

***The Rapid:  
A Critical Analysis  
Myths vs. Facts***

***Please Note: We strive for accuracy and transparency. This report is heavily footnoted with sources and analysis. We invite corrections and comments: [info@itpwatch.org](mailto:info@itpwatch.org).***

## ***Introduction and Summary***

This report is a culmination of several years of work following repeated requests from The Rapid for tax increases in the Grand Rapids area. As we began to analyze the operations of The Rapid, we were surprised to find just how ineffective and inefficient the system was. During our campaign against The Rapid's tax increase in 2007, a spokesperson from The Rapid's called us and claimed that the data we were publishing was incorrect. We strive for accuracy and transparency, so we asked that they send us any corrections so that our data would be accurate. They declined to do so. This is probably because we use data that The Rapid itself releases to the federal government. Thus, we concluded that our data was in fact correct.

In 2009, The Rapid once again asked for a tax increase to implement the Silver Line Bus Rapid Transit (BRT) line. We quickly pointed out the failures and ridiculousness of this plan. The purpose of our campaign was simply to publicize these issues to the voters. Our non-partisan taxpayer advocacy organization, Kent County Families for Fiscal Responsibility, created a project web site named "ITP Watch" to maintain ongoing scrutiny of The Rapid's operations. Since The Rapid publishes nearly nothing of detail on its web site regarding its operations, we have continued to build out this project and added more data from other sources.

The 2009 tax increase failed at the ballot, the first time this has happened for The Rapid since its inception. Voters in Wyoming, Walker, Grandville, and Kentwood sent a clear message that the Silver Line was not wanted nor needed.

We've continued to scrutinize The Rapid's operations using data that The Rapid is required to report to the federal government. The Rapid still fails to make any meaningful data publicly available online, so we've also had to rely on Freedom of Information Act requests to get the most basic of details.

The purpose of this report is to address several major arguments that The Rapid makes each time it asks for more money from taxpayers. We believe that The Rapid fails to make the case, and in a big way. This report only analyzes the fixed route bus service that The Rapid offers. We do not analyze the "demand response" services, such as the Go!Bus. The far majority of The Rapid's budget is spent on standard bus service. This area of spending also presents the greatest opportunity for improvement.

In compiling this report, we came to several important and somewhat surprising conclusions:

- 1) Despite official assertions to the contrary, when we looked at the data The Rapid publishes regarding fuel usage and passengers carried, we came to the stunning conclusion that The Rapid is a net adder of pollution to the environment (to the tune of *seven million pounds* of carbon dioxide a year);
- 2) The Rapid's bus services are exceedingly expensive and The Rapid loses \$4.31 per passenger;
- 3) The Rapid is getting worse over time at taking advantage of economies of scale. The Rapid's costs of adding each additional passenger has increased 262% over the last four years;

- 4) The management at The Rapid takes an incredibly cavalier attitude toward spending taxpayer money freely, with little regard for whether such spending is in the best interest of taxpayers.

While The Rapid is the least transparent major unit of government in Kent County, we strive for transparency ourselves.<sup>1</sup> This paper is heavily footnoted so that anyone reading it can follow along and verify our data with public sources. Our disappointment with The Rapid's management continues to grow as we attempt to get more detail from them on their operations. Our requests are met with demands for large fees to release information that the public should be aware of. In this day and age of easy Internet publishing, The Rapid has no excuse for withholding important information from the public, yet they continue on as though they should be immune to the watchful eyes of taxpaying citizens.

An additional source of frustration has been trying to get accurate information from The Rapid's staff. We have been subjected to contradictory statements and what we believe are intentionally vague answers. For instance, we issued a press release regarding a Freedom of Information Act request we filed with The Rapid on the subject of the fuel efficiency of their buses. The response they sent us said that their standard buses get 4.45 miles per gallon while the hybrid-electric buses get 5.13 miles per gallon. When our press release went out, The Rapid's spokesperson implied that we were lying, yet we had their documents to prove it. The Rapid's director was then quoted in the *Advance* newspaper as stating that the standard buses actually get 4.4 miles per gallon and the hybrid-electrics get 5.2 miles per gallon. We aren't sure if he was rounding in an attempt to widen the apparent efficiency gain, but those small numbers make a material difference. Our own analysis of The Rapid's fuel usage, according to data reported to the federal government, shows that The Rapid's buses are getting closer to 4.22 miles per gallon. Even though the numbers seem tiny, when over a million gallons of fuel are utilized each year, the resulting costs and efficiencies are significantly different. Yet we still can't get a straight, clear answer on the issue. This is just one example of many where it has been difficult and frustrating to pin down The Rapid on the facts.

One final thing we'd like to stress is that we're not against public transit. We think it can be beneficial if operated in a responsible and effective way. We simply stand for more transparent government, efficient operations, and tangible societal and environmental benefits. The Rapid has shown that it does poorly at all three, and in some cases, *extremely* poorly. The Rapid could do far better than it does with the sizable amount of money it spends. Taxpayers need to demand far more accountability and openness from this opaque agency before increasing taxes and boosting funding.

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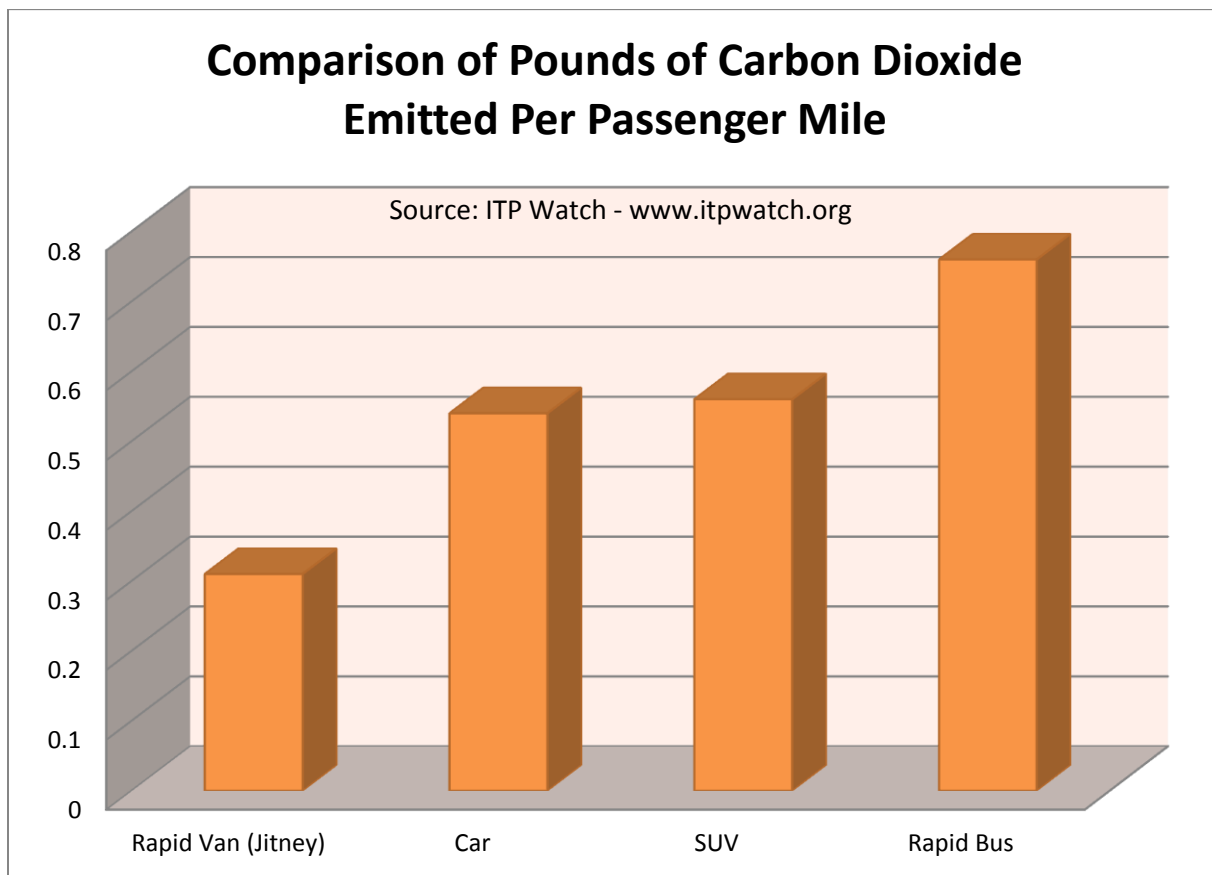
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**MYTH: Use of The Rapid reduces pollution and is environmentally friendly.**

**FACT:** The Rapid is actually increasing pollution.

According to The Rapid, its average bus only gets 4.45 miles to the gallon.<sup>2</sup> The Rapid's buses carry an average of only 7.3 passengers at any given time (about 90% empty, based on the Rapid's average bus capacity of 74 people).<sup>3</sup>

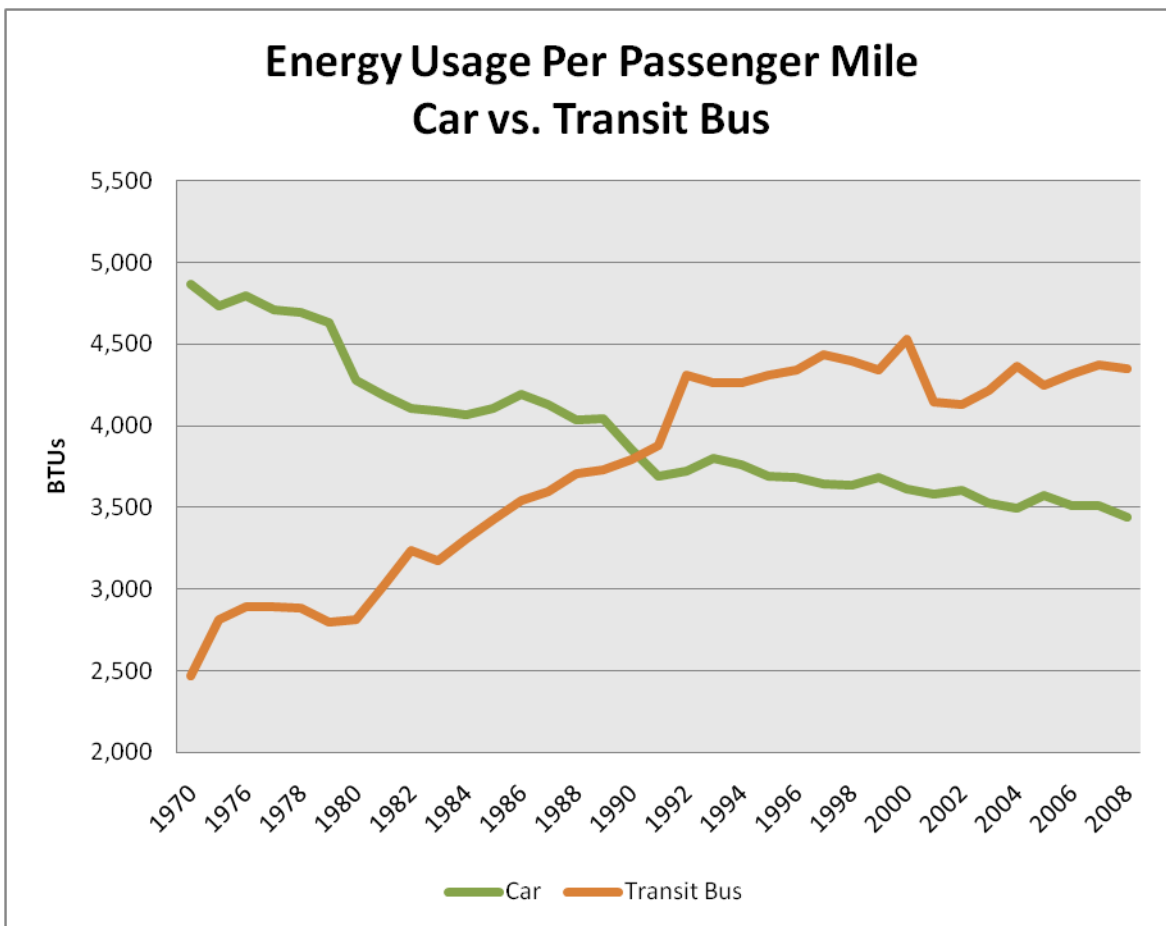
Using data The Rapid reports to the federal government each year, we can calculate that The Rapid's buses emit 0.76 pounds of carbon dioxide per passenger mile.<sup>4</sup> As a comparison, the average SUV emits 0.56 pounds of carbon dioxide per passenger mile and the average passenger car emits 0.54 pounds of carbon dioxide per passenger mile.<sup>5</sup> (For an explanation of why *passenger miles* are the preferred method of fairly comparing modes of transportation, please see the next section).



This means that The Rapid is in no way reducing pollution. Because of The Rapid's low capacity utilization and its buses being larger than needed, a lot of fuel is being used to move around a comparatively low number of people. The buses are so empty that they are less efficient than if SUVs were used to transport every single Rapid passenger. **The Rapid's buses are a net adder of pollution to the environment.** In fact, we were shocked to calculate that The Rapid's buses added over **seven million pounds** of carbon dioxide to the environment, compared to the amount that

would have been emitted if every single Rapid bus passenger had been transported in an average midsized car.<sup>6</sup> The reality is that The Rapid’s passengers produced 40% *more* CO<sub>2</sub> emissions than if they had ridden or been transported in cars. The Rapid’s web site falsely claims that its services reduce carbon dioxide emissions by 50%.<sup>7</sup>

This result, admittedly somewhat counter-intuitive, is due to several factors. The largest factor is that The Rapid is buying bigger buses over time, yet the number of passengers filling those buses is low. A second factor is that autos are getting more efficient over time. According to data released by the US Department of Energy, transit buses have gotten 75% *less* energy efficient since 1970.<sup>8</sup> Conversely, passenger autos have gotten 30% more energy efficient in the same period. The chart below demonstrates this trend.



It should be noted that the above chart actually overstates the efficiency of The Rapid’s buses. The Rapid’s buses are carrying fewer passengers than the national average, making the pollution and energy efficiency picture worse. Between 2005 and 2009, The Rapid’s average bus capacity has grown from 70 to 74.<sup>9</sup> For some reason, despite low capacity utilization, The Rapid is scrapping older, smaller buses for even larger ones.

The Rapid has purchased five hybrid-electric buses and falsely claimed that these would double the gas mileage of a regular bus.<sup>10</sup> However, as The Rapid now admits, these buses only get 0.68 miles per gallon more than a regular bus – all for the additional cost of at least \$200,000 per bus.<sup>11</sup> The hybrid-electric buses are still less energy efficient than SUVs.

Strangely, The Rapid claims that saving \$4,000 per year in fuel costs by using these hybrid buses is worth spending more than \$200,000 extra for each of these buses.<sup>12</sup> At that rate, it would take more than 50 years for the hybrid-electric buses to break even.

You'll also notice that a service called "Rapid Van" is referenced in the above chart. This is the Rapid's van pool ride share service. This type of service, also known as a "jitney," is far more successful at providing cost-effective mass transit. The Rapid Van service is *dramatically* better at reducing pollution than The Rapid's fixed-route bus services, yet The Rapid only spends 0.5% of its annual budget on this service.<sup>13</sup> For more information on jitneys, please see the section below titled "MYTH: Using the Rapid is the only way for many people to get to work."

### ***MYTH: The Rapid is a cost-effective way to offer public transit.***

**FACT:** Until ITP Watch put pressure on The Rapid to be more transparent, its web site did not include the annual capital (equipment and facility) costs in its annual budget reports. This under-reporting of its annual expenses was over \$16 million a year.

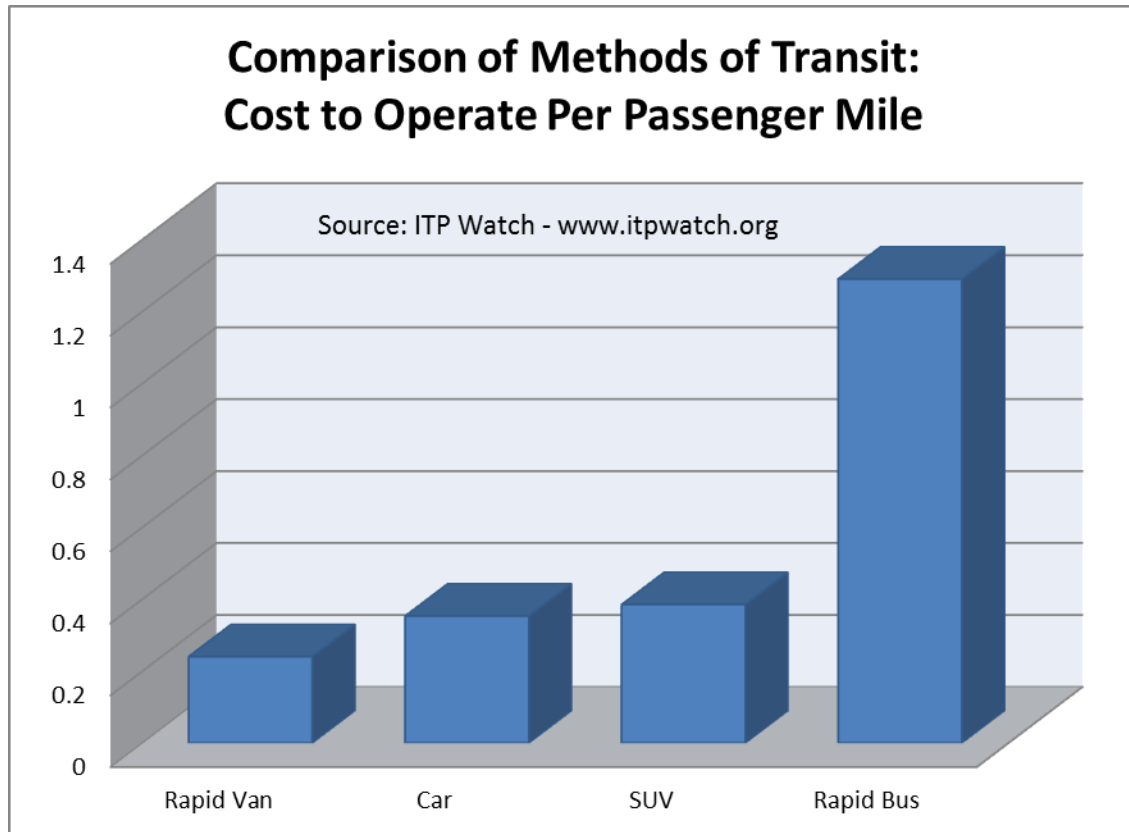
Now that The Rapid has decided to publish *some* more data (but still not its full budgets), the public can get a better idea of what The Rapid costs.

When the true cost of The Rapid is calculated, we find that the typical Rapid bus costs \$9.53 per mile<sup>14</sup> to operate (compared to about \$0.56 per mile for a passenger car).<sup>15</sup> This means that it would take at least 17 passengers using Rapid buses at all times to be more cost efficient than a car. However, The Rapid's buses only average about 7.3 passengers at any given time.<sup>16</sup>

For a more "apples to apples" comparison, the standard transit industry practice for evaluating methods of transportation is to base comparisons on *passenger miles*.<sup>17</sup> This method multiplies the number of physical miles a vehicle is traveling by the average number of people who are using that vehicle. This calculation results in a number that allows for an accurate comparison of the allocation of resources utilized for each person who is using a vehicle. To better illustrate this, imagine that a Rapid bus travels 10 miles with an average of 7.3 people on it. That bus therefore provided 73 passenger miles of service. If a car with an average of 1.59 people in it travels 10 miles, that car has provided 15.9 passenger miles of service. With this information we can compare the costs and benefits of moving one passenger one mile using varying methods of transit.

Thus, The Rapid's buses, which average 7.3 passengers at any given time, cost \$1.29 per passenger mile to operate.<sup>18</sup> For a comparison, the average SUV has 1.92 passengers in it.<sup>19</sup> Therefore, a typical SUV costs \$0.39 per passenger mile to operate.<sup>20</sup> For a more reasonable comparison, the average

passenger sedan costs \$0.35 per passenger mile to operate. These passenger vehicle costs include fuel, maintenance, tires, insurance, registration fees, depreciation, and finance.<sup>21</sup> It should also be noted that The Rapid's costs do not include depreciation or finance costs.<sup>22</sup> For additional comparison, the Rapid Van service costs about \$0.24 per passenger mile to operate.<sup>23</sup>



Furthermore, for *each passenger* who rides a Rapid bus, The Rapid loses \$4.31.<sup>24</sup> **Only about 10% of The Rapid's cost of providing bus service is covered by passenger fares.**<sup>25</sup>

Using its current configuration of oversized and under-utilized buses, The Rapid is unlikely to achieve a high level of usage because the current outdated hub-and-spoke method of shuttling people around is inefficient, time-consuming, and inconvenient. Taking a bus downtown to get on another bus to go someplace just a couple of miles away from your starting point is a poor way to handle transit. Alternatives, such as smaller buses, more flexible scheduling and routing, and more effective utilization of resources could dramatically improve The Rapid's cost effectiveness.

Moreover, The Rapid has shown taxpayers in other ways that it doesn't take efficiency seriously. For example, The Rapid is spending \$32 million on a new garage so they can store their buses indoors.<sup>26</sup> The Rapid spent \$250,000 on an art sculpture for their headquarters.<sup>27</sup> Also, the director of the Rapid is one of the highest paid government employees in the county, making over \$190,000 a year.<sup>28</sup> Despite most other levels of government in the state making cuts due to tight budgets, The Rapid gave all of its employees a raise in 2011.<sup>29</sup>

The Rapid is spending more than \$200,000 more per bus to buy hybrid-electric models. The Rapid has said that these buses save about \$4,000 per year in fuel costs. It would take over 50 years for these hybrid buses to break even and justify the additional expense. Peter Varga, the director of The Rapid, was even quoted as saying “If our entire fleet consisted of hybrid electric buses, we would save \$472,675 in [fuel] a year.”<sup>30</sup> Yet, what Mr. Varga doesn’t say is that replacing all of The Rapid’s 120 standard buses with hybrid-electrics would cost \$61 million.

You’ll also notice that a service called “Rapid Van” is referenced in the above chart. This is the Rapid’s van pool ride share service. This type of service, also sometimes known as a “jitney,” is far more successful at providing cost-effective mass transit. The Rapid Van service is *dramatically* better for the environment than The Rapid’s fixed-route bus services, yet The Rapid only spends 0.5% of its annual budget on this service.<sup>31</sup> For more information on jitneys, please see the next section.

### ***MYTH: Using The Rapid is the only way for many people to get to work.***

**FACT:** We recognize that public transportation is important for many people to get to work who can’t afford a car. However, the way The Rapid currently operates is very inefficient.

According to the Census Bureau, about 4,200 people in the Grand Rapids area depend on public transportation (The Rapid) to get to work.<sup>32</sup> The amount taxpayers spend on the Rapid each year could be used to buy each and every one of these individuals a taxi ride, and money would be left over.<sup>33</sup>

Alternative forms of public transit have been shown to be far more efficient, pollute less, and provide superior service. One such example is shuttle buses, sometimes referred to as “jitneys,” which allow passengers to share rides, have a much more flexible schedule, and reduce transit time.<sup>34</sup> Smaller vehicles are used far more efficiently and effectively and result in dramatically lower pollution than transit buses. The Rapid already runs a service call *Rapid Van*, allowing for easy carpooling. Our own analysis of the Rapid Van service shows that by utilizing this option, passengers reduce their CO2 emissions by a whopping 59% over using The Rapid’s buses. The Rapid Van service similarly is much less expensive to operate, costing only \$0.20 per passenger mile, compared to \$1.29 per passenger mile to operate The Rapid’s buses and \$0.35 per passenger mile for the average car. Furthermore, The Rapid’s passenger fares cover about 39% of the cost of a van trip, compared to only 10% of bus trips. These vans operate with an average of 3.5 passengers, meaning that they are operating at 50% of capacity. Compare this to The Rapid’s large buses, which operate roughly at about 9% of capacity.

We understand the importance that public transportation has to a lot of people in Kent County. Our argument is simply that The Rapid is a huge money loser, inefficient, and ultimately adds massive amounts of pollution to the environment. Wouldn’t it make more sense to address the problem directly with better, cheaper, and more effective alternatives? We think so, but The Rapid doesn’t

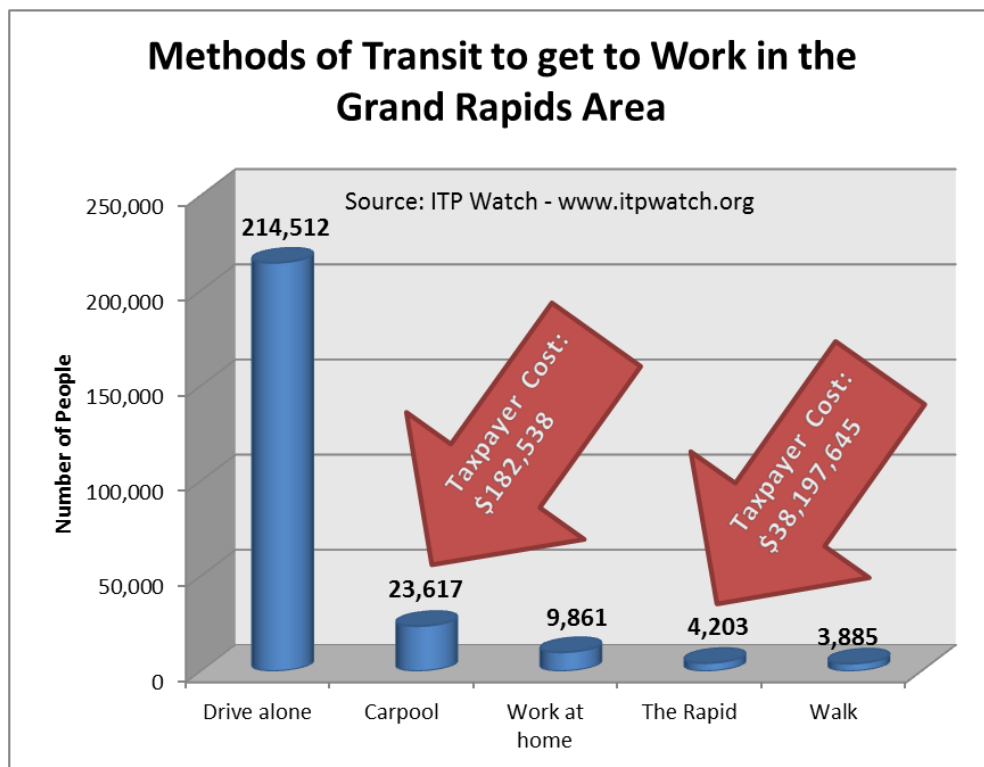
take these problems seriously. The Rapid seems to be far more interested in flashy and “perception” projects rather than giving taxpayers a greater value for their money.

**MYTH: The Rapid is reducing congestion on our roads.**

**FACT:** According to the American Community Survey, a report released by the US Census Bureau, about 1.6% of workers in the Grand Rapids area use public transit to get to work. That’s about 4,200 people out of 258,000 workers.<sup>35</sup> As a comparison, 9.1% of workers, nearly 24,000, carpool to work each day.<sup>36</sup> Carpooling costs taxpayers nothing and is far more effective at reducing congestion than mostly-empty buses.

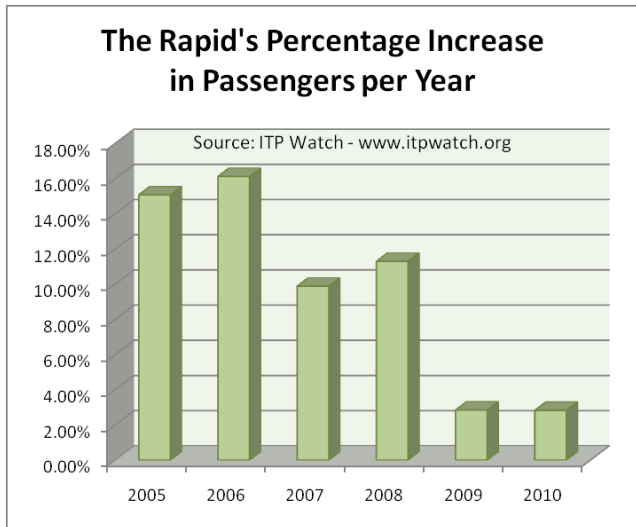
In addition, only about 0.3% of all passenger miles ridden in the Grand Rapids area are via public transit.<sup>37</sup> One can hardly make the argument that The Rapid reduces congestion in any meaningful way.

The graph below compares the methods that workers in the Grand Rapids area use to get to work. As you can see, far more people carpool than use The Rapid, yet, the cost to taxpayers is virtually nothing (\$182,538 is spent on the Rapid Van service). The Rapid’s bus service cost more than \$38 million in 2009, yet just about as many people walked to work as used The Rapid. Wouldn’t resources be better spent subsidizing and encouraging methods of transit which result in a much higher return on investment than adding gigantic, mostly-empty buses to an already underutilized system?



**MYTH: The Rapid is increasing its number of passengers. That means it's doing a great job!**

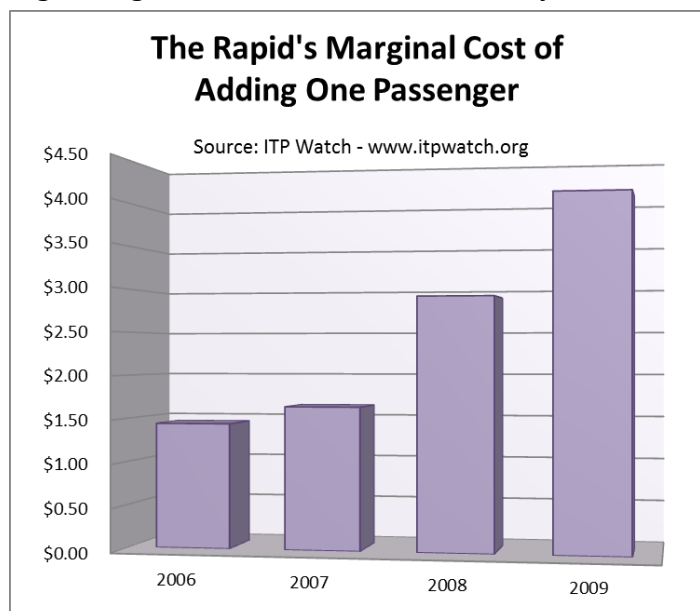
**FACT:** Yes, it is true that The Rapid has been doing a good job of adding passengers. Between 2005 and 2009 The Rapid has gone from just over 6 million annual trips to about 8.8 million annual trips. That's an increase of about 47%. In the same time period, The Rapid's cost of providing fixed-route bus service has increased about 39%, to about \$42.4 million. On the surface this appears to be an impressive improvement.



If we look closer, we'll see that The Rapid dramatically expanded its services in 2000 after a mandatory property tax levy was implemented. This means that The Rapid, as currently funded and organized, is only about ten years old. As a result, The Rapid started at a very low level of service, making it relatively easy to improve performance and increase ridership. The problem is that, with time, The Rapid's growth *rate* has decreased. The chart to the left shows that The Rapid's ability to add more passengers each year has reached a downward sloping path.<sup>38</sup>

Much of the increase in passengers is due to the several factors which do not include standard fixed-route growth: the number of people in downtown Grand Rapids using the free DASH shuttle along with students from Grand Valley State University, Grand Rapids Community College, and Grand Rapids Public Schools. While The Rapid is reimbursed for these operating costs, over the past couple of years, the number of passengers using the regular bus lines has been relatively flat.<sup>39</sup>

While the absolute numbers of passenger trips is increasing, the cost of adding those passengers is rising faster. Instead of taking advantage of economies of scale and reducing the cost of the Rapid on a per-passenger basis, costs are increasing. Because of the enormous amount of money The Rapid spends on capital projects, the loss (or subsidy) per passenger incurred by The Rapid has risen from \$3.52 in 2006 to \$4.31 in 2009. If The Rapid were getting more efficient, that number would be *decreasing* each year.



Another method for measuring the effectiveness of an organization's growth is to measure the cost to provide each additional unit of service. In other words, how much does it cost The Rapid to add one more passenger to its buses? The chart above shows that this marginal cost to add a passenger has been increasing over the past several years. In 2006, it cost The Rapid only \$1.44 to add one passenger. In 2009, it cost The Rapid \$4.06 to add one passenger.

Over time, The Rapid is apparently having more difficulty filling its buses. Rather than focusing inward on better utilizing its existing resources or trying to boost ridership on existing routes, The Rapid asks for tax increases nearly every two years to add even more underutilized buses.

***MYTH: The Rapid is doing a good job compared to other transit agencies.***

**FACT:** The Rapid occasionally commissions extremely expensive studies to justify their inefficiency, but we can analyze the facts using publicly-available data, without sending a bill to taxpayers.

The Rapid's Transit Master Plan web site states: "The Rapid's cost per passenger is \$3.00. The average among peer systems (similar service area and population – 400,000-500,000) is \$4.26."<sup>40</sup> We take issue with two problems in this statement.

First, the calculations we make regarding cost per passenger include capital costs. The Rapid refuses to include these costs when calculating its expenses. This means that The Rapid only uses the costs of fuel, personnel, etc. when it makes such statements. This is akin to only counting the cost of gas for your car and not the cost of the car itself when figuring out your monthly budget. But that is why The Rapid states that it only costs \$3.00 to transport one passenger. The Rapid is required to report capital costs to the government, however. The real cost, when including The Rapid's capital expenses, rises to \$4.79 per passenger. Taxpayers bear \$4.31 of that cost because the average passenger fare received by The Rapid is \$0.48. This is just one way which The Rapid seeks to mislead the public regarding its true costs.

Second, we find it odd that The Rapid is comparing itself to other transit agencies solely based on the population of the area being served.<sup>41</sup> We decided that it would be fairer to compare The Rapid to a transit agency right next door which spends about the same amount of money.

The Lansing area transit agency (CATA) spends almost as much as The Rapid on operating costs providing traditional fixed route bus service (\$25 million vs. \$26 million spent by The Rapid). As a comparison, CATA but carried 23% more passengers.<sup>42</sup> Furthermore, CATA's operating cost per trip was \$2.31 (22% better than The Rapid) and it recovered 60 cents per trip in fares (25% better than The Rapid). Surprisingly, while providing service to 23% more passengers than The Rapid, CATA did so with 23% fewer buses than The Rapid.

In 2009, bus fares in Grand Rapids covered less than 16.3% of operating costs (and, of course, none of the capital costs. If we factor in capital costs, The Rapid only recovers 10% of the cost of providing bus service through passenger fares). By comparison, CATA recovered 26% of operating costs through passenger fares.

The Rapid's Buses carried an average 7.3 people over the course of a day. The buses of the Lansing's CATA carried an average of 10.89 riders.

The Rapid seems to spend a *lot* on capital expenses. Between 2007 and 2009, The Rapid spent about 45 cents on capital costs for every dollar of operating costs. For comparison, CATA spent about 15 cents on capital costs for every dollar spent on operating costs.

We conclude that the Rapid is already spending a lot of money and not getting much of a return for it. The problem is not a shortage of money but ***too much*** money — and spending it in the wrong places. The Rapid is shockingly expensive to operate. The agency needs to focus more on serving riders and not on bilking taxpayers out of more money.

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<sup>1</sup> Kent County Families for Fiscal Responsibility, *The Rapid Earns a "D-" in Transparency; City of Grand Rapids an "A"*, March 8, 2011. Available at <http://www.kcfr.org/2011/03/08/the-rapid-earns-a-d-in-transparency-city-of-grand-rapids-an-a/>.

<sup>2</sup> See Freedom of Information Act response from the ITP, dated July 13, 2009. Available at <http://www.itpwatch.org/wp-content/uploads/2011/02/full-itp-foia.pdf>.

<sup>3</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>. Divide the number of passenger miles by the number of vehicle revenue miles to come to the total average number of passengers on The Rapid's buses. Total capacity is derived from the National Transit Database list of The Rapid's buses and their total capacity. NTD data is available at <http://www.ntdprogram.gov/ntdprogram/data.htm>.

<sup>4</sup> See National Transit Database, 2009, Interurban Transit Partnership. Available at <http://www.ntdprogram.gov/ntdprogram/data.htm>. The Rapid's fixed-route bus services utilized 1,118,084 gallons of diesel fuel and 13,320 gallons of regular fuel in 2009. Each gallon of diesel fuel emits 22.2 pounds of carbon dioxide. Each gallon of regular unleaded fuel emits 19.4 pounds of carbon dioxide (See the Environment Protection Agency web site, Emission Facts: Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel, available at <http://www.epa.gov/oms/climate/420f05001.htm>). Thus, The Rapid's buses emitted 25,079,872 pounds of carbon dioxide in 2009. Divide that number by the number of passenger miles reported by The Rapid, and we arrive at emission of 0.76 pounds of carbon dioxide per passenger mile.

<sup>5</sup> U.S. Department of Energy, *Transportation Energy Data Book, Edition 29* (July 2010). Available at <http://cta.ornl.gov/data/index.shtml>. See Tables 4.1 and 4.2 for average car and SUV miles per gallon, respectively. These tables include all cars in use, not just newer models, for a more accurate comparison. The average mpg for a car was 22.6 in 2008 (latest year available). The average mpg for all trucks and SUVs was 18.1 in 2008. See Figure 8.1 for average vehicle occupancy in 2009. The average vehicle occupancy for cars was 1.59 and 1.92 for SUVs. Multiply the number of passenger miles by the number of miles per gallon for each class of vehicle to arrive at passenger miles per gallon (example for SUVs: 18.1 x 1.92 = 34.75 passenger miles per gallon). Then divide 19.4 pounds of carbon dioxide by the number of passenger miles per gallon of each vehicle to arrive at the number of pounds of carbon dioxide emitted per passenger mile (example for SUVs: 19.4 / 34.75 = 0.56 pounds of carbon dioxide emitted per passenger mile). SUVs emit 0.56 pounds of carbon dioxide for each passenger mile and cars emit 0.54 pounds of carbon dioxide per passenger mile.

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These numbers are significantly lower for new vehicles. Using the Transportation Energy Data Book's numbers in Tables 4.7 and 4.9, we calculate that an average new midsize car with an occupancy of 1.59 passengers emits 0.38 pounds of carbon dioxide per passenger mile and the average new midsize SUV at average occupancy of 1.92 emits 0.40 pounds of carbon dioxide per passenger mile. Therefore a new midsize SUV emits 47% less carbon dioxide per passenger mile than Rapid buses.

<sup>6</sup> Comparing the number of passenger miles per gallon of the car to passenger miles per gallon of the Rapid's buses. See footnote 5 above for the amount of CO<sub>2</sub> emitted by The Rapid's buses. The Rapid's buses provided 32,891,699 passenger miles of service through its standard bus services in 2009. Divide this number by the number of passenger miles per gallon of the average car (22.6 x 1.59 = 35.93, see note 4 above. Therefore, 32,891,699 / 35.93 = 915,438). Our result is 915,438 gallons of gas that would have been used to transport all Rapid passengers if they had been transported in a car with an average of 1.59 passengers. 19.4 pounds of carbon dioxide are emitted per gallon of regular unleaded fuel (see note 3 above). Therefore, a total of 17,759,497 pounds of CO<sub>2</sub> would have been emitted had all Rapid passengers been transported in a car at the average occupancy rate. The Rapid *actually* emitted 25,079,872 pounds of CO<sub>2</sub> in 2009. Subtract the number that would have been emitted, and we arrive at 7,320,375 *extra pounds* of CO<sub>2</sub> emitted by The Rapid.

<sup>7</sup> See The Rapid's web site "The Rapid & the Environment." Available at <http://www.webcitation.org/5xCwe6tMl>

<sup>8</sup> U.S. Department of Energy, *Transportation Energy Data Book*, 2010 edition. Table 2.13. Available at [http://cta.ornl.gov/data/tedb29/Edition29\\_Chapter02.pdf](http://cta.ornl.gov/data/tedb29/Edition29_Chapter02.pdf)

<sup>9</sup> National Transit Database data from 2005 to 2009. See the worksheet titled Vehicle Revenue Inventory. Available at <http://www.ntdprogram.gov/ntdprogram/data.htm>

<sup>10</sup> Grand Rapids Press, *In with the new*, April 24, 2007. Available at <http://www.itpwatch.org/wp-content/uploads/2010/09/inwiththenew.pdf>.

<sup>11</sup> See Freedom of Information Act Response from the ITP, dated July 13, 2009. Available at <http://www.itpwatch.org/wp-content/uploads/2011/02/full-ity-foia.pdf>

<sup>12</sup> Southwest Advance, *Do hybrid buses live up to their promises? Local group says 'No,'*, March 3, 2011. Available at [http://www.mlive.com/southwestadvance/index.ssf/2011/03/do\\_hybrid\\_buses\\_live\\_up\\_to\\_the.html](http://www.mlive.com/southwestadvance/index.ssf/2011/03/do_hybrid_buses_live_up_to_the.html)

<sup>13</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>.

<sup>14</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>. On the "Bus" line of data, add *Operating Expenses* and *Uses of Capital Funds* and then divide this number by the number of *Annual Vehicle Revenue Miles*.

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<sup>15</sup> See AAA, *Your Driving Costs*, page 2. We used “Medium sedan” at 15,000 miles a year as an approximate number. Available at <http://www.aaaexchange.com/Assets/Files/201048935480.Driving%20Costs%202010.pdf>.

<sup>16</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>. Divide the number of passenger miles by the number of vehicle revenue miles.

<sup>17</sup> U.S. Department of Energy, *Transportation Energy Data Book, Edition 29* (July 2010). Available at <http://cta.ornl.gov/data/index.shtml>. See pages 2-14 for an example of comparisons using passenger miles.

<sup>18</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>. On the “Bus” line of data, add *Operating Expenses* and *Uses of Capital Funds*, and then divide the result by the total number of *Passenger Miles*. This results in a total cost per passenger mile.

<sup>19</sup> See Bureau of Transportation Statistics, *National Transportation Statistics*. Available at [http://www.bts.gov/publications/national\\_transportation\\_statistics/html/table\\_automobile\\_profile.html](http://www.bts.gov/publications/national_transportation_statistics/html/table_automobile_profile.html). Divide the number of passenger miles by the number of actual miles, to arrive at 1.73 passengers per mile for “other 2 axle, 4 tire vehicles.” (this includes light trucks and SUVs).

<sup>20</sup> See AAA, *Your Driving Costs*, page 8. We used “4WD Sport Utility Vehicle” at 15,000 miles a year as an approximate operating cost number. Available at <http://www.aaaexchange.com/Assets/Files/201048935480.Driving%20Costs%202010.pdf>. Divide the actual operating cost per mile (\$0.739) by the number of average passengers (1.92) to arrive at an operating expense of \$0.385 per passenger mile.

<sup>21</sup> See AAA, *Your Driving Costs*, page 2. Available at <http://www.aaaexchange.com/Assets/Files/201048935480.Driving%20Costs%202010.pdf>.

<sup>22</sup> The Rapid does not finance the purchase of its buses.

<sup>23</sup> National Transit Database Profile of the Interurban Transit Partnership, 2008 (latest date with capital costs for Rapid Van service included). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/5033.pdf>

<sup>24</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>. On the “Bus” line of data, add *Operating Expenses* and *Uses of Capital Funds*, then to account for the amount paid in fares, subtract *Fare Revenue*. Then divide this number by *Annual Unlinked Trips*. This is the amount of “loss,” or subsidy that taxpayers make up for each passenger, the difference between the amount each passenger pays and how much it actually costs to carry that passenger.

<sup>25</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>. On the “Bus” line of data, add *Operating Expenses* and *Uses of Capital Funds*. Then Divide *Fare Revenue* into this number to arrive at a percentage of the cost of bus service that is covered by fares.

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<sup>26</sup> See the Grand Rapids Press, *The Rapid will expand operations center, garage with \$10.6 million in federal stimulus money*, December 18, 2010. Available at [http://www.mlive.com/news/grand-rapids/index.ssf/2009/12/the\\_rapids\\_will\\_expand\\_operati.html](http://www.mlive.com/news/grand-rapids/index.ssf/2009/12/the_rapids_will_expand_operati.html).

<sup>27</sup> See the Grand Rapids Press, *Oppenheim sculpture 'Journey Home' shaping up outside The Rapid's Central Station bus depot*, June 2, 2009. Available at [http://www.mlive.com/news/grand-rapids/index.ssf/2009/06/lance\\_wynn\\_the\\_grand.html](http://www.mlive.com/news/grand-rapids/index.ssf/2009/06/lance_wynn_the_grand.html).

<sup>28</sup> See ITP Watch, *Wage and Salary Data for 2010*, Freedom of Information Act response from the ITP. Available at <http://www.itpwatch.org/the-rapid-information-center/wage-salary-data/>

<sup>29</sup> Interurban Transit Partnership board of directors meeting minutes, August 25, 2010. Available at [http://www.ridetherapid.org/includes/modules/base/controllers/assets/fileDownload.php?file=1287672464\\_Minutes-of-8-25-10-Board-Meeting.pdf&r=%2Fabout%2Fboard](http://www.ridetherapid.org/includes/modules/base/controllers/assets/fileDownload.php?file=1287672464_Minutes-of-8-25-10-Board-Meeting.pdf&r=%2Fabout%2Fboard)

<sup>30</sup> Southwest Advance , *Do hybrid buses live up to their promises? Local group says 'No,'*, March 3, 2011. Available at [http://www.mlive.com/southwestadvance/index.ssf/2011/03/do\\_hybrid\\_buses\\_live\\_up\\_to\\_the.html](http://www.mlive.com/southwestadvance/index.ssf/2011/03/do_hybrid_buses_live_up_to_the.html)

<sup>31</sup> National Transit Database Profile of the Interurban Transit Partnership, 2009 (latest date available). Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>.

<sup>32</sup> US Census Bureau, *American Community Survey 2009*. Available at <http://www.webcitation.org/5xCwIbNoi>

<sup>33</sup> Assuming that the amount of money that The Rapid spends for bus service was divided up amongst these 4,200 people, each of those individuals would receive \$9,049, or about \$35 per working day (assuming 260 working days per year). For comparison, the average Rapid passenger travels about 3.7 miles per trip. A taxi ride of that length in Grand Rapids would cost about \$10.45, meaning that buying each of these 4,200 individuals a taxi ride each way (to and from work) would actually leave money left over to the tune of \$14.10.

<sup>34</sup> The Community Solution, *The Smart Jitney: Rapid, Realistic Transport*, April 2007. Available online <http://www.communitysolution.org/pdfs/NS12.pdf>

<sup>35</sup> US Census Bureau, *American Community Survey 2009*. Available at <http://www.webcitation.org/5xCwIbNoi>

<sup>36</sup> US Census Bureau, *American Community Survey 2009*. Available at <http://www.webcitation.org/5xCwIbNoi>

<sup>37</sup> US Department of Transportation, Federal Highway Administration, *Highway Statistics 2008, Urbanized Areas - 2008 Selected Statistics*. 2011-03-01. Available at <http://www.fhwa.dot.gov/policyinformation/statistics/2008/hm72.cfm>. (Archived by WebCite® at <http://www.webcitation.org/5wrYsuTOE>). Total vehicle miles driven, daily, in the Grand Rapids area is 15,860,000. Multiply this by 1.58 as the average occupancy of a passenger vehicle, and we arrive at 25,058,800 traveled per day. Multiply this by 365 to arrive at 9,146,462,000 passenger miles traveled per year. The Rapid provided services of 32,891,699 passenger miles in 2009. Divide

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32,891,699 by 9,146,462,000 and we arrive at approximately 0.3% of all passenger miles traveled were by those who utilize The Rapid.

<sup>38</sup> 2010 ridership numbers compiled using preliminary data from the National Transit Database. See the “Monthly Database” for fiscal year 2010 ridership numbers. Available at <http://www.ntdprogram.gov/ntdprogram/data.htm>.

<sup>39</sup> We have filed a Freedom of Information Act request with The Rapid to get more detail on utilization of each of its routes. This request is pending. The Rapid makes no route detail available on its web site, which could easily be done. We have to resort to FOIA requests to get basic operational data from The Rapid. The Rapid’s lack of transparency for a major government entity should be troubling to taxpayers.

<sup>40</sup> The Rapid, *The Rapid: Efficiency and Effectiveness to Keep The Grand Rapids Metro Area Moving*. Available at <http://rapidtmp.org/news-resources>. (Archived by WebCite® at <http://www.webcitation.org/5x6ub0zjH>)

<sup>41</sup> See National Transit Database Fact Sheet for The Rapid, 2009. Available at <http://www.itpwatch.org/wp-content/uploads/2009/04/ntd-2009.pdf>

<sup>42</sup> All CATA data pulled from the National Transit Database Fact Sheets for CATA using latest available data. Available at <http://www.ntdprogram.gov/ntdprogram/data.htm>.