had been designed by Sound Transit to be grade separated from motor vehicle roadways, collisions between cars and trains would be impossible. It is further clear that if Sound Transit chose not to mix trains with buses in the Bus Tunnel, then collisions between buses and trains in that Tunnel would be impossible. These design choices in fact were considered. But the right-of-way design this Board has chosen in fact makes inter-modal collisions possible. Therefore, all collisions between trains and any type motor vehicles where their paths cross are certainly "chargeable" to Sound Transit.

The following table summarizes the two points of view: (1) The government point of view that some accidents are not chargeable to Sound Transit even though they could be prevented through a safer light rail design. (2) An alternative, common sense point of view that *all* collisions between trains and motor vehicles are chargeable to Sound Transit, since Sound Transit could make such accidents impossible through the selection of a grade-separated alternative design.

**Blaming the Victim?**

**Safety of Link Light Rail Design and the Question of Chargeable Fatalities**

	Grade-Separated Crossings in Rainier Valley and Exclusive Rail in the DSTT  <b>A More Safe Design Rejected by Sound Transit</b>	At-Grade Crossings in Rainier Valley and Joint Operations in the Bus Tunnel  <b>The Less Safe Design Selected by Sound Transit</b>	
		<b>Government Point of View</b>	<b>Alternate Point of View</b>
Remote occurrence of fatal train collisions with motor vehicles or pedestrians, each event meant to be prevented by safety measures.	Collisions impossible!	Collisions chargeable to Sound Transit.	Collisions chargeable to Sound Transit.
Occasional fatal train collisions resulting from victims' recklessness, inattention, carelessness, confusion, incapacitation, or lack of knowledge despite safety measures.	<b>Collisions impossible!</b>	<b>Collisions NOT chargeable to Sound Transit,</b> given the safety measures for the chosen design.	<b>Collisions chargeable to Sound Transit,</b> since a safer design is possible.

**I turn next to a different issue, that of Sound Transit claiming compensating safety improvements that result from the rearrangement of roadway geometry and traffic signals coming with the installation of light rail.**

Joni Earl, Sound Transit Executive Director, sent an e-mail message following the March 27 Board Meeting that summed up the light rail safety situation in Southeast Seattle. She wrote, "In the Rainier Valley where light rail will run at grade, Sound Transit is increasing the signalized pedestrian-only crossings on Martin Luther King Jr. Way South from two to 10, increasing the signalized traffic and pedestrian intersections from 12 to 21, and providing 17 dedicated, signalized left-turn pockets. Warning bells, a safety zone, and protective railings will also be provided to increase safety at pedestrian crossings. The improvements for light rail will actually reduce the current number of accidents on Martin Luther King Jr. Way South and will make that corridor safer."

The only evidence presented to date that the addition of light rail will make the MLK Jr. Way corridor safer than it is today comes from the 1999 Final Environmental Impact Statement. That document states that the addition of new traffic signals and street geometry in association with the light rail trains will reduce the number of vehicle-to-vehicle collisions by 44 per year, and the number of collisions between motor vehicles and pedestrians or cyclists will be reduced by seven annually. Sound Transit claims that the 44 fewer vehicle-to-vehicle collisions are more than ample compensation for the 29 new collisions between trains and motor vehicles. The seven fewer expected occasions when vehicles hit pedestrians or cyclists are said to justify the expected three new annual cases of trains hitting people or cyclists.

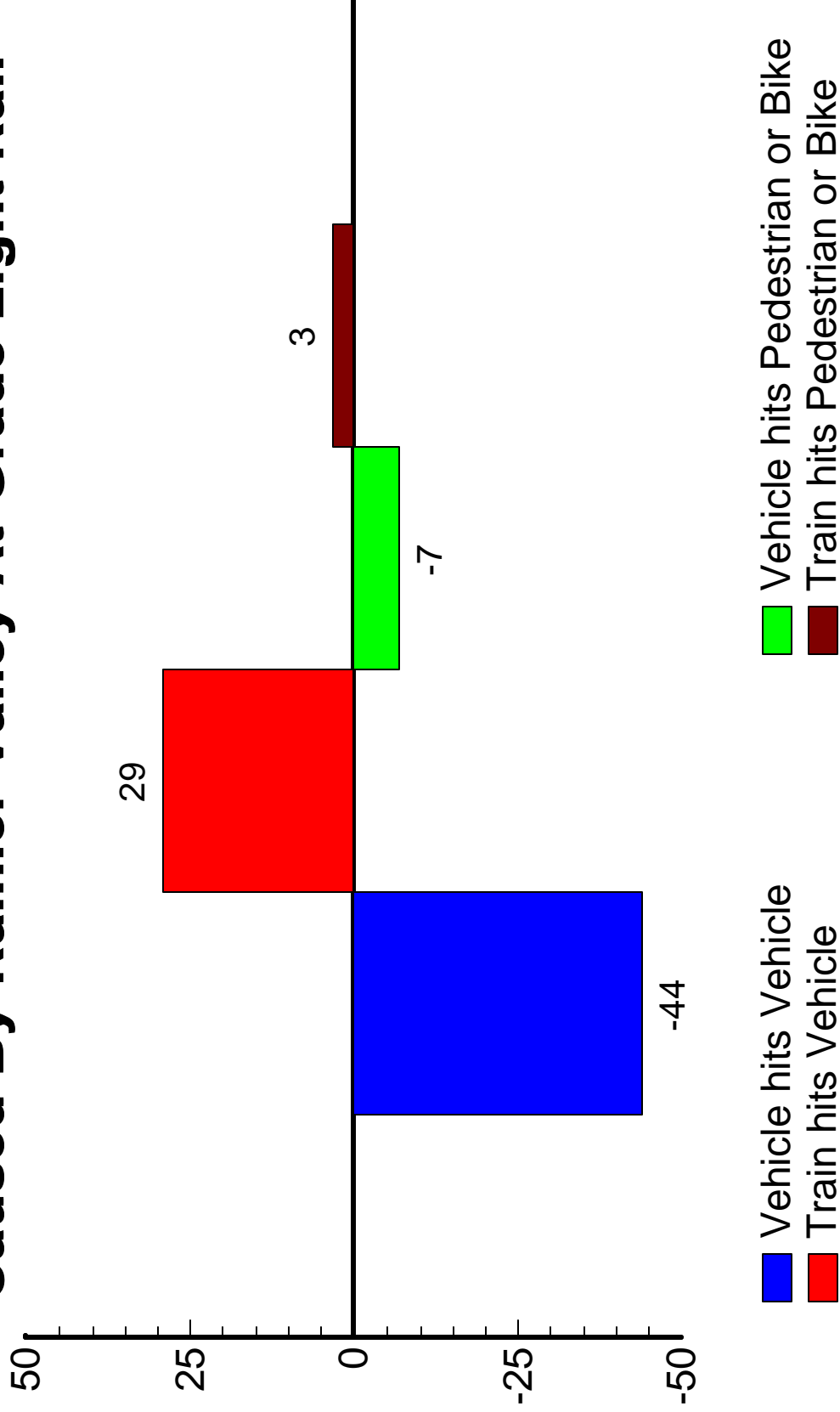
The magnitude of these different numbers are shown on the chart following. The two bars above the line represent the new light rail train-involved collisions expected annually as a result of the at-grade light rail design as calculated for the 1999 Final EIS. The two bars below the line represent the non-train-related collisions reduced as a result of redesigning MLK Jr. Way for light rail.

This logic of substituting one kind of accident for another kind is an invention of those who need to justify the present light rail design with its 18 ungated at-grade roadway crossings. The common-sense idea that getting hit by a train may be more serious than being hit by a car is not discussed. The fatality and serious injury rates from the various types of accidents traded-off are not discussed in the EIS. Furthermore, this kind of trade-off between accident types across modes is not covered in Federal Hazard Analysis Guidelines or Safety Certification Guidelines for fixed-guideway transit systems.

Because the Board authorization for the Initial Segment right of way design and operations plan creates chargeable hazards to human life that are likely to occur at an interval less than one million operating hours, I urge that the Board take immediate action to **stop work on the implementation of the present light rail design**. I further urge that the Board immediately order a complete **light rail hazard analysis from an objective party** such as Volpe National Transportation Systems Center. That analysis should consider the costs and benefits of all reasonable right-of-way design alternatives to at-grade crossings and joint bus-rail tunnel operations. Such alternatives should be viewed as responsible, life-saving, hazard resolution opportunities.

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# Changes in Estimated Annual Collision Count Caused By Rainier Valley At-Grade Light Rail



1999 Final EIS, Table 5.6-10