

KENOSHA-RACINE-MILWAUKEE (KRM) CORRIDOR TRANSIT SERVICE OPTIONS: AN INVESTIGATION AND ANALYSIS

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OVERVIEW

Kenosha, Racine and Milwaukee are all located close to the lakefront, particularly their central business districts (CBDs), but for the two southern cities there is no freeway near the lake, and it can take more than eight miles of east-west travel to reach I-94, the main north-south road through the region. With the exception of a bus line operated by Wisconsin Coach Lines, which takes an hour and 44 minutes from the Kenosha Metra station to the University of Wisconsin-Milwaukee, there is currently no north-south transit service in this corridor connecting the three cities.

The Southeastern Wisconsin Regional Transit Authority (SWRTA) was formed to study public transit improvements in the Kenosha-Racine-Milwaukee lakeside corridor, with the primary emphasis being on a commuter rail service that would start in Kenosha, where the Metra UP-North commuter rail line from Chicago terminates. The proposed

new service would operate north to the Amtrak Depot in Milwaukee primarily along the Union Pacific-Kenosha Subdivision (UP Kenosha Sub) line, now used relatively lightly for freight.

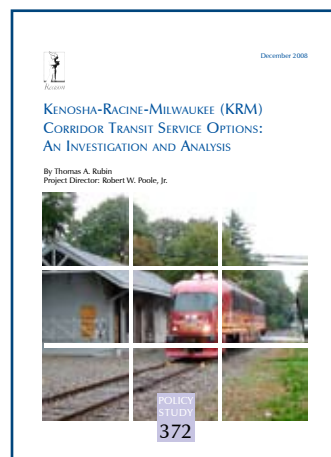
SWRTA studied several alternatives for transit service in this corridor, narrowing it down to three:

- Commuter rail operations on the UP Kenosha Sub;
- Bus Rapid Transit (BRT) service on semi-dedicated lanes on existing state highways along the lakeside;
- The federally required Transportation Systems Management alternative, basically “the best that can be done” without new significant capital expenditures.

SWRTA selected a form of commuter rail service, using two-car, diesel multiple units (DMU) trains. DMUs are specialized self-propelled passenger cars which can be operated as single-car trains or in longer trains.

Several other transit alternatives were either not considered at all in the

This is a policy summary of policy study #372, *Kenosha-Racine-Milwaukee (KRM) Corridor Transit Service Options: An Investigation and Analysis*.



alternatives analysis or were given short shrift. In view of the costs, ridership, and other components of the KRM DMU alternative, these overlooked alternatives deserve further consideration.

In this policy study we review surface transportation improvement alternatives in the KRM Corridor with a focus on public transit. A key part of the decision-making process should be whether the service is worth the public sector investment to make it happen, given the costs, benefits and risks of the proposed commuter rail and other alternatives.

Accordingly, we analyze the proposed KRM commuter rail project and other transit alternatives in this three-county area, including those considered in the 2007 *Draft Environmental Impact Statement* (EIS) and others not included therein.¹

The primary federal program for funding major fixed guideway transit capital investments, such as commuter rail and the guideway transit forms of BRT, is the New Starts program. This is a discretionary program, which means that funding is provided for specific projects that have gone through an extensive competitive vetting process.² While there are several other federal funding programs, all the other major ones are formula grant programs, which means that the region would be receiving the same amount of funds, whether a major capital project is under way or not. If funds from those formula programs are utilized for a major transit capital project, other projects will likely suffer, specifically including the on-going maintenance and capital renewal and replacement of the region's roadways and transit asset base.

Greater Milwaukee's home-to-work commute and peak-period travel are relatively easy when compared to other medium- and large-sized urbanized areas. For 2005, the most recent data, the Milwaukee area's Travel Time Index was just 1.13. This means, on average, that travel during peak travel periods takes only 13% longer than off-peak. Greater Milwaukee tied for the 18th lowest score of the 69 urbanized areas rated with 2000 populations over 500,000. The TTI for Milwaukee has actually been improving in recent years, from the 1.15 of 1999 to 2002 to 1.13 more recently.³

The home-to-work travel time data developed by the U.S. Census Bureau shows that for 2005, the Milwaukee urbanized area (not including Racine or

Kenosha), commute time averaged 20.8 minutes, which tied for 12th lowest of the 69 urbanized areas.⁴ Finally, *Forbes* Magazine recently ranked Milwaukee's commute as the third best of the 75 major U.S. cities it surveyed.⁵ For Racine County, the average travel time to work in 2006 was 21.2 minutes; for Kenosha County, 26.3 minutes; and for the nation, 25.0 minutes.

With the important exception of Kenosha County residents, the population of the KRM corridor counties have commutes to work that are very good in comparison to commutes to most other U.S. communities. The relatively low level of congestion, coupled with the relatively low use of transit, makes gaining popular support for new transit funding more difficult.

OFFICIALLY STUDIED TRANSIT ALTERNATIVES

Commuter Rail

The primary element of the proposed DMU commuter rail service is the operation of 14 round-trips per working weekday between Kenosha and downtown Milwaukee, a distance of 32.6 miles. An additional element is the extension of three round-trips to Waukegan, Illinois, on the UP-North line, an added distance of 15.7 miles, and one round-trip a day to Chicago.

Projected weekday ridership is 5,966 for the year 2000 (that is, using data from the 2000 Census) and 7,392 for 2035, of which 4,817 (65%) would be new to transit.⁶ Nine stations are proposed, including several new ones to be constructed and upgrades at existing facilities.

The KRM corridor commuter rail option includes bus services changes, primarily to bring more people to, and to improve connections from, the rail stations. SWRTA estimates a \$1 million annual operating expense to operate the additional bus service after subtracting operating expenses of bus services that will be eliminated because they would be replaced by the commuter rail service.

In order to operate the proposed service safely at the desired speed and times, there are a number of requirements for improvements of the existing facilities, from buying vehicles, building stations and park-

ing lots to upgrading equipment and track and providing ticket collection equipment and more.

According to the SWRTA, the total project cost is figured at \$249,760,309. This includes a contingency factor of 17.5% of the construction charges.⁷ The size of this contingency is small compared to similar project at this stage of development; many unknown factors can, and often do, lead to significant cost over-runs.

The *KRM AA/DEIS* operating cost projection methodology is complex,⁸ and, because of the difficulties of attempting to perform detailed cost analyses of a proposed system currently in a preliminary phase of design, we did a reasonableness test by comparing boardings per vehicle revenue hour to the national commuter rail average. For KRM, using the projected 2035 ridership, the value was 100,⁹ compared with the 2006 national average of 48, and for Metra, 54.¹⁰ Here, we have a significant variance—the KRM projection of 100 boardings/hour is 209% of the national average of 48 and 185% of Metra’s 54 for 2006. Projected KRM boardings per hour are far higher than the peer values.

Using data from the same sources, here are the comparative statistics for two other key indicators (national data for 2006, KRM data for 2035):¹¹

	National	KRM
Annual Boardings/Station	377,369	209,440
Annual Boardings/Bi-Directional Track Mile	126,551	57,821

On these measures, KRM would be well below the 2006 national commuter rail averages, but this could be partially explained by the lower level of service and shorter trains assumed to be operated. The shorter trip length would tend to free up more space for additional boardings through higher turnover of seats for each trip. Also, KRM is intended to provide more bi-directional service than most commuter rail operators, and trains originating at Kenosha or Waukegan would tend to be somewhat fuller than might be expected for most suburban terminus stations because of transfers from Metra.

However, even after taking all of these factors into consideration, the KRM boardings per hour still appears high. If it is, this could mean one of two very different things:

- The projected ridership is overstated; or

- The projected level of service will not be sufficient to handle the passenger loads, particularly during peak periods.

The proposed sources of funding for the initial capital expenditures are:¹²

Federal Section 5309 New Starts:	\$124,880,154	50%
CMAQ	18,000,000	7%
State Commuter Rail Development Program	53,440,077	21%
RTA Bonds	22,981,027	9%
RTA Direct Investment	30,459,050	12%
Totals	\$249,760,308	100%

Federal 49 USC 5307 Formula funds are shown as operating funding in the *Financial Plan*.¹³ While these monies can legally be used for operating subsidies,¹⁴ this funding source is also intended by the federal government for capital renewal and replacement of existing assets, such as replacement of rail cars when they reach the ends of their useful lives, rail right-of-way work, etc. In fact, one of the largest challenges facing the region is that for the past several years, Milwaukee County Transit System (MCTS) has relied heavily upon Formula funds to cover operating expenses and has now almost completely drawn down the reserve it had prudently built up while, at the same time, it is facing the need to replace many of its buses.¹⁵ This pattern should not be repeated by KRM.

Fixed guideway transit systems have many required capital expenditures beyond initial construction. For example, the dozen DMU’s assumed for initial commuter rail operations¹⁶ have an original cost projected at \$49,039,747 and would have to be replaced in 25 to 30 years.¹⁷ This is only one of the many on-going capital renewal and replacement costs for rail operations that this federal program was designed to assist in funding.

Finally, we calculate a statistic, Cost Per New Passenger, that is useful in evaluating the cost-effectiveness of this proposal, and find that cost to be \$28.01. By contrast, the average fare per boarding, at the start of service in 2014 is projected at \$2.92.¹⁸ Another way of looking at this statistic is that the cost to add a new transit rider for a year, over that of the TSM alterna-

tive, for a round trip every one of those 255 working weekdays, is \$14,285 (i.e., \$28.01 x 2 boardings/day x 255 days/year).

By comparison, in 2007, the total cost per passenger for the Milwaukee County Transit system (MCTS) was \$3.08¹⁹—for far shorter trips, to be sure, but ones that are very important to the mostly lower-income riders. Cost disparities of this type raise a very legitimate question of allocation of resources if there are proposed funds that could be used either to improve the financially floundering MCTS or to build and operate KRM commuter rail.

Bus Rapid Transit Alternative

The *EIS – Definition of Alternatives*, September 2006, pp. 45-61, discusses four BRT options tracing back to the 1991 *Transit Technology* report:

- Mixed traffic on freeways
- Reserved lanes on freeways
- Exclusive busways
- Reserved lanes on surface arterial streets

In its study of alternatives, SWRTA first short-listed for detailed study, but subsequently rejected in favor of commuter rail, a version of the last of these, which involved adding dedicated lanes to local roadways along the lake shore. The many at-grade intersections posed both speed restrictions and risk of collisions, while the conversion of many former through streets to right-turn-in, right-turn-out intersections, loss of curb parking and other characteristics combined to produce significant community impacts, slower speed than the commuter rail option and an initial capital cost almost as high as commuter rail.

Transportation Systems Management

Transportation System Management (TSM) is a required alternative to be evaluated for projects proposed for New Starts funding. It is basically the low capital cost alternative, the “best that can be done” without the build alternative(s).²⁰

In the SWRTA report, the TSM alternative is primarily improved bus service—which is the norm for this type of analysis.²¹ The results are low-cost, but also relatively low-impact, in terms of the quantities of ben-

efits, compared to the other alternatives. TSM simply did not provide the degree of improved transit benefits that the Steering Committee believed necessary in this corridor.

OTHER KRM CORRIDOR ALTERNATIVES

In this section we explore several alternatives not considered by SWRTA in its alternatives analysis: express bus service on I-94, BRT-Lite on major arterials, and vanpools.

I-94 Commuter Express Bus

In most long-haul transit corridors where commuter rail is being considered, the most logical transit alternative is usually long-haul commuter express bus service, particularly if there is or could be a high-occupancy vehicle (HOV) or high-occupancy toll (HOT) lane available for the long-haul buses to use.

This was not part of the range of options studied in the SWRTA report (*EIS*). The main reason is that there is no long-distance freeway near the Lake Michigan shoreline where most of the residents and many of the existing major trip generators are.²² In addition, consideration of HOV and HOT lanes in these three counties, particularly along I-94, have not led to construction or even serious planning of such lanes.

However, long-haul commuter express bus service could still make sense in this corridor, either as a substitute for or as a supplement to the commuter rail proposed for the Lake Michigan shoreline. We believe that it is worth investigating to see if demand for this service exists.

For a traveler beginning at the Racine transit center, or near the CBD, I-94 express bus service would clearly not be time-competitive with the commuter rail running time to the Milwaukee CBD. However, the further west one’s travel origin point, the more competitive the I-94 bus alternative becomes. For a traveler with a destination in Waukesha, the travel time comparison becomes moot because the commuter rail alternative will not serve this destination.

Of course, for those living or having destinations west of I-94, express bus service on I-94 would be

more useful than commuter rail along the lake front.

Although the in-vehicle travel time question is an important aspect of mode choice decisions, particularly for home-to-work trips, there are many other factors that must be considered. A very major one is cost, particularly the public sector cost. The more it costs the taxpayers to move one transit passenger, the fewer will be moved, both because the money doesn't go as far and because the willingness of the taxpayers to subsidize transit decreases as the cost per passenger increases.

One of the best examples of freeway express bus service exists in New Jersey, where both commuter rail operated by New Jersey Transit and express bus service contracted for by New Jersey Transit serve New Jersey commuters to and from Manhattan. Table 1 provides data on these services, from the National Transit Database.

Table 1: NJ Transit Commuter Rail and Express Bus Data, 2006		
Reported Data	Commuter Rail	Long-Haul Express Bus
Operating Expenses	\$685,214,833	\$151,562,901
Fare Revenues	\$351,614,444	\$135,388,351
Annual Passenger Miles	2,128,606,042	746,301,020
Annual Vehicle Revenue Miles	59,005,104	33,455,633
Annual Unlinked Trips	75,394,695	20,167,860
Annual Vehicle Revenue Hours	1,990,994	1,315,791
Calculated Metrics		
Farebox Recovery Ratio	51.3%	89.3%
Cost/Passenger	\$9.09	\$7.52
Revenue/Passenger	\$4.66	\$6.71
Subsidy/Passenger	\$4.42	\$0.80
Cost/Passenger-Mile	\$0.322	\$0.203
Revenue/Passenger-Mile	\$0.165	\$0.181
Subsidy/Passenger-Mile	\$0.157	\$0.022
Average Trip Length	28.2	37.0
Average Operating Speed	29.6	25.4

Source: National Transit Database

Looking at the calculated metrics, express bus is superior in all indicators, with lower costs and higher revenues, which lead to far lower taxpayer subsidy levels; indeed, the taxpayer subsidy per passenger for

express bus is only 18% that of commuter rail, and per passenger-mile, 14% that of commuter rail. Conversely, the taxpayer subsidy per commuter rail passenger is five-and-one-half times that for each bus passenger and the commuter rail subsidy per passenger-mile is over seven times that of bus. While taxpayers cover 48.7% of commuter rail operating costs, they are only picking up 10.7% of those of express bus.

Actually, express bus performs even better than these statistics make it appear. The "operating" costs shown for the private bus contractors actually include part of their capital costs, plus the property taxes and income taxes that they pay.

Finally, the capital requirements for commuter rail are far more than for bus. From 1996 through 2006, NJ Transit's commuter rail capital expenditures were \$4.181 billion. One year's worth of this would pay for the entire commuter bus fleet, which has a useful life of at least 12 years. The capital costs per passenger and per passenger-mile are also significantly lower for express bus, compared to commuter rail.

The main lesson to be learned from the New Jersey experience is that both commuter rail and long-haul commuter express bus are working well in New Jersey and both have characteristics and properties that could be applied, with great differences in scale, to the KRM Corridor. The differences should be considered to see which, or both, are most applicable in Wisconsin.

Two other important considerations in comparing these two modes of transit are scalability and risk. Commuter rail is, to a very high degree, an all-or-nothing option; unless a very significant investment is made up-front before there is any real-world indication of what results can be achieved, it simply cannot be done. In this particular case, at least \$250 million must be invested before commuter rail service can even begin.

Long-haul commuter express bus service could, on the other hand, literally be implemented one bus at a time. This would probably be carrying scalability beyond its reasonable range, but it would certainly be possible to implement one bus line at a time and then expand service or not as the results of the first implementations become known.

Moreover, the proposed commuter rail investments are permanent. These are long-term (up to

several decades of useful life) investments that must be made up front and, if not successful, there is very little opportunity for getting any money back from these investments. Only a few elements of an express bus operation—such as park & ride lots—are permanent, non-transferable investments, and there are often temporary options even for them, and their cost is a small fraction of the infrastructure costs for commuter rail.

BRT Lite

Bus Rapid Transit is a broad term that encompasses all types of bus service improvements that raise the speed of travel. By “BRT Lite”, we are referring to one subset: buses operating on city streets without special guideways but with a limited number of stops and traffic signal preferences.²³ Besides low cost, this also has the advantage of relatively fast implementation. It is realistic to have the first new BRT-Lite line in operation within a year of the start decision. One great advantage is having no environmental clearance requirements.

By using this method, Los Angeles has improved the speed of its bus system 15 to 40% on over two dozen routes. Much of the speed improvement has been due to LA-DOT’s traffic engineers fine-tuning the traffic signal progressions to give priority to getting buses through a long line of signalized intersections. At first, there was some reluctance to implement this, but the after-action reports have shown that total vehicle capacity—bus, auto and truck—has actually increased slightly, with some of the improvement being due to auto drivers who become aware of how the system works and changing their travel speeds to match that of the Metro Rapid buses to time the lights.

MCTS, in connection with the city of Milwaukee, is actively pursuing BRT Lite solutions. Given the relative size of the various communities in the Southeastern Wisconsin area, Milwaukee—particularly the core CBD area and major arterials leading to it, plus major cross-town arterials—is where the greatest benefit is likely to occur. BRT Lite could also be used on selected north-south and east-west arterials in Kenosha and Racine Counties. These types of low-cost, brains-instead-of-dollars, improvements can be used in many applications in many medium- to large-sized urban areas.

Vanpools

Vanpools are another unglamorous, but potentially very cost-effective and productive, means of providing transportation. MCTS currently has a small (27 vans) but very low-cost vanpool program with passenger fares covering 100% of operating expenses.²⁴ Establishment and expansion of a vanpool program is, to a large extent, a matter of a public body making a decision to do it, investing a relatively small amount of public funding and engaging in an outreach, education, training and technical assistance program for other governmental organizations, employers of all sizes and types, faith-based organizations and others.

While vanpools will rarely capture a major share of the home-to-work trips, they will often provide among the greatest return on investment on taxpayer dollars that is available to governmental transportation decision-makers and staffs.

ECONOMIC DEVELOPMENT

A study commissioned by SWRTA reached the following conclusion:

*The proposed project will have a significant impact on the economy, including 4,700 jobs created during construction with a \$560 million impact on the area economy, and 126 jobs during project operations/maintenance with a \$24 million annual impact on the economy.*²⁵

However, this outcome appears doubtful. The basic problem is that the analysis does not consider what the economic impact of not building KRM commuter rail would be—if the taxes to build it were left with the local taxpayers, or spent on other governmental projects. Calculating the “gross,” rather than the “net,” impact of the KRM project is not an accurate way of calculating these impacts.

In addition, while the plan is for significant out-of-state financing for the project, it improperly shows all spending on the project being local. This is also incorrect, as there are no local suppliers for the specialized rail cars that are specified, nor the actual rails and special trackwork, nor many other of the materials or much of specialized human resources costs.

Again, from the first page of the Executive Summary:

The proposed project will have a significant impact on property value. Based on experience across the nation, existing development along the commuter rail line may be expected to experience a 4 to 20 percent and even higher premium in property value. An intermediate 10 percent premium for a one mile corridor along the KRM rail line would represent a \$2.1 billion increase in property value in the three KRM counties.

If we assume that each year 2035 rider makes a round-trip, that would mean that there are 3,696 daily round-trip riders. So, if we divide the \$2.1 billion “10%” increase in property values by those 3,696 commuter rail travelers, we find that each and every one of them will cause an increase in property values of about \$568,000 in that one-mile corridor. This is obviously far-fetched, particularly when one considers that many of the 3,696 will neither live nor work within this one-mile corridor, these being the primary types of real estate where commuter rail access and the presence of commuter rail riders could be expected to have an impact.

CONCLUSIONS

Of the alternatives studied by SWRTA, the decision to select the DMU commuter rail option is understandable, given its focus on the lake shore. But, we believe long-haul express bus operations on I-94 should be studied, both as co-existing with and as an alternative to commuter rail. Express bus requires very little initial capital cost compared to commuter rail, is very scalable and therefore low risk, and has been shown to have very low taxpayer costs where there is a strong demand for such service. This service is of more value to potential riders the closer they are to I-94, but our analysis shows the break-even point on travel time for many can be very close to the CBDs of Kenosha and Racine, and that such service can serve destinations, such as outside of the city centers of Kenosha, Milwaukee and Racine and in the other four Southeastern Wisconsin counties, that commuter rail cannot well serve. The key to such an analysis is a study of the demand for travel, particularly home-to-work, in both the three-county and the seven-county region.

In addition, BRT Lite service, providing express bus service with traffic signal priority on north-south and east-west highways should be considered for a number of corridors, including the lakeside route proposed by SWRTA for a far more expensive exclusive-guideway form of BRT.

We find the projections of economic and real estate benefits of commuter rail to not be credible in methodology or in purported results and suggest that transportation decisions such as this be made based on transportation costs and benefits.

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