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Still A Loser: The Tampa to Orlando High-Speed Rail Proposal

Florida taxpayers face huge operating deficits come 2026 if the project goes ahead

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EXECUTIVE SUMMARY

The Tampa to Orlando high-speed rail project was cancelled by Governor Rick Scott in 2011 to shield Florida taxpayers from billions of dollars in liabilities. Yet, a recent report for the Florida Department of Transportation (FDOT) estimated that the line could have earned an operating surplus of \$38.0 million by 2026. This policy brief examines the financial claims as contained in the FDOT report.

Ridership and Revenue: International research indicates that passenger rail projects are characterized by optimism bias in ridership and revenue forecasts. On average, eventual ridership totals 39% below forecast. The operating surplus estimate in the recent report was based on ridership that is far higher than the figure cited in the previous "investment-grade" ridership survey. The new ridership forecast is not based on an investment-grade survey. This much higher ridership assumption results in an operating surplus four times the surplus projection that was current when the project was cancelled (the "2009 Forecast"). Yet, as Reason Foundation's study (*The Tampa to Orlando High-Speed Rail Project: A Florida Taxpayer Risk Assessment*) indicated, even the previous investment-grade ridership projection appeared to be very high (investment-grade ridership projections can be erroneous, as the projections for the now-bankrupt Las Vegas Monorail indicate).

Further, the new surplus projection is incomplete in excluding debt service costs for the \$250 million anticipated private investment in the system.

Optimism Bias in Capital Costs: There is also optimism bias in capital costs. The international research indicates that passenger rail projects typically cost 45% more than forecast, and the latest industry trends are even worse. Since 2002, the estimated cost of the California high-speed rail project has increased by as much as 183%. The Tampa to Orlando high-speed rail project cost projections were based upon 2002 construction cost projections. It seems likely that, if updated, the costs would be far higher based upon the California experience.

Best Case: If the Tampa to Orlando high-speed rail had equaled the international average (which seems optimistic, given recent cost trends in the high-speed rail industry), the cost overrun would have been \$1.2 billion (45%).

Worst Case: In the worst case, which assumes the industry cost trends indicated by the cost increase in the California high-speed rail project, the capital cost overrun would be \$4.4 billion.

Cost Overruns' Impact on the Surplus Projection: Assuming this range of cost overruns, the following three scenarios indicate negative financial results in 2026.

- Assuming the revenue estimate from the recent report for FDOT (The FDOT 2011 Revenue Scenario), the annual deficit would be from \$56 million to \$264 million. This is particularly notable, since these deficits would arise despite the most optimistic ridership and revenue projections and demonstrate that the project would not be commercially viable even with a comparatively modest cost overrun.
- Assuming the revenue estimate was current when the project was cancelled (The Project 2009 Revenue Scenario), the annual deficit would be from \$93 million to \$292 million.
- Assuming the revenue projection was correct in *The Tampa to Orlando High-Speed Rail Project: A Taxpayer Risk Assessment* (The Reason Revenue Report Scenario) the annual deficit would be from \$113 million to \$321 million.

As is noted below, these deficits would have been the responsibility of Florida taxpayers.

Risks Avoided by Florida Taxpayers: In the politically charged discussion that has characterized the Tampa to Orlando high-speed rail project since Governor Scott's cancellation, there have been claims that capital cost escalation and losses would have been the responsibility of the private franchisee.

However, according to the new report, "FDOT intended to procure the system through a financing plan that would repay the private consortium through an annual payment for its investment (if needed) in constructing the system." Thus, the Florida taxpayers would have had the potential liability of compensating the private franchisee for its investment. The likelihood of commercial revenues covering operating and capital costs seems remote.

It is likely, as Governor Scott predicted, that:

... even with financial guarantees from the private-sector builders/operator, moving forward with such a project would likely lead to a financial obligation by the state of Florida in the future.

Conclusion: The recent surplus projection of \$38 million in 2026 was based upon new, highly optimistic ridership projections. Further, the projection excludes the cost of the private investment and the impact of likely cost overruns. As a result, the FDOT surplus projection could be optimistic on the order of \$94 million to \$359 million in 2026. The reality is that much or all of this would have been the responsibility of Florida taxpayers.

1. INTRODUCTION

There has been considerable press coverage [1] of a report for the Florida Department of Transportation (FDOT) indicating that the now-cancelled Tampa to Orlando high-speed rail line would have been profitable. [2] According to this report, the high-speed rail line would have produced a net operating surplus of \$38.0 million in 2026. [3] This policy brief evaluates the data in the report produced for FDOT by the WSA/SDG (Wilbur Smith Associates and Steer Davies Gleave) team. In summary, the new surplus projection is inexplicably more optimistic than previous projections, despite the economic downturn. The new projection also excludes the taxpayer cost of the anticipated private investment and ignores the very real possibility that the project would have experienced material capital cost increases. As a result, the WSA/SDG surplus projection provides an incomplete and likely unachievable picture of the eventual financial results.

2. BACKGROUND

For many years, there have been proposals to build high-speed rail lines in Florida. At least three projects were previously proposed and cancelled. The last was the result of an amendment to the Florida Constitution to require building high-speed rail. That constitutional amendment was subsequently repealed by the voters.

When President Obama took office, his administration began pursuing an aggressive high-speed rail program. Over the course of approximately two years, the state of Florida received federal grants for approximately \$2.40 billion to construct the Tampa to Orlando high-speed rail line. The total cost of the system was to be \$2.65 billion, with the \$250 million balance to be subsidized by Florida taxpayers or invested by the eventually selected private franchisee.

Over the same two years, the extent of government spending and debt became significant political issues and the nation and Florida took a more fiscally conservative turn. In the 2010 election Rick Scott was elected governor of Florida.

Early in 2011, Reason Foundation published an analysis (*The Tampa to Orlando High-Speed Rail Project: A Florida Taxpayer Risk Assessment*) of the proposed high-speed rail line. [4] Both the capital cost forecasts and the ridership forecasts indicated evidence of the optimism bias that has been documented in international research. [5] These factors, it was predicted, created the risk of billions of dollars in capital cost escalation and the need for ongoing operating subsidies, above and beyond project plans, that would have been the ultimate responsibility of Florida taxpayers.

In February of 2011, Governor Scott cancelled the Tampa to Orlando high-speed rail project, explaining that:

The high-speed rail line now targeted for Florida requires the federal government to invest \$2.4 billion in taxpayer money for an 85 mile line from Tampa to Orlando. That would not pay for itself. Conventional wisdom suggests that this line, like the vast majority of passenger rail lines, will not be economically sustainable, but that potential concessionaires will bid on the line to obtain a right of first refusal to operate the prospective line from Orlando to Miami. However, given that actual ridership will not be known until well after the capital investment is made, the potential for substantial capital and operating cost overruns and the nominal difference in travel times between the cities, it is likely that even with financial guarantees from the private-sector builders/operator, moving forward with such a project would likely lead to a financial obligation by the state of Florida in the future. Moreover, there is no indication this investment will provide any meaningful job creation beyond the construction phase, nor will it result in sustainable economic growth opportunities. Put simply, the proposed high-speed rail line is far too uncertain and offers far too little long-term benefit for me to consider moving forward and ultimately putting taxpayers at risk during an already challenging fiscal climate. [6]

Press reports indicated that the analysis by Reason Foundation was instrumental in the governor's decision.

In the weeks that followed, there were unsuccessful attempts to convince Governor Scott to reverse his cancellation. There was also an attempt to form a combined agency among cities and counties to sponsor the project.

Proponents of the line claimed that the private franchisee, when selected, would assume the responsibility for any cost overruns. However, as the discussion below indicates, the Florida Department of Transportation did not think any private investment interest would accept that risk. (See "Risks Avoided by Florida Taxpayers," below).

Subsequently, the *Tampa Tribune* obtained the WSA/SDG report from the Florida Department of Transportation, which estimated that the high-speed rail line would have made an operating surplus of \$38 million by 2026. This claim is the subject of this report.

A. Optimism Bias: Ridership and Revenue

The tendency of project promoters and consultants toward excessive optimism in ridership, revenue and capital cost projections is well known. In their seminal work on infrastructure planning, European academics Bent Flyvbjerg, Nils Bruzelius and Werner Rothengatter [7] examined 258 transportation infrastructure “megaprojects” covering 70 years in North America, Europe and elsewhere. They found that actual ridership on passenger rail projects averaged 39% below forecast levels. [8] In particular, they noted:

There is a massive and highly significant problem with inflated forecasts for rail projects. For two-thirds of the projects, forecasts are overestimated by more than two-thirds. [9]

They also found significant inaccuracies in capital cost forecasting, which is discussed below. Flyvbjerg et al have characterized the inaccurate ridership and cost forecasts as exhibiting "optimism bias" and “strategic misrepresentation.” [10] In words uncharacteristically sharp for academic work, they refer to this practice as "lying."

The Tampa to Orlando High-Speed Rail Project: A Florida Taxpayer Risk Assessment found evidence of optimism bias in ridership forecasts that were current in early 2011. [11]

At that time, forecasts were based upon an "investment-grade" ridership study produced almost a decade earlier by AECOM Consulting and Wilbur Smith Associates, in 2002. An investment-grade ridership survey is intended to be sufficiently robust for potential investors to rely upon.

The investment-grade ridership study had forecast approximately 3.16 million annual riders on the Tampa to Orlando high-speed rail line by 2025, which this policy brief extrapolates to 3.26 million for 2026. [12]

The new WSA/SDG revenue estimate is far higher than the investment-grade forecast. The intercity ridership (Orlando to stations outside the Orlando area) forecast increased 44% relative to the investment-grade forecast. The forecast ridership within the Orlando area was increased 28% from the investment-grade forecast. Overall, the new ridership projection is 4.59 million annual riders in 2026, a 41% increase from the figure in the investment-grade ridership survey (Figure 1). [13]

Figure 1:

However, even the previous investment-grade ridership forecast appeared to be optimistic. *The Tampa to Orlando High-Speed Rail Project: A Florida Taxpayer Risk Assessment* estimated 2025 ridership at 2.0 million, well below the 3.16 million in the investment-grade survey.

Figure 2:

Investment-grade ridership forecasts *can* suffer from optimism bias. This is evident in the case of the Las Vegas Monorail, where an investment-grade ridership study was so inaccurate that investors suffered nearly total losses. The Las Vegas Monorail has filed for bankruptcy and defaulted on some of its bonds.

Investment-Grade Ridership Forecast and the Las Vegas Monorail

The Las Vegas Monorail was financed by tax-exempt bonds issued by the state of Nevada Department of Business and Industry. The bonds were rated by (for example) Moody's as "Baa3" and Fitch Ratings as "BBB-", the lowest possible "investment-grade" ratings. The project sponsors commissioned an "investment-grade" ridership forecast, which was praised in an "independent peer review."

The Las Vegas Monorail is forecast by URS Greiner to attract ridership of over 52,000 passengers daily (19 million annually) in the first year of operation, based upon a \$2.50 fare. URS Greiner's studies have been accepted by the investment community for decades, and their projections have been the basis for over \$24 billion worth of transportation infrastructure financing. As an extraordinary measure to provide the State and bondholders additional comfort in the reliability of the revenue projections, the URS Greiner study withstood a separate and independent peer review by the respected firm of Wilbur Smith. As a final check, the three year, multi-million dollar Major Investment Study performed by the region's public transit operator, the Regional Transportation Commission (RTC), forecast the Las Vegas Monorail corridor will have considerably more ridership than was forecast by the investment-grade URS Greiner study. [14]

Despite this endorsement, both ridership and revenue were less than one-half of forecast in its first two full fiscal years (2005 and 2006), even before the Great Financial Crisis. Less than nine months after opening, and well before the beginning of the Great Financial Crisis, Moody's downgraded its rating to "Ba1," the highest "speculative-grade" rating and indicated the outlook to be "negative." [15]

Both ridership and revenue fell to 75% below forecasts in 2010 and the project filed for bankruptcy in 2010. At the end of the 2010 fiscal year, company financial statements indicated a deficit in net assets of \$382 million, compared to a projected \$95 million surplus for the first six full fiscal years of operation and an original project capital cost of more than \$600 million. The investors who relied on the Las Vegas Monorail investment-grade ridership forecasts appear likely to suffer virtually total losses. In November of 2011, the federal bankruptcy court ruled against the Monorail's Chapter 11 bankruptcy plan, which "doom it to failure," even if, as proposed, the debt was reduced from \$658 million to \$40 million. [16]

Negative financial results had been forecast when the project was in the planning stages. In 2000, Wendell Cox Consultancy [17] produced a report that forecast daily Las Vegas Monorail ridership at from 53% to 68% below the URS Greiner forecasts, figures similar to the eventual actual ridership. [18] The report also predicted that the project would default on its financial obligations.

Neither FDOT nor WSA/SDG, which produced the background ridership report on which the FDOT report is based, provides justification for the huge increase in the ridership compared to the investment-grade survey.

Further, no material improvement of the passenger rail market appears to have occurred since the publication of the investment-grade ridership study. Indeed, the downturn in the economy would seem to justify a *lowering* of the ridership forecast. For example, a more modest trend in tourism is indicated by a slow-down in hotel room growth in the Orlando area. The investment-grade ridership survey had forecast an annual growth rate in the Orlando rooms of 3.1% between 2005 and 2015. The actual increase in hotel room growth has been substantially less, falling to a projected annual rate of 1.2% between 2007 and 2012, according to "Visit Orlando." [19] This 60% reduction in room growth rates would suggest a substantially weaker tourist market in the Orlando area than had been forecast in the investment-grade ridership study.

Thus, the investment-grade ridership forecast, which had already appeared to exhibit optimism bias, was increased to a more unrealistic level, at the same time as the nation and Florida were experiencing the worst economic decline since the Great Depression.

Figure 3:

Any optimism bias evident in the WSA/SDG ridership projections would also be reflected in the revenue and surplus projections. The WSA/SDG report indicates that total revenues in 2026 would be approximately \$101 million (2010\$), yielding a surplus of \$38 million after deducting operating expenses.

This projection differs from the 2009 financial analysis prepared by Public Financial Management (PFM) for the project. PFM projected total revenues of \$74 million in 2026, with a surplus of approximately \$10 million after deducting operating expenditures. [20] This previous surplus figure is barely one-quarter of the new WSA/SDG surplus. Based upon the Reason report's forecast ridership, an \$18.6 million deficit would occur in 2026.

The WSA/SDG estimate is incomplete on two counts. Firstly, the figures exclude the cost of the minimum private investment. It was widely claimed by proponents of the project that the eventual private franchisee would invest \$250 million into the system, making up the difference between the forecast capital cost of \$2.65 billion and the federal grants of \$2.40 billion.

The effect of financing the \$250 million private capital investment is substantial, and is indicated in three revenue scenarios, which are described below.

- The FDOT 2011 Revenue Scenario: Based upon the WSA/SDG report.
- The Project 2009 Revenue: Based upon the Public Financial Management report prepared for the Tampa to Orlando high-speed rail project in 2009.
- The Reason Report Revenue Scenario: Based upon *The Tampa to Orlando High-Speed Rail Project: A Florida Taxpayer Risk Assessment*.

Table 1 revises the projections for each of the scenarios to include the private debt service payments on the \$250 million investment. Under the 2011 FDOT Scenario, the surplus would be reduced from \$38.0 million in 2026 to \$21.7 million. [21] The 2009 Project Revenue Scenario would result in a \$6.4 million deficit, while the Reason Report Revenue Scenario would result in a \$34.9 million deficit.

Table 1: 2026 Annual Operating Revenues (in millions of 2010\$)

	WSA/SDG 2011 Revenue Scenario	Project 2009 Revenue Scenario	Reason Revenue Scenario
Intercity and Orlando Ridership (millions)	4.6	3.3	2.0
Revenues	\$101.1	\$73.5	\$44.5
Operating Expenses	-\$63.2	-\$63.6	-\$63.2
Operating Surplus (Deficit)	\$38.0	\$9.9	-\$18.6
Private Debt	-\$16.3	-\$16.3	-\$16.3
Net Surplus	\$21.7	-\$6.4	-\$34.9

Secondly, the WSA/SDG figures do not include any allowance for what appears to be the virtual certainty of material capital cost overruns. This issue is discussed in the next section.

B. Optimism Bias: Capital Costs

The WSA/SDG "surplus" figure does not include any provision for capital cost overruns. A material capital cost overrun seems more than likely.

The international research indicates an optimism bias in projecting capital costs. Flyvbjerg et al. found that capital cost escalation for passenger rail can be as much as 50 percent to 100 percent above projections. Moreover, Flyvbjerg et al. found that capital cost overruns were pervasive, occurring in 9 out of 10 projects.

Trends revealed in recent months indicate a worsening of capital cost projection inaccuracies in the U.S. high-speed rail construction industry. Between 2002 and 2011, the cost of the California High-Speed Rail Authority's Phase I route (San Francisco to Los Angeles) has risen from approximately \$26 billion to between \$65.4 billion and \$75.4 billion. This is an increase of from 148% to 183% in less than a decade (all data in 2010\$). [\[22\]](#)

The 2002 California comparison is used because the capital cost projections being used in 2011 for the Tampa to Orlando high-speed rail line were developed in 2002 and have not been materially updated. As in California, as the project moved closer to construction and the design was finalized and environmental mitigations costed out, it is to be expected that the costs would have risen, producing a capital cost overrun.

If the same industry trend that drove the California costs up so much were to apply in Florida, costs would have risen \$4.4 billion, to over \$7 billion. If the capital cost overrun was limited to the average cost escalation from the international literature, the cost escalation would have been \$1.2 billion, for a total capital cost of \$3.85 billion. Financing either of these cost overruns would result in substantial deficits in 2026 (Figure 4).

Figure 4:

The impact of cost overruns would be real and would need to be included in any financial projections. Despite widely reported perceptions to the contrary, these additional costs (Table 2) would fall to the taxpayers of Florida, rather than to the private franchise (See: "Risks Avoided by Florida Taxpayers," below).

Best Case: Assuming a lower capital cost overrun of \$1.2 billion, the following results are projected for the three scenarios:

- The WSA/SDG 2011 Revenue Scenario would produce an annual deficit of \$56 million in 2026. This is \$94 million less in net revenue than in their report.
- The Project 2009 Revenue Scenario would produce an annual deficit of \$93 million in 2026. This is \$131 million less in net revenue than in the WSA/SDG report.
- The Reason Report Revenue Scenario would produce an annual deficit of \$113 million in 2026. This is \$151 million less in net revenue than in the WSA/SDG report.

Worst Case: In the worst case, which assumes the industry cost trends indicated in the California high-speed rail project, the capital cost overrun would be \$4.4 billion. The following results are projected:

- The WSA/SDG 2011 Revenue Scenario would produce an annual deficit of \$264 million in 2026. This is \$302 million less in net revenue than in the WSA/SDG report.
- The Project 2009 Revenue Scenario would produce an annual deficit of \$292 million in 2026. This is \$330 million less in net revenue than in the WSA/SDG report.
- The Reason Report Revenue Scenario would produce an annual deficit of \$321 million in 2026. This is \$359 million less in net revenue than in the WSA/SDG report.

Table 2: 2026 Annual Gross Surplus/Deficit (in millions of 2010\$)

	WSA/SDG 2011 Revenue Scenario	Project 2009 Revenue Scenario	Reason Revenue Scenario
Net Surplus from Table 1	\$21.7	-\$6.4	-\$34.9
Cost Overrun Debt Service: Low	-\$77.6	-\$77.6	-\$77.6
Surplus (Deficit)	-\$55.9	-\$83.9	-\$112.5
Cost Overrun Debt Service: High	-\$285.8	-\$285.8	-\$285.8
Surplus (Deficit)	-\$264.0	-\$292.1	-\$320.6

3. RISKS AVOIDED BY FLORIDA TAXPAYERS

In the politically charged environment that has characterized the Tampa to Orlando high-speed rail project since Governor Scott's cancellation, there have been claims that capital cost escalation and losses would have been the responsibility of the private franchisee.

In fact, the WSA/SDG report makes it clear that there was no such serious expectation. That report indicates that the difference between the \$2.65 billion projected capital cost and the \$2.40 billion federal grants "would have been covered" ... "without subsidy through either private investment or available State funding through the Florida Rail Act." [23] Thus, there was the possibility that Florida taxpayers would have had to pay the difference, rather than the private franchisee.

Further, the WSA/SDG report states that, "FDOT intended to procure the system through a financing plan that would repay the private consortium through an annual payment for its investment (if needed) in constructing the system." Thus, the private franchisee would have been compensated by the state of Florida for its investment, to the extent that commercial revenues fell short of repaying the investment.

Moreover, it is clear from the project projections that commercial revenues would have been insufficient to compensate the private franchisee except under the most optimistic conditions – the highly unlikely event that there would be no cost overrun and that the highly inflated new ridership and revenue forecasts were achieved.

It is naive to believe that any competent international firm would take the responsibility for cost escalation that would neutralize any possibility of profits and could very well threaten the future of the company itself, which cost overruns of such a magnitude would do. It is more likely that when the cost escalation appeared, a bailout by Florida taxpayers would be necessary, as occurred, for example, with the Channel Tunnel link in the United Kingdom. Taxpayers have paid most or all of the capital costs for most high-speed rail lines. The International Union of Railways, has indicated that only two high-speed rail segments (as opposed to complete lines), Tokyo to Osaka and Paris to Lyon have "broken even," including their capital costs. [24]

This is precisely the risk to taxpayers that Governor Scott sought to avoid:

... It is likely that even with financial guarantees from a private-sector builders/operator, moving forward with such a project would likely lead to a financial obligation by the state of Florida in the future. [25]

As Flyvbjerg, et al note:

... strong incentives and weak disincentives for cost underestimation and thus cost overrun may have taught project promoters what there is to learn, namely that cost underestimation and cost overrun pay off. If this is the case, cost overruns must be expected and it must be expected to be intentional. [26]

Cancellation of the Tampa to Orlando high-speed rail project spared Florida's taxpayers from having to learn, first hand, the consequences of optimism bias.

4. CONCLUSION

The WSA/SDG surplus projection of \$38 million in 2026 is based upon new, overly optimistic ridership projections. Further, the projection excludes the cost of the private investment and the cost of likely cost overruns. As a result, the reality is that Florida taxpayers would face deficits of \$50 million to more than \$300 million in 2026.

ENDNOTES

[1] Ted Jackovics, "High-speed rail would have been profitable, state report says," *Tampa Tribune*, February 6, 2012, <http://www2.tbo.com/news/breaking-news/2012/feb/06/high-speed-rail-would-have-been-profitable-state-r-ar-355492/>.

[2] Florida Department of Transportation, *Florida High Speed Rail Service Development Program: Executive Summary*, November 2011 and background report: *Tampa - Orlando High Speed Rail Ridership Study - Summary Report*, Wilbur Smith Associates and Steer, Davis, Gleave, November 2011).

[3] Unless otherwise indicated, all dollar amounts in this report are expressed in 2010 dollars.

[4] Wendell Cox, *The Tampa to Orlando High-Speed Rail Project: Florida Taxpayer Risk Analysis* (Los Angeles: Reason Foundation, 2011) http://reason.org/files/florida_high_speed_rail_analysis.pdf.

[5] The researchers have made recommendations for improving projections that would rely more on reference to comparable projects and less on theoretical mathematical models. See *Planners Called to Help End Inaccuracies in Public Project Revenue Forecasting*, American Planning Association, <http://www.planning.org/newsreleases/2005/apr07.htm>.

[6] Governor's Office, Governor Rick Scott's letter to Secretary of Transportation Ray LaHood (February 16, 2011), <http://bit.ly/gVa1TV>.

[7] Bent Flyvbjerg, Nils Bruzelius and Werner Rothengatter, *Megaprojects and Risk: An Anatomy of Ambition*, (Cambridge, UK: Cambridge University Press, 2003). Flyvbjerg is a professor at the Oxford University in the United Kingdom. Bruzelius is an associate professor at the University of Stockholm. Rothengatter is head of the Institute of Economic Policy and Research at the University of Karlsruhe in Germany and has served as president of the World Conference on Transport Research Society (WCTRS).

[8] Stated in the text, as forecast levels average 65 percent above actual, which is the equivalent of a 39 percent ridership shortfall.

[9] Flyvbjerg, Bruzelius and Rothengatter, *Megaprojects and Risk*, p. 26.

[10] Brent Flyvbjerg, "Over Budget, Over Time, Over and Over Again: Managing Major Projects," *The Oxford Handbook of Project Management*, (Oxford: Oxford University Press, 2011), pp. 321-344, <http://www.sbs.ox.ac.uk/centres/bt/Documents/Flyvbjerg11OverBudgetOverTimeOverAndOverAgainManagingMajorProjects.pdf>.

[11] Cox, *The Tampa to Orlando High-Speed Rail Project*.

[12] The WSA/CDG 2011 report uses 2026, rather than 2025, as the out-year for ridership and revenue forecasts. For comparison, this report adjusts 2026 ridership to 3.26 million annual riders based upon the annual rate of increase from 2020 to 2025.

[13] This compares the intercity and the airport access markets as indicated in the investment-grade ridership report and the background 2011 report. Additional ridership is assumed in the WSA/SDG report, but not explained.

[14] Thomas J. Stone, Carlos A. Banchik and Jeffery B. Kimmel (2001). "A Unique Rapid Transit Project for a Unique City," The Monorail Society, <http://monorails.org/tMspages/LasVeg5.html>.

[15] Las Vegas Monorail Corporation, NV, Moody's, <http://www.moody's.com/credit-ratings/Las-Vegas-Monorail-Corporation-NV-credit-rating-805022402>. Credit rating descriptions from *Moody's Rating Symbols and Definitions*, <http://www.moody's.com/sites/products/AboutMoody'sRatingsAttachments/Moody'sRatingsSymbolsand%20Definitions.pdf>.

[16] Tim O'Reiley, "Judge Rejects Las Vegas Monorail Bankruptcy Plan," Las Vegas Review Journal, November 18, 2011, <http://www.lvrj.com/business/judge-rejects-las-vegas-monorail-bankruptcy-plan-134143548.html>.

[17] Wendell Cox, *Analysis of the Proposed Las Vegas LLC Monorail*, 2000, Wendell Cox Consultancy <http://www.publicpurpose.com/ut-lvmono-0006x.htm>.

[18] See: Demographia, *Las Vegas Monorail Ridership & Revenue: Forecasts and Actual*, <http://www.demographia.com/db-lvmonoride.pdf>.

[19] Calculated from "Visit Orlando" data at <http://corporate.visitorlando.com/research-and-statistics/orlando-hotel-statistics/orlando-hotel-inventory/>.

[20] 2010\$.

[21] All debt service assumed to be amortized over 30 years at an annual interest rate of 5.0%.

[22] In 2010\$, cost of extension from Los Angeles to Anaheim added.

[23] In fact, payment to cover the \$250 million gap by the state under the Florida Rail Act would represent a subsidy.

[24] Victoria Burnett (May 29, 2009), "Spain's High-Speed Rail Offers Guideposts for U.S.," *The New York Times*, http://www.nytimes.com/2009/05/30/business/energy-environment/30trains.html?_r=2&em=&adxnnl=1&adxnnlx=1245164423-dWyLEqWIOk53FwbSfTcZCQ.

[25] Governor's Office, Governor Rick Scott's letter to Secretary of Transportation Ray LaHood (February 16, 2011), <http://bit.ly/gVa1TV>.

[26] Flyvbjerg, Bruzelius and Rothengatter, *Megaprojects and Risk*, p. 16.

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