

**Ohio Department of Transportation - Transportation Task Force  
Infrastructure Financing Committee Testimony Summary**

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I believe the Task Force Committees have been meeting regarding infrastructure financing and other transportation issues largely because the excessive traffic being incurred by the State's roadway systems is due largely in part to the rail industry's decision in the last century to downsize, rationalize, abandon, and liquidate its networks. Except for Cleveland's Rapid Transit Authority, the State's interurban/trolley passenger and light freight network has also been almost completely abandoned.

To illustrate the problem, [Ohio Max 600 Letter.pdf](#) shows most all of Ohio's rail line routes that ever existed over time. [Ohio 600 400 Now Letter.pdf](#) shows what routes remained c.2004, an estimated loss of 50% of network capacity. ODOT GIS map [ODOT Active Abandoned Rail Map 5-2008.PDF](#) provides a similar comparison.

The former New York Central RR and Pennsylvania RR Cos. had extensive networks in Ohio and adjacent states and provinces. [TM NYC System Maps 1960-2007.pdf](#) (Courtesy Trains Magazine) and [TM PRR System Maps 1965-2005.pdf](#) (Courtesy Trains Magazine) show the routes abandoned after subsequent mergers indicated by the dashed lines.

[TM 6-2006 pp42-43.pdf](#) and [TM 1-2006 pp54-55.pdf](#) (Courtesy Trains Magazine) show main rail line capacities in terms of the number of tracks for 1950 and 2006. The 1950 map insert shows remaining 3- and 4-track main lines even as they were being downsized then.

In terms of annual tonnages, [TM 3-2003 60-61.pdf](#) (Courtesy Trains Magazine) shows NYC + PRR's successor Penn Central's 1974 tonnages per route as being more distributed vs. PC's successor Conrail's 1998 tonnages per route as being more consolidated. [CR Tonnage Map 5-1982.pdf](#) shows Conrail's 1982 tonnages confirming they consolidated their routes, and [TM 2-2007 pp52-53.pdf](#) (Courtesy Trains Magazine) shows national tonnages for 1980 and 2005.

These maps clearly show the remaining rail network today suffers from downgraded and abandoned capacity compared to earlier years. Note that the loss of multiple tracks hampers efficient operations and increases risks when redundant routes are reduced.

To place railways and highways into further perspective, an Ohio Legislature Local Transportation Needs and Funding report said two tracks have the same capacity as 16 lanes of highway, apparently referring to passenger service. In terms of equating freight tonnages and frequencies via rail and trucks, for a sample rail line segment that hosts 50M tons rail freight annually and assuming each train car weighs 100 tons:

50M tons per year / 100 tons = 500K train cars/year

Assume that one 100 ton train car = four 25 ton trucks:

500K train cars/year \* 4 = 2M trucks/year

Thus:

2M trucks/year = 5479.5 trucks/day  
5479.5 trucks/day = 228 trucks/hour  
228 trucks/hour = 3.8 trucks/minute

Costs to construct new rail lines per mile: \$528K - \$5M.  
Costs to construct new highway lanes per mile: \$10M - \$100M.  
These prices and ranges fluctuate, particularly with the recent 40% construction cost increases due to the recent runup in energy prices (Ohio DOT Director James Beasley 3-13-2007 testimony), but regardless rail costs a fraction of that for highway lanes, takes much less time to construct, and has far greater capacities and efficiencies.

Because of the surge in traffic ODOT and the railroads need to build more capacity. But in the case of the railroads some of them desire public assistance to help restore their capacity and routes they or their predecessors have liquidated. In the former Conrail's case, the federal government poured \$16B (in 2006 dollars) into helping them rebuild from Penn Central's bankruptcy, only to see Conrail arbitrarily tear out many of those improvements and subsequently downsize, consolidate, and abandon numerous routes.

So should the federal and state governments help finance improvements to those private companies' lines again? Should the State continue to hope for federal subsidies with rumors of conflict with Iran, continued hostilities and reconstruction programs in other war-torn countries, and funding priorities for other programs? Or is there a better business and governance model that the State could explore to make those improvements on its own?

An analysis of the Ohio Turnpike Commission reveals the following:

- OTC constructed the I-76/I-80/I-90 Project #1 tollway using \$326M in tax-free revenue bonds (equivalent to \$2.779B in 2007), and although having been subsidized by the State with a small percentage of the state gas tax and by a joint test program with ODOT to shift more trucks from roadways to the Turnpike, it has never been subsidized by the federal government.
- OTC assesses users based upon ton-mile tolls and is consist-neutral except for hazmats and special other special shipment considerations.

- It provides openly accessible universal service roadway to all qualified users without engaging in carriage service.
- The tollway is public utility real and personal property tax-free.
- It is non-profit and adequately finances its administration and maintenance needs.
- According to its 2005 CAFR, OTC had debt ratings from Standard & Poors of AA, Moody's of Aa3, and Fitch of AA making it one of the best-rated turnpikes worldwide.
- Fitch's rating scale is: AAA, AA, A, BBB, BB, B; CCC, CC, C, DDD, DD, D, and + & - may be added to each rating other than AAA or below CCC.
- Moody's rating scale is Aaa, Aaa1, Aaa2, Aaa3, Aa, Aa1, Aa2, Aa3, A, A1, A2, A3, Baa, Baa1, Baa2, Baa3, Ba, Ba1, Ba2, Ba3, B, B1, B2, B3.
- S&P's rating scale is AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-.

I believe there is no technical reason why OTC could not additionally engage in public railway turnpike provision as it does public highway turnpike provision. The Alameda (CA) Corridor Transportation Authority is a 20-mile investment grade quasi-public railway turnpike connecting the Ports of Long Beach and Los Angeles and is quite close to being a true railway turnpike, with minor differences being its users retain a number of functions vs. ACTA administering them itself. Likewise a rail division within OTC would be ideal to administer various public, abandoned, threatened, and spin-off candidate rail lines without the threat of forcefully nationalizing private rail lines. OTC rail lines could be open access, universal service, and consist-neutral – highly ideal to address the congestion, capacity, energy, and other crises while providing attractive and quality infrastructures necessary for economic retention and development.

ATCA's rail network maintenance of way:operating expenses ratio was percentage-wise less than OTC's 2005 highway MOW:operating expenses ratio-

	MOW	Operating Expenses	%
ATCA	\$3,990,152	\$33,749,081	11.82
OTC	\$34,185,000	\$155,472,000	21.98

Thus using a MOW:OE ratio we can approximate a true public railway turnpike administration. In a theoretical railway turnpike, all administration costs including maintenance of way costs would be paid for by ton-mile assessments. That calculation is as follows-

- 1) Determine the Total Annual Network Ton-Miles. For each train on a network, multiply its tonnage by its distance traveled; sum all the ton-miles for one year.
- 2) Determine the Total Network Track Miles. "Track Miles" is the distance in miles of all individual tracks in a network or route; "Route Miles" is the distance in miles between two points.
- 3) Determine the Annual MOW per Track Mile. \$25K MOW per track mile for ~50 MPH freight track is recommended by US DOT Inspector General for Class I rail carrier traffic U.S DOT Office of Inspector General Archives; \$5K for FRA Class II 25 MPH freight track is recommended by Roy Blanchard, The Blanchard Company; at least \$1K for no traffic on a line is recommended by ORDC. Note - these costs are prior to at least 40% construction and MOW price increases.
- 4) Determine Annual Network MOW. Multiply Total Network Track Miles \* Annual MOW.
- 5) Determine Ton-Mile Assessment for MOW. Divide Annual Network MOW by Total Annual Network Ton-Miles.
- 6) Determine Ton-Mile Assessment for All Expenses. Add all other expenses to Annual Network MOW; divide all expenses by Total Annual Network Ton-Miles.

A spreadsheet of scenarios for 10, 200, and 1200 mile single, double, and triple track routes hauling between 0M-250M tons annually, with variable administration costs was created in Excel ([MMY RR VC Calc 5-21-2008.xls](#)) no macros, with a .pdf hardcopy also available ([MMY RR VC Calc 5-21-2008.pdf](#)).

For a proof of concept, suppose Conrail's Pittsburgh-Columbus Panhandle route was still continuously intact and selected for a public railway turnpike. The route between Pitt-Grant/MP 191.1 was ~191 miles. If the freight route was extended east via the Monongahela Line to Thompson Yard for interchanging with multiple carriers, its length would be ~200 miles. What would the variable costs be to administer the line for 50M annual tons of traffic (the amount Conrail was running on the Panhandle before they out-of-routed it elsewhere and eliminated other customers)?

The previous variable administration costs scenario; 200 route mile, double-track line; Case 6 50M Annual Tons is used. The equivalent number of 100-car trains using the segment annually is determined by dividing an arbitrarily set 10K ton per train amount (at 100 tons per car) into the total tonnage, i.e., 50M tons / 10K tons per train = 5K trains.

The number of ton-miles on the 200 mile segment is determined by multiplying the 10K tons per train by the number of trains (5K) by the 200 route mile distance, i.e., 10K tons per train \* 5K trains \* 200 miles = 10B ton-miles.

The route was originally single track then upgraded to multiple tracks and subsequently downgraded back to single track and abandoned between MP 11-MP 39. For this exercise the whole route will be double track meaning the track miles will be twice the route miles, i.e., 200 route miles \* 2 tracks = 400 track miles.

Per the US DOT Inspector General's recommendation for heavy use Class I rail lines, the annual MOW per track mile is set to \$25K.

The annual network MOW cost is determined by multiplying the track miles by the \$25K per mile MOW value, i.e., 400 track miles \* \$25K = \$10M annual MOW for the entire route.

The ton-mile toll assessment for MOW only is determined by dividing the annual network MOW cost by the total ton-miles, i.e., \$10M annual MOW / 10B ton-miles = \$0.001 per ton-mile. Thus the fee for a 100 ton car going the 200 mile route would be 100 \* 200 \* \$0.001 = \$20.

Since all other public railway turnpike administrative costs are unknown for now, a table was created listing theoretical administration costs (including MOW) based upon what percentage MOW would be of all other administrative costs. The percentages used ranged from 50%, 25%, 10%, 5%, 2.5%, and 1%. Per the previous chart, the Ohio Turnpike Commission's 2005 MOW was 21.98% of their operating expenses before debt service, and the Alameda Corridor Transportation Authority's 2005 MOW was 11.82% of their operating expenses before debt service. (See [OTC's 2005 CAFR .pdf p.31](#) and [ACTA's 2005 CAFR .pdf p.8](#))

The ton-mile assessment for all administrative costs including MOW is determined by dividing the theoretical administration costs by the total network ton-miles. Say all administrative costs could be held to 10% MOW costs, just under ACTA's 11.82%. The toll for a 100 ton car going the 200 mile route would then be 100 \* 200 \* \$0.01 = \$200.

While in a theoretical railway turnpike all administration costs including MOW costs would be paid for by ton-mile tolls, in reality more of the administrative costs would instead be "fixed" and not as "variable" as MOW costs. Thus another scenario is necessary to better account for those differences.

A spreadsheet of scenarios for 10, 200, and 1200 mile single, double, and triple track routes hauling between 0M-250M tons annually, with fixed administration costs was created in Excel ([MMY RR FC Calc 5-21-2008.xls](#)) no macros, with a .pdf hardcopy also available ([MMY RR FC Calc 5-21-2008.pdf](#)).

Again using the Pittsburgh-Columbus Panhandle route for a public railway turnpike, the fixed administration costs scenario; 200 route mile, double-track line; Case 6 50M Annual Tons is used. The ton-mile

MOW assessment is the same as in the variable cost example, with 50M annual tons over 400 track miles at \$25K MOW per mile requiring \$0.001 per ton mile.

Since all other administrative costs are again unknown for now, a table was created listing theoretical administration costs, this time excluding MOW costs, based upon what percentage MOW costs would be of all other administrative costs. The percentages ranged from 50%, 25%, 10%, 5%, 2.5%, and 1%. Using the previous example, if administration costs excluding MOW costs could be held to 10% and the MOW costs are \$10M, the administration cost would be \$90M, i.e., \$10M MOW is 10% of \$100M, and \$100M - \$10M MOW = \$90M administration alone.

A per-car administration "fee" to cover all administrative costs excluding MOW is determined by dividing the administration costs by the total number of cars using the network annually, i.e., at 10% MOW the administration cost is \$90M,  $\$90M / 500K \text{ cars (5K trains} * 100 \text{ cars per train)} = \$180 \text{ per car.}$

The ton-mile toll is then be added together with the administration fee to determine the total assessment charge for each engine and car. The combined toll and fee assessment for a 100 ton car going the 200 mile route would be  $(100 * 200 * \$0.001 = \$20 \text{ MOW}) + (\$180 \text{ administration}) = \$200.$

Permitting OTC to provide rail rights of way, infrastructures, and certain facilities without engaging in carriage service is fairly simple and straightforward. I revised certain ORC 5537 Turnpike Commission sections to include rail as shown in the **proposed legislation** with the underlines and strikeouts. Obviously there are some differences that would have to be addressed such as traffic patrolling and safety rules responsibilities, but those could be investigated and implemented.

OTC should conduct thorough analyses into which line segment acquisitions and restorations would be most beneficial to promptly address the capacity, congestion, and energy crises, and then move to acquire, restore, and administer those lines. OTC should also be able to move quickly to acquire more lines if Class I railroads threaten to abandon or spinoff unwanted lines, if more Class II/III carriers become financially unstable, or if Wall St. realizes superior efficiencies of a public railway turnpike and advocates wholesale nationalizations across the rail industry. The following main line segments might be candidates for acquisition or restoration-

- Panhandle Rail Line (Caprail I's Gould Tunnel-Columbus plus various short branch lines)
- Panhandle Line East (abandoned Pittsburgh-Weirton; Norfolk Southern's Weirton-Gould Tunnel)
- Youngstown-Cleveland (former Erie Lackawanna RR main line from Pymatuning, PA-Latimer, OH; Levittsburg-Aurora; restored freight

trackage and interchanges from E. 37<sup>th</sup> St.-Whiskey Island; restored passenger route interchanges into Cleveland Union Terminal)

- Panhandle Line West (abandoned Dayton-Indianapolis via Richmond, IN)
- Panhandle Line Northwest (abandoned Columbus-Chicago via Hilliard-Bradford, OH)
- Ft. Wayne Line (Pittsburgh- Alliance-Lima-Ft. Wayne, IN-Chicago. The US STB split this former Conrail high speed, high capacity main line in half at Crestline with the eastern half awarded to Norfolk Southern and the west to CSX. CSX net leases Crestline-Chicago to Class II Chicago, Ft. Wayne & Eastern RR, and that line is single track and 25 MPH at best. Administration under one agency would restore open access, universal service, and through service would significantly relieve CSX's and NS's consolidated Pittsburgh/Buffalo-Cleveland/Akron-Chicago routes through northern Ohio. NS uses the line segment between Pittsburgh-Alliance as part of its Pittsburgh-Cleveland main line, which is not recommended for acquisition. The Bayard Branch route of the NS ex-Cleveland & Pittsburgh RR line between Rochester, PA-Yellow Creek, OH-Alliance should instead be acquired, and the abandoned Beaver Valley Industrial Track connection could be restored to connect the Bayard Branch into CSX's ex-Pittsburgh & Lake Erie RR main line at West Bridgewater, PA so that both NS and CSX have equal access to the east end of the line. Various track configurations would be necessary to connect the west end of the line into both NS and CSX networks.)
- Other east-west routes between the problematic rationalized area between Port Huron, MI to Cincinnati and various north-south lines within Ohio

Thus I would ask the Task Force to 1) consider validating my public railway turnpike claims, perhaps by requesting the Legislative Service Commission, the US Government Accountability Office via a Congressional delegation request, or a recognized unbiased independent institution or researcher to run a cost estimate on the business model scenarios enclosed on the CDs, and also 2) to consider the proposed OTC legislation. Again I thank the Task Force for its time and I can be contacted for any questions or clarifications.

## About the Author

Daniel L. Van Epps is an Ed.D doctoral candidate in Technology Education/Systems Analysis at West Virginia University. He holds a fiber optic certificate from Lansing (MI) Community College, a BA and MA in Telecommunications/Information Systems and Technology from Michigan State University, a Masters Certificate in Intelligent Transportation Systems from the University of Michigan, and has taken a graduate railroad business course at Carnegie Mellon University. Originally from Detroit, MI and a graduate of Dover (OH) High School, he is currently an independent researcher, lobbyist, and consultant with proposed projects ranging from restoring 3.5 miles of abandoned rail line in Mineral City, OH under administration and operation of a new Community Improvement Corporation; an intermodal facility at east Dennison, OH; the Ohio Turnpike engaging in public railway turnpike provision; and together with a new Akron-Uhrichsville, OH conduit and fiber line to help rollout backbone speed and dark fiber availability in Eastern Ohio and increased network redundancy in the Pittsburgh-Cleveland-Columbus corridor, the repurposing of an apparently abandoned Pittsburgh-Columbus military conduit and fiber line for public use by the military, Homeland Security, telecommunication carriers, universities, supercomputer centers, and lineside end users. Information on those and other proposals is online at his website <http://www.multimodalways.org>

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