Title
Freight Railroad Capacity Alternatives In The Pacific Northwest: An Analysis of Class I Cooperation In The Columbia River Gorge

Objective
This paper describes the development, analysis and results of a freight railroad computer software simulation model. The model tests the capacity and operational characteristics of a directional running scenario involving the BNSF Railway and Union Pacific Railroad mainline tracks operating on the north and south banks of the Columbia River in Washington and Oregon.

Background
Today, freight railroad traffic volumes are now at or approaching capacity in the Pacific Northwest, especially along the Columbia River corridor. Recent increases in bulk freight tonnages, particularly of agricultural products prepared for export such as wheat, forest products and potash, comprise much of the ton-miles delivered to West Coast ports. The overall growth in bulk cargo, in combination with the fast growing intermodal container traffic market and high volume overland shipments of Asian vehicles, has pushed overall railroad corridor capacity to its practical limit.

In addition to increased demand for rail service, train congestion is caused by many complex and inter-related factors that are present throughout the Northwest freight rail system, of which physical and operational capacity constraints play an important role. Several studies have proposed multiple solutions to the capacity problem. One alternative that shows a great deal of promise for providing a long-term solution is a concept called "directional running".

Directional running, in effect, would create a rail couplet system. The BNSF and UP lines would each become a one-way track, exclusively serving only westbound or eastbound traffic. This level of cooperation would require the two railways to combine their track infrastructure, communication and other resources in order to increase overall capacity of both sets of tracks. This scenario also assumes that a major piece of infrastructure, a new railroad bridge located near Boardman, Oregon would be built. The bridge will connect the east ends of the lines, and in conjunction with the BNSF Bridge over the Columbia River in Portland, would form a complete loop around the Columbia Gorge.

OpenTrack, a computer software railroad simulation modeling program developed by the Swiss Federal Institute of Technology in Switzerland, will be used to better understand and evaluate the alternative scenarios by focusing on improving capacity and operations The results of the directional running scenarios will be compared against existing conditions and a no-build option, using the performance measurements of total trains per day, the delay ratio, and total running time.

To receive the complete version of this paper, please email Zachary Horowitz at zacharyhorowitz@hotmail.com. I apologize for the inconvenience.