

Rail Profile

Freight and Goods Movement Study- Phase I

Rail Freight

Traffic in the freight rail system in the Nashville Area is shaped by the position of Nashville in the eastern and national rail network, and by the structure of the network itself. Ownership, connection, and distance combine to influence the pattern and character of current and prospective freight volume. Nashville is a crossroads for rail as it is for the highway, and it carries a substantial burden of tonnage. Even so, the ability of rail to further relieve the highway, and mitigate congestion, is constrained by network position, capacity ceilings, and institutional factors. These limitations are explained and discussed below.

Nashville is served by a single Class I railroad: CSX Transportation, and its related intermodal unit. Class I roads are the primary freight haulers of the country, accounting for over 90% of railway revenue. In practical terms, there are seven of them in the U.S. and Canada, and all are private enterprises who own their networks. The U.S. is served mainly by four, with two independent systems generally west of the Mississippi River, and two east. This dividing line is significant for Nashville, since the 'gateway' or border of system ownership lies some 200 miles from the metropolitan area, which in railroading is a short distance.

The orientation of CSX lines in Tennessee is chiefly north-south, with a spur west from Nashville to Memphis, but none eastward. A second Class I road, the Norfolk Southern (NS), has a network orientation running northeast-southwest. The NS has a curving east-west line between Memphis and Knoxville via Huntsville, AL and Chattanooga, skirting Nashville and lying over 100 miles to the south.

Large railroads have limited interest in traffic below 500 miles, for reasons including comparative return on capital resources (revenue is strongly related to distance) and modal competitiveness. There are two practical implications to this combination of facts:

- Eastern and western railroads interchange traffic at the Mississippi gateways. The total distance of a traffic lane may be well in excess of 500 miles, yet if the distance to the gateway is abbreviated for one of the parties, their revenue and interest is diminished, just as if the traffic were short-haul business. This is the so-called 'watershed' issue. When a railroad has a long distance lane on its own lines while it's interchange partner's is short, the first road often reaches across the gateway into the other's territory with trucks, instead of with a through rail movement. In addition, interchange service typically is weak, and can be uncompetitive with highway service in watershed zones.
- Routes and watersheds restrict opportunities. There are three key interstate highway corridors at Nashville, and all of them are constrained by rail:
 - **I-40:** there is no through rail line east from Nashville to Knoxville to compete with trucks on the I-40 corridor, and the line west hits the gateway at Memphis;
 - **I-24:** the rail route parallel to I-24 reaches a gateway at St. Louis in about 300 miles;
 - **I-65:** the I-65 route arrives at the Chicago gateway within 475 miles.

The Nashville Area is served in addition by two related short line railways: the Nashville & Eastern, extending from Nashville eastward toward Monterey, and the Nashville & Western,



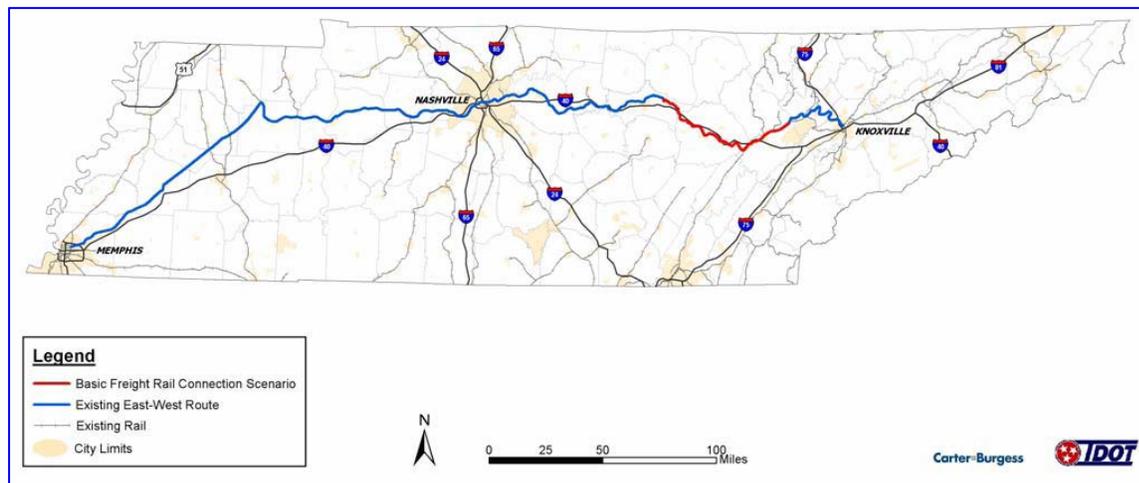
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running a briefer distance west to Ashland City. The former property figures prominently in the Basic Freight Rail Connector proposed in the Tennessee Rail System Plan of the state DOT. Using a combination of abandoned, non-operating, operating, and newly constructed track, the State proposes to bridge the gap from Algood on the Nashville & Eastern to Class I lines at Oliver Springs, and thereby complete a through route between Nashville and Knoxville.

The proposed Connector is shown on a TDOT map reproduced in **Exhibit 11** on the following page. It is important to recognize that Class I network configurations mean this route does not establish a complete equivalent to the I-40 corridor, though it is a step in that direction. A critical freight function of I-40 is its feed into I-81, a key truck route to large consumer markets of the northeast. While CSX with the Connector could operate from Memphis to Knoxville on a path parallel to I-40, its lines from Knoxville turn due north, and away from I-81. NS conversely can parallel I-81 and presumably would reach back from Knoxville to Nashville on the Connector, but would need track rights on rival CSX facilities to extend from Nashville to Memphis. In other words, neither Class I railroad would have a through route combination like I-40 and I-81, and in addition, both systems terminate at the Mississippi River.

Exhibit 11: Proposed Memphis to Knoxville Railroad Connector



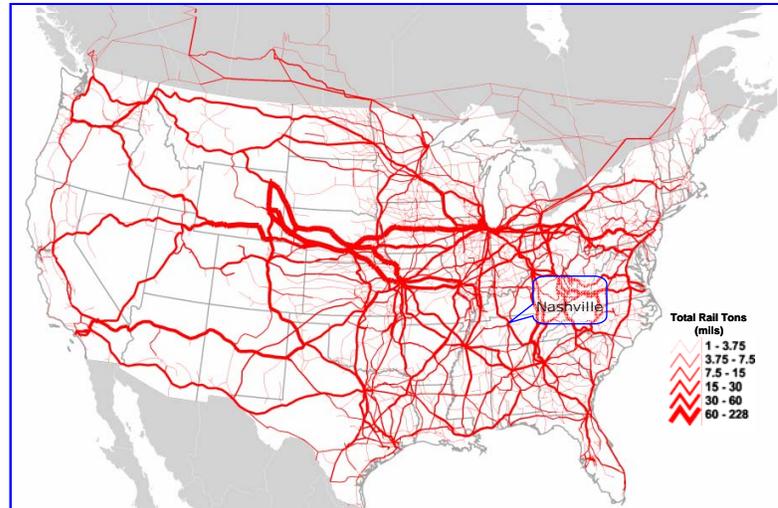
The scenario described above is problematic from the standpoint of diverting through trucks to rail. The Tennessee Rail System Plan does not claim that trucks traversing Tennessee on I-40 will divert due to the Connector, but does suggest a modest number of trucks running between Nashville and Knoxville may divert. The Plan points to the NS Memphis route via Alabama as already capable of attracting I-40 through freight. There is validity to this concept, but NS is not especially effective in supporting the strategy due to the watershed issue, and NS concentrates its east-west operations further south at Meridian, MS. This rather complex set of considerations boils down to a single key point: Network ownership and structure are basic barriers to railroad capability of providing alternatives to highway freight transportation at Nashville.

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Exhibit 12: Nashville Rail Flows

The position of Nashville as a crossroads for CSX as depicted in **Exhibit 12**, where the north-south orientation of traffic flow is visible. The map also places Nashville rail volumes in the context of national rail traffic network. Nashville is a key hub in the CSX system, routing sixty trains per day through the Nashville Area toward five key cities: Atlanta, Birmingham, Chicago, Louisville, and Memphis. Forty of these trains simply pass through; the rest are



“hubbed” in a classification yard, with the majority of railcars sent out again on a different train set - much like airline passengers change planes in an air hub. Of the 32 million tons of annual rail volume, 88% travels between other markets and is simply transiting Nashville. Just under 4 million tons is based in the Nashville market, with two-thirds of that inbound traffic. International containers, metals, chemicals, paper, and automotive products (new cars and auto parts) are the primary inbound goods; automotive products are the chief outbound commodity by rail.

Two primary facilities are used in Nashville. The major CSX terminal and classification operation is Radnor Yard, located south of town on I-65 by route 255. Three rail-truck transfer facilities are part of the terminal, handling intermodal containers, new automobiles produced outside of the Nashville Area, and bulk commodities. Daily service is provided to the auto plants at Smyrna and Spring Hill. Kayne Yard is downtown alongside I-40, in the gulch; it is a smaller facility serving industrial customers, and performing truck transloading for bulk goods.

Both yards are convenient to interstate highways and there are no important access restrictions at either one, according to railroad and motor carrier personnel, although trains using Radnor will sometimes block the entrance to the intermodal facility, creating self-imposed delays and congestion. However, utilization of Radnor yard is approximately 98% and the facility is landlocked, leaving no capability for growth. Existing trains also are near capacity, meaning they can accept little incremental traffic before triggering the major fixed expense of new train starts, and it is likely that some of the rail lines touching Nashville are approaching capacity limits as well. The consequence is that opportunities for traffic growth – even normal growth in current rail volume, and apart from any traffic that now moves by highway – are materially restricted, and would require both substantial financial investments and new land solutions.