

WABASH TROLLEY IMPACT STUDY

Prepared for the CityBus Board of Directors



May 23, 2008

PolicyAnalytics, LLC

EXECUTIVE SUMMARY

CityBus launched the Wabash Trolley, a free circulator route between the Purdue University Campus and downtown Lafayette, in 2003. This “hilltop-to-hilltop” connector had been identified by local planning documents as a component of Lafayette’s downtown development strategy. Due to its distinctive replica vehicles and frequent headways, the trolley has since become a common feature of the Lafayette/West Lafayette streetscape. The Wabash Trolley has become a popular service and its ridership has increased each year since its inception. It provides convenient, high frequency service to and from Purdue and downtown, and is useful to students, residents and merchants alike.

The trolley service is funded in large part by a \$360,000 excess levy, which is scheduled to expire at the end of 2008. In June 2008, the Lafayette City Council will decide whether to extend this public transportation investment. This report is intended to inform the decision making process by quantifying the various economic and social benefits of the Wabash Trolley.

The analyses in this report cover a variety of topics, ranging from environmental impacts, to property values, to the cost of parking. The report also addresses financial factors that are relevant to the excess levy, and compares CityBus operations to other Indiana transit agencies.

Summary of Findings

1. Trolley ridership has increased from approximately 283,000 riders in 2004 to 340,000 riders in 2006, an increase of 20% over three years.
2. The trolley generates approximately \$188,000 in vehicle ownership and operating cost savings annually.
3. Between 2002 and 2006, properties within one-half mile of the downtown trolley route experienced significantly greater property value growth than the county average. This suggests that downtown amenities, including the Wabash Trolley, contribute to increased property values.
4. Every dollar of local excess levy funding generates approximately \$0.62 in state PMTF funding. If the \$360,000 excess levy were discontinued, CityBus would lose an additional \$221,769 in state PMTF funding.
5. CityBus compares well to other Indiana public transit agencies in terms of operational effectiveness. CityBus’ per-capita levy is \$20.58, less than the average for large Indiana fixed route agencies.





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WABASH TROLLEY OVERVIEW



In 2002, Lafayette community leaders published the “Up with Downtown” enhancement strategy for Lafayette¹. A component of this planning strategy was the establishment of a shuttle system or circulator to connect downtown areas in Lafayette and West Lafayette. CityBus launched the Wabash Trolley in 2003 as a result of this planning process.

The Wabash Trolley operates distinctive replica trolley vehicles on most of its routes. These vehicles make the trolley easily identifiable to both residents and visitors. The trolley operates on a 6.2 mile fixed circuit between the Main St./ South St. corridor and the Purdue campus, and provides 12 to 15 minute headways on most weekdays. Though the Trolley carries riders of all ages and occupations, the majority of Trolley riders are students. The Purdue Memorial Union and Wabash Landing stops are among the most popular on the route in terms of boardings and alightings.

In its first five months of operation, the Trolley served approximately 83,000 riders, or 722 riders daily. Since then, Trolley ridership has increased significantly. In 2007, the trolley carried more than 340,000 riders. Trolley ridership is highly seasonal. Ridership is highest during the winter months of the academic calendar and lowest during the summer months. During 2007 peak season, the trolley served approximately 1,800 riders daily.

“I live downtown...I work at Purdue. I like to shop weekly in Upper Main stores...and occasionally at Wabash Landing. I am also a dedicated patron and heavy user of the Tippecanoe Public Library. The trolley facilitates all of this, indeed, makes some of it possible.”

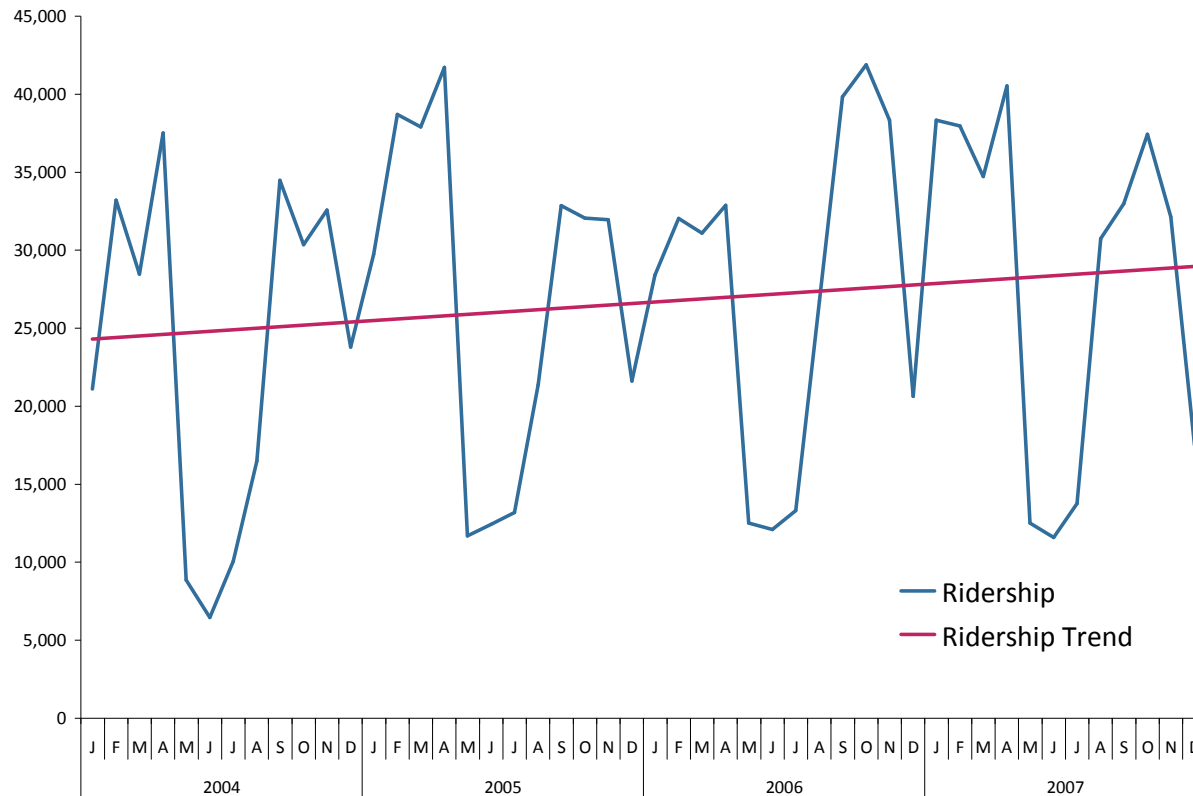
*L. Hoelcher
Lafayette Resident*

Wabash Trolley Route



TROLLEY RIDERSHIP

Wabash Trolley Historical Ridership



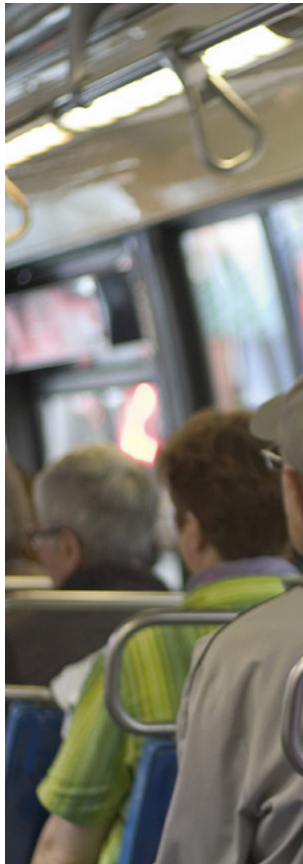
- ◆ The Wabash Trolley service began in August 2003, and carried 83,000 passengers in the first 5 months of operation.
- ◆ Ridership increased rapidly through 2005, and has experienced slower, yet positive growth since.
- ◆ Trolley ridership is highly seasonal. Peak ridership occurs over the winter months of the academic calendar. Non-peak ridership occurs over the summer months.

Annual Trolley Ridership

	Ridership	Pct. Change
2004	283,279	
2005	325,146	15%
2006	329,665	1%
2007	340,144	3%

ECONOMIC BENEFITS OF PUBLIC TRANSPORTATION

(continued on next page)



As a public good, the benefits of public transit extend to both riders and non-riders. Like strong police and fire protection, well maintained roads and sidewalks, parks, libraries and museums, an effective public transportation system is an important contributor to the quality of life, safety and attractiveness of a community. Throughout the country, communities have realized the benefits of public transportation, as both ridership and public transportation funding have both increased substantially since 1995².

User Benefits

The most obvious benefits of public transportation are the rider benefits. These are the benefits that accrue directly to the users of public transportation. Riders enjoy increased mobility, reduced transportation costs and a reduced likelihood of serious accident. For transit dependent riders – those without regular access to an automobile – public transportation provides primary access to places of employment, education, shopping and health care. Other transit riders may choose public transportation over private auto travel because of its convenience and cost effectiveness. Public transportation eliminates the need to park, reduces vehicle operating costs, or can even replace a car.

Community Benefits

The non-user (community) benefits of public transit are more abstract and are sometimes difficult to quantify. However, these benefits should not be marginalized. The positive benefits of public transportation extend to all residents, regardless of whether they actually ride the bus. First, public transportation produces environmental and congestion mitigation benefits. As more people ride public transit, fewer cars are on the road releasing pollutants into the air. This is especially relevant amidst concerns of global warming and as communities try to meet strict federal air quality guidelines. Also, public transportation increases the capacity of the transportation network by allowing access to a greater number of passengers without additional capital investment in roads, bridges, or parking.

Public transportation has also been attributed to increased property values. Studies have shown that in Oregon, Texas, Virginia and California, properties located near transit tend to have higher increased value³. Public transportation provides an amenity, much like proximity to a park, that increases the value of a property. Many communities are implementing transit oriented development practices (TOD) to leverage this

ECONOMIC BENEFITS OF PUBLIC TRANSPORTATION

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advantage. TOD is a popular land use planning strategy in which complementary mixed uses are planned in a compact, walkable setting that is centered around transit access. TOD helps to preserve productive land uses, prevent urban sprawl and generate a sense of community identity.

Economic Development

Finally, public transportation provides an economic development impact to communities. Public transit can encourage commerce by expanding the geographic customer base and employment pool for businesses. This in turn lowers costs to businesses and can stimulate business activity. Some point to business development and ask why the cost of public transit should be spread out among taxpayers, when the economic stimulus seems to be focused on specific geographic areas. The truth is vibrant business and commerce districts are important to the identity and economic well-being of a community. Small cities throughout the Midwest are experiencing erosion in their urban core as merchants and residents migrate to the suburbs. Those communities with strong downtown districts understand that investment and vision is necessary to maintain a healthy downtown dynamic.

The trolley performs another important role specific to Lafayette and West Lafayette – connecting the Purdue campus with the downtown district. The campus area in West Lafayette is home to nearly 40,000 students during the school year. These students represent considerable purchasing power and form a deep, diverse labor pool with the potential to help Lafayette businesses thrive. Furthermore, the Trolley makes downtown Lafayette housing a more attractive option to Purdue students, faculty and staff. The Wabash Trolley does more than just provide a few free rides to students, it links two of the County’s most iconic and historic community fixtures in a way that benefits the entire Lafayette and West Lafayette community.



ENVIRONMENTAL AND USER BENEFITS

Emissions Benefits

By choosing public transportation over individual auto travel, trolley riders reduce the amount of harmful pollutants released into the atmosphere. Over the long term, this reduction produces important health, quality of life, and ecological benefits. In 2007, the Wabash trolley reduced the emission of carbon monoxide (CO) and volatile organic compounds (VOC) by 3.48 and .19 metric tons respectively. The operation of the trolley resulted in increased oxides of nitrogen (NO_x). This is commonly observed when assessing public transportation on a small scale because the diesel engines that power buses emit significantly more NO_x than passenger automobiles. Reduced emissions are community benefits that are enjoyed by both riders and non-riders.

Annual Rider Savings

Vehicle operations savings is an important cost saving that accrues directly to riders of public transportation. By choosing public transportation, a rider extend the operating life of a car, or avoid owning a car (or a second car) altogether. Public transit riders also enjoy fuel savings, and reduce the likelihood of personal loss due to collision. A model was developed for this report to estimate the cost savings afforded to riders of the trolley. Per mile vehicle operating and fuel consumption costs were applied to the number of private vehicle miles avoided because of the Trolley. In total, Wabash Trolley riders saved more than \$188,000 in vehicle operating and ownership costs in 2007, including an estimated 11,366 gallons of fuel. These user savings repay approximately 45% of the total operating cost of the trolley.

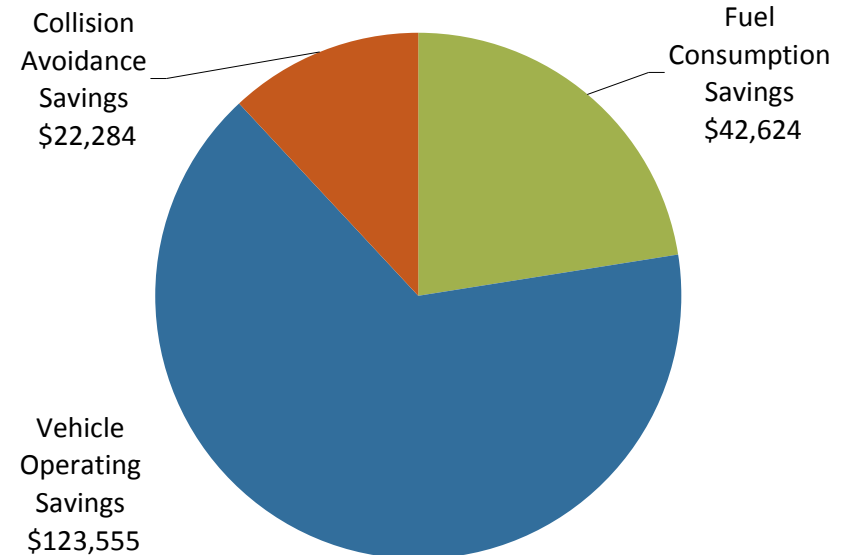
Net Emissions Avoided

metric tons

Year	Carbon Monoxide	Oxides of Nitrogen	Volatile Organic Compounds
2004	3.96	(1.62)	0.21
2005	3.51	(1.50)	0.22
2006	3.45	(1.43)	0.18
2007	3.48	(1.35)	0.19

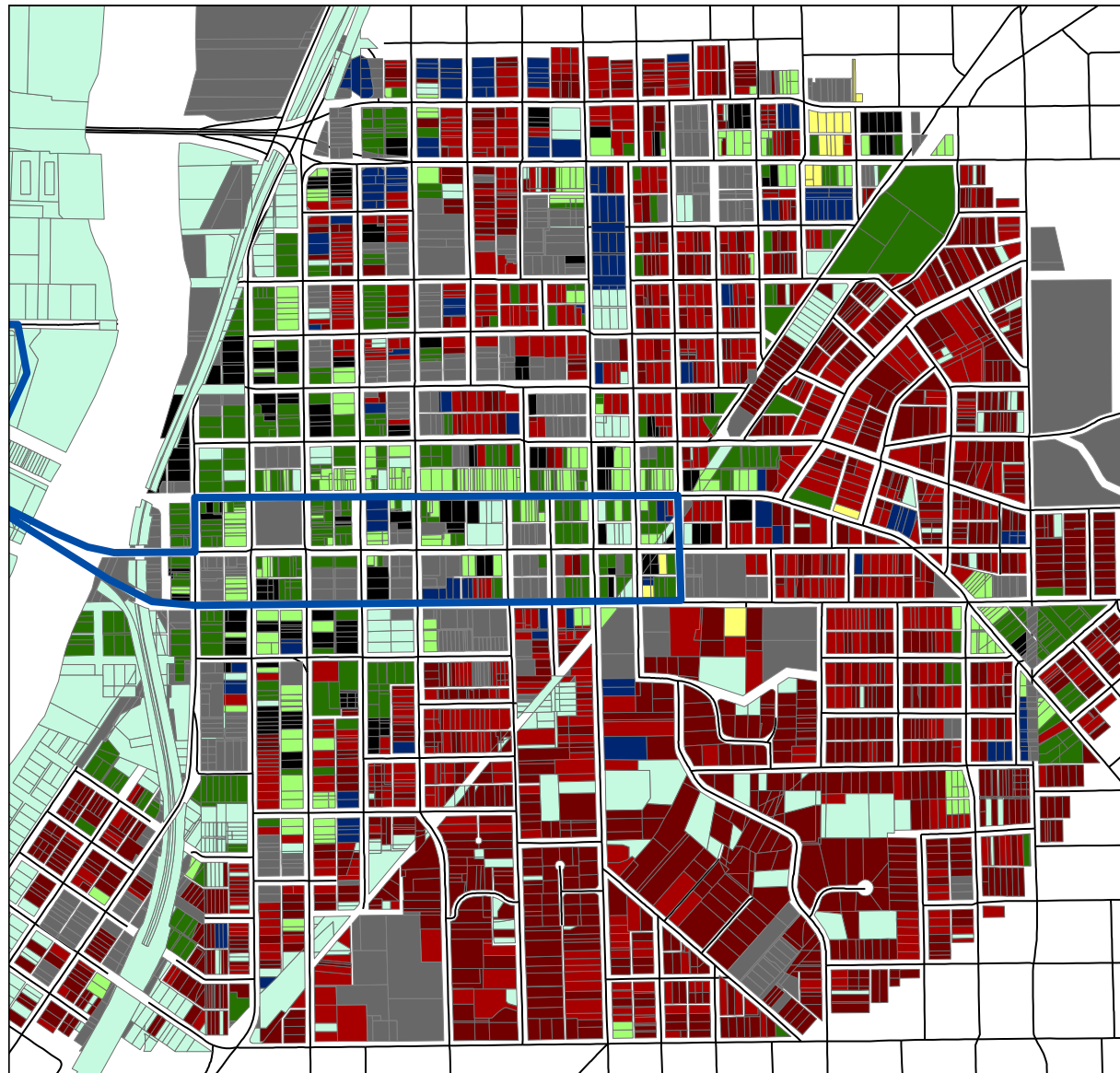
Source: Policy Analytics, LLC⁴

2007 Rider Savings



Source: Policy Analytics, LLC⁵

CENTRAL BUSINESS DISTRICT PROPERTY USES



Legend

- Wabash Trolley Route
- All Other Uses
- Commercial Parking
- Tax Exempt
- Medical
- Retail and Restaurant
- Other Commercial
- Rental Residential
- Other Residential
- Single Family Residential

This map shows the property uses served by the Wabash Trolley's downtown route. The properties adjacent to the route are predominately commercial, with a mix of retail, restaurant and other residential uses. A large number of residential and rental properties are located to the North, East, and South of the trolley route.

TAX BASE ANALYSIS

In this report, an analysis of assessed values (tax base) performs two functions. Under HEA 1001, the assessed value in an area has a direct bearing into the amount of property tax revenue a local governmental unit can expect to receive. Furthermore, in 2002, the state of Indiana changed its property tax valuation method to market value assessments. This means that local township assessors value properties at their estimated market price. While the practice of market value assessments has not been perfected, changes in market conditions are now reflected in assessed values.

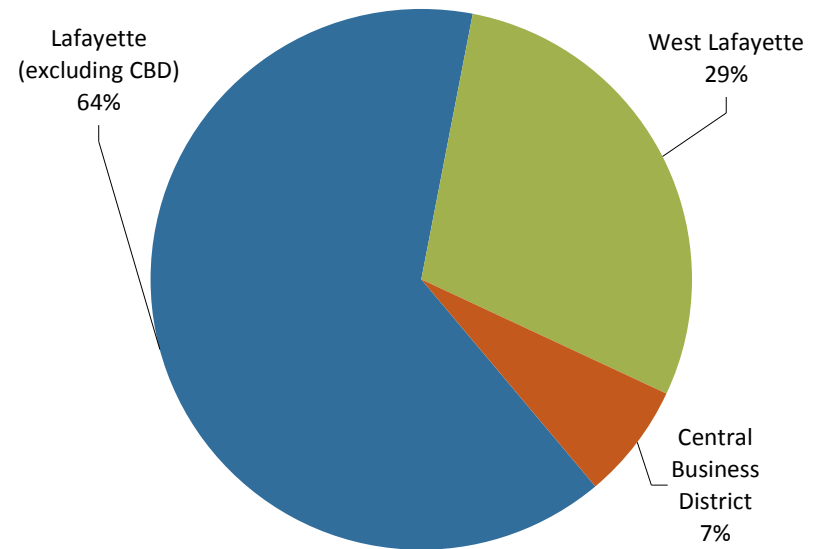
The opposite chart displays a breakdown of geographic assessed value by geographic area in Lafayette and West Lafayette. The Lafayette downtown business district (defined for this analysis as the area with 0.5 miles of the downtown Trolley route) contains 7% of the gross assessed value of the two cities, but covers about 4% of the combined acreage. The majority of the assessed value in the CBD is classified as residential property.

The following page contains a map of the CBD that displays the change in AV from 2002 to 2006 for each parcel. Most parcels have increased in AV due to trending (the realigning of property values with market values) in 2006-2007. The commercial properties in the main street corridor tended to experience greater AV growth than the outlying residential property. Very few properties in the downtown region that experienced decreases in valuation over the four year period.

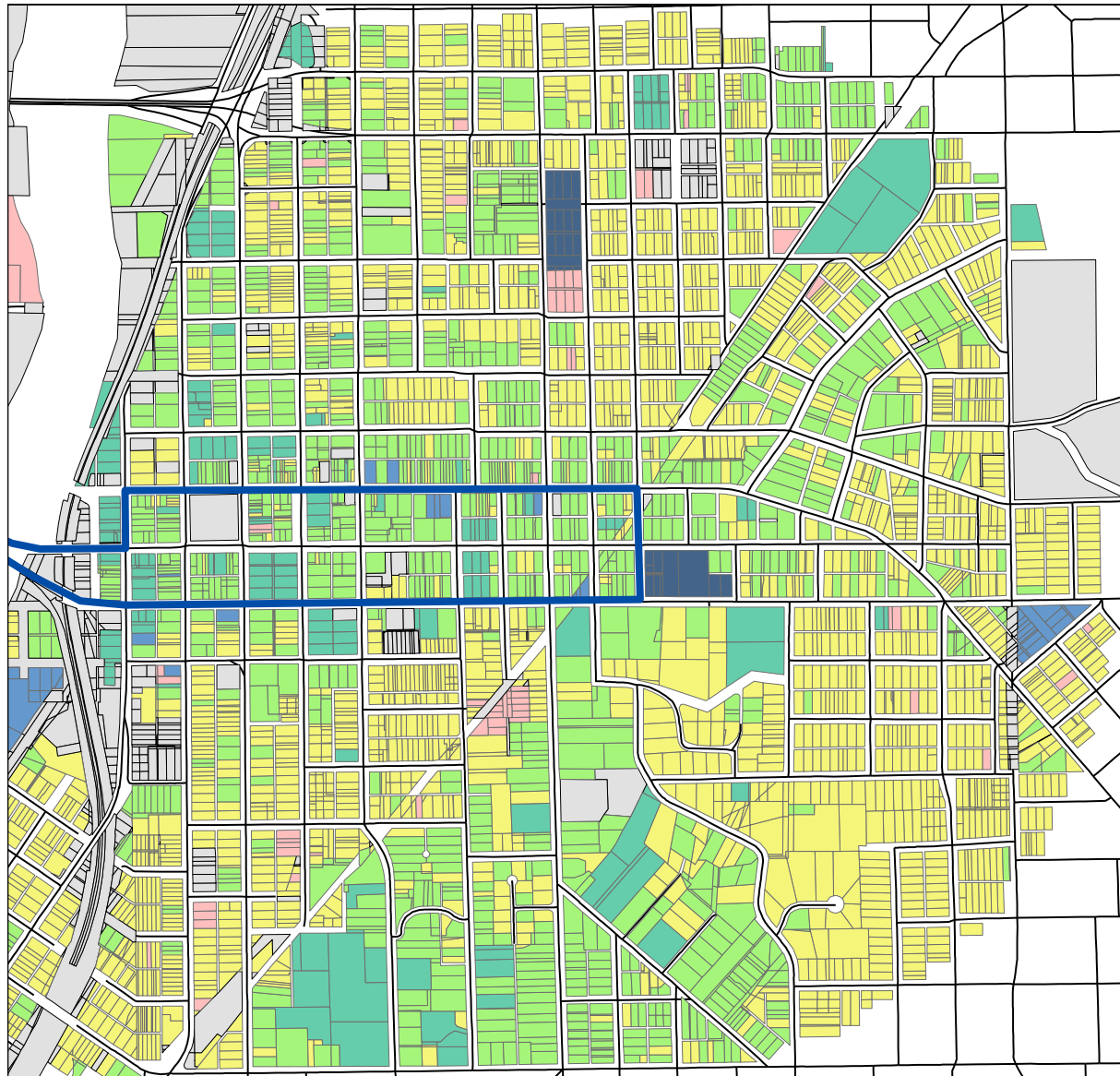
Assessed Value by Property Use (2006 pay 2007) within .5 miles of Trolley

Res. Single Family	\$96,714,600
Other Res.	87,272,100
Commercial Residential	30,959,200
Retail and Restaurant	30,036,800
Other Commercial	78,624,700
Tax Exempt	48,426,300
Industrial	2,950,400
Other	2,010,100
Total	\$376,994,200

Distribution of Gross Assessed Value (2006)



CENTRAL BUSINESS DISTRICT AV CHANGE: 2002-2006



Legend

— Wabash Trolley Route

AV Change 2002-2006

AV Decrease

No Change

\$1 - \$50,000

\$50,001 - \$200,000

\$200,001 - \$500,000

\$500,001 - \$1,000,000

\$1,000,001 - \$10,000,000

The majority of parcels in the CBD area experienced AV increases from 2002 through 2006. The largest increases occurred in the commercial properties in the Main Street / South Street corridor and the residential area directly south of downtown. This analysis expressed in this map suggests that downtown amenities, including the Wabash Trolley are a factor in increased property values.

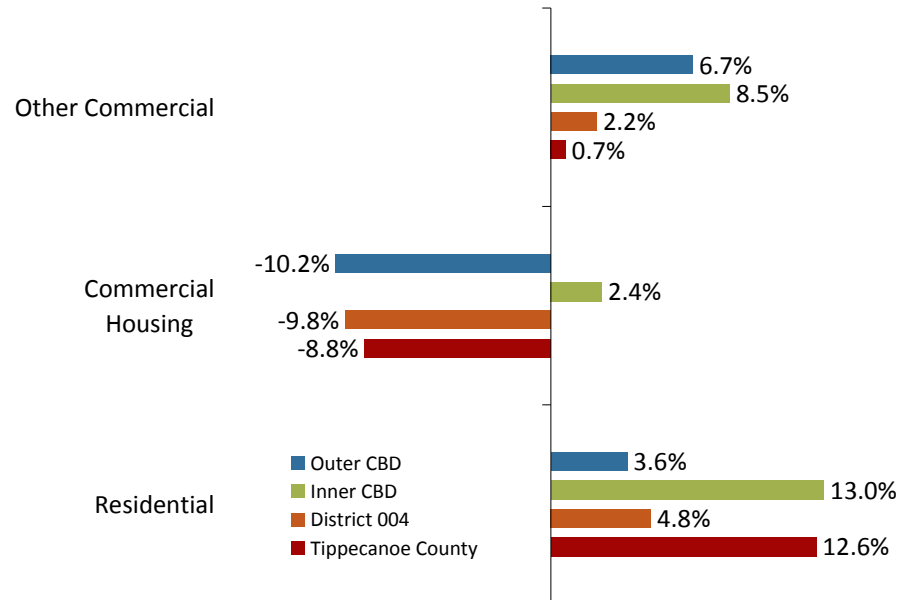
PROPERTY VALUE CHANGE

A close analysis of Lafayette assessed values shows that property values near the trolley increased at a significantly greater rate than property elsewhere in the county. This analysis used four geographic definitions to track property value changes. The “Inner CBD” is defined as parcels within 0.5 miles of the Wabash Trolley’s downtown route. The “Outer CBD” grouping includes all parcels that are between 0.5 and 1.5 miles outside of the trolley route. Taxing District 004, is the central Lafayette taxing district, and extends beyond the Outer CBD. Finally, the Tippecanoe County grouping contains all parcels in the county. Only parcels that did not change in property class were included in the analysis.

Residential property values increased in the inner CBD by 13% from 2002 to 2006, which is similar to the growth rate countywide. However, residential parcels in the outer CBD and District 004 groupings experienced much slower property value appreciation. The difference in growth rates is more evident in commercial housing. Across the county, commercial residential parcels decreased in value by 8.8% from 2002 to 2006, and decreased even faster in the outer CBD and district 004 parcel groupings. However, commercial housing property values in the inner CBD increased by 2.4%.

This property value growth in the downtown area suggests that potential renters and property owners value the amenities that accompany downtown living, and that the presence of the Wabash Trolley contributes to a positive growth environment in the downtown area.

**AV Change — 2002 to 2006
Same Parcel, Same Property Class**



CBD PROPERTY USES

Central Business District Excluding Tax Exempt and Utilities

	2002	2006	Change
Parcels			
Industrial	39	39	-
Commercial Residential	89	90	1
Hospitality	25	25	-
Retail	169	172	3
Office and Finance	95	95	-
Other Commercial	331	351	20
Single Family Residential	912	926	14
Residential Condos	13	20	7
Other Residential	754	765	11
Total	2,427	2,483	56
Assessed Value (\$1,000s)			
Industrial	2,894	2,950	57
Commercial Residential	25,178	30,959	5,781
Hospitality	4,540	4,792	252
Retail	21,699	27,367	5,668
Office and Finance	24,768	27,202	2,435
Other Commercial	46,057	49,300	3,243
Single Family Residential	82,295	96,715	14,419
Residential Condos	1,929	3,435	1,506
Other Residential	76,015	83,837	7,822
Total	285,375	326,558	41,183

From 2002 to 2006, the Lafayette CBD (parcels within 0.5 miles of the downtown trolley route) has seen the addition of 24 commercial properties and 32 residential properties. The largest increases were in parcels classified as single parcel residential, and in various other commercial properties.

Residential condominiums experienced the largest increase in assessed value on a percentage basis, growing 78% from 2002 to 2006. Residential and rental property values also grew significantly, while standard commercial property values increased at a more moderate rate.



RENTAL RATE ESTIMATES

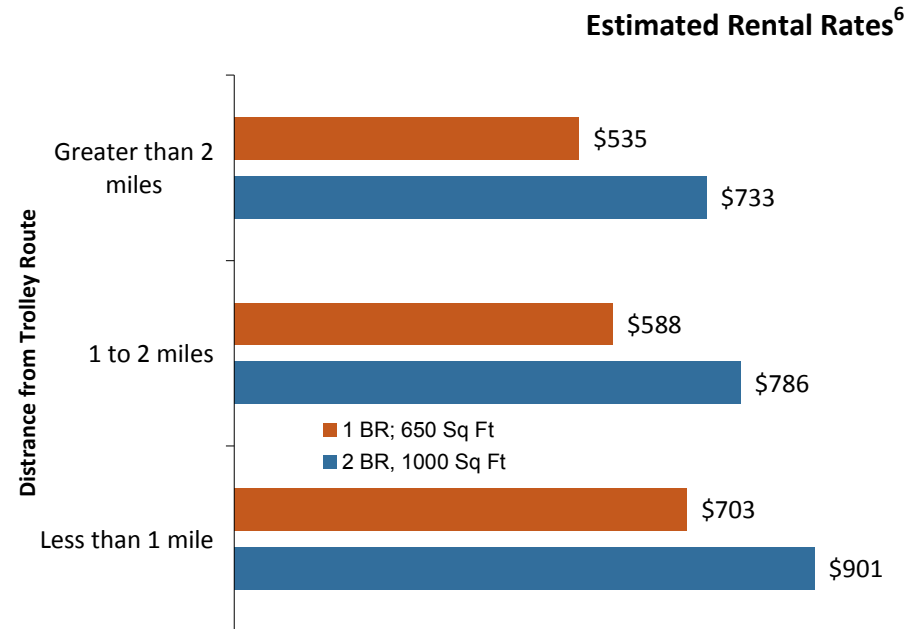
Just as property values in the inner central business district have increased at a greater rate than elsewhere in Tippecanoe County, an analysis of rental properties suggests downtown units can charge premium rents. A sample of 124 rental units from throughout Tippecanoe County was used to determine the effect of geography on rental rates. The sample units ranged from small studios to large four bedroom, four bathroom units. The average monthly rate for the sample was \$666.

The sample data suggests that geographic location close to the trolley has a significant effect on rental rates. When controlling for square footage, bedrooms, and bathrooms, rental units located within 0.5 miles of the trolley route can command rates that are an estimated 23% greater than properties located two miles from the trolley route.

The increased rental rates imply that downtown amenities, including the Wabash Trolley, contribute to a greater demand for housing in the downtown area.

“I am hearing more and more of my colleagues and neighbors stating that they too will start taking the bus or trolley”

D. Anderson
Lafayette Resident



Source: Policy Analytics, LLC

COST OF ADDITIONAL PARKING

One important benefit of public transportation is that it leads to reduced parking requirements. Riders can travel downtown without the hassle of searching for a parking place, and paying to park. If the Wabash Trolley were to be discontinued, additional parking would be needed in the downtown area. A model was developed for this analysis to estimate the cost of providing additional downtown parking in the absence of the trolley.

The model assumes that current downtown parking capacity is at or near capacity, and that parking spaces would be required to accommodate trolley riders (at the least, additional capacity would be required to maintain the current level of parking surplus). The number of additional downtown-bound cars in absence of the trolley is then distributed over the course of a day, allowing for peak periods. The costs of additional parking are derived from existing estimates⁷, and assume that structure parking would be used to accommodate the additional traffic.

If the Wabash Trolley was eliminated, approximately 84 additional parking spaces would be needed in the downtown area to meet demand. The capital cost of accommodating additional parking demand due to the Wabash Trolley is estimated at \$1.2 million⁷. This does not include the continuing cost of operating the parking structure. Some of this cost could be recovered by charging parking fees, however that would add further costs to traveling downtown, thus decreasing demand for downtown amenities.



PMTF IMPACT

The Public Mass Transit Fund (PMTF) is a state funding source that distributes revenue to Indiana public transit agencies on an annual basis. The total annual PMTF distribution is equal to .635% of the state’s total sales tax revenue. Public transit agencies are grouped according to the size of their service population, and a performance-based formula is used to allocated PMTF revenue within agency groupings.

CityBus is included in the large fixed route agency grouping along with Fort Wayne, Indianapolis, Gary, Bloomington, Evansville, Muncie and South Bend. Based on 2006, operating data, this grouping receives approximately 71% of the total PMTF allocation. The following measures (ratios)— ridership divided by operating expense, operating miles divided by operating expense, and locally derived income divided by operating expense are used to allocate PMTF revenue within this agency grouping.

Because the PMTF allocation is based on operating statistics, the continuation or discontinuation of the Wabash Trolley will have a major impact on future revenues. Each dollar of local revenue used to fund the Wabash Trolley is estimated to generate approximately \$0.62 in PMTF revenue. PMTF distributions are calculated on three year operating averages, so the entire effect of the PMTF reduction would not be felt immediately, but over a period of three years. If the trolley is discontinued, CityBus is estimated to lose approximately \$221,769 in PMTF funding after three years, for a total revenue loss of more than \$581,000.

Estimated PMTF Funding Impact

	Year 1	Year 2	Year 3
PMTF rev. with Trolley	\$2,983,109	\$2,983,109	\$2,983,109
PMTF rev. without Trolley	2,909,830	2,837,061	2,761,340
PMTF Loss	73,279	146,048	221,769
Excess Levy Loss	360,000	360,000	360,000
Total Revenue Loss	\$433,279	\$506,048	\$581,769

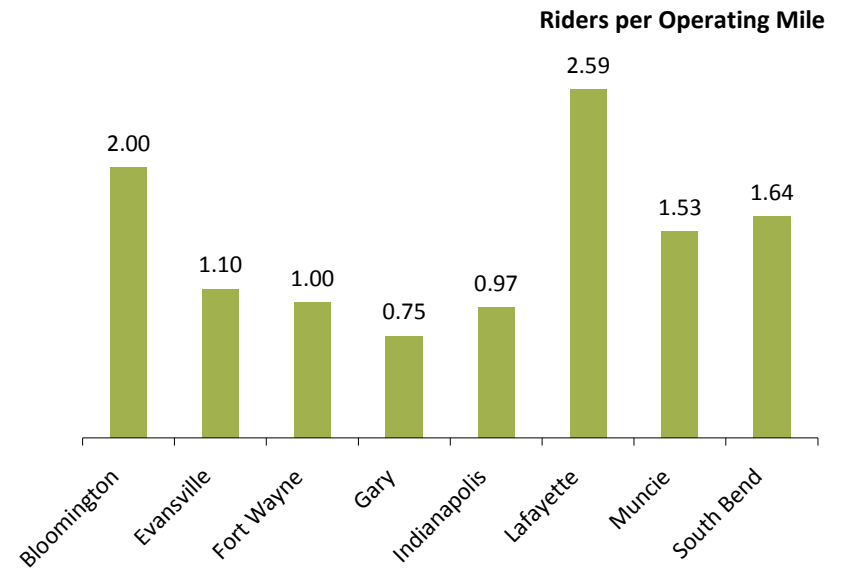
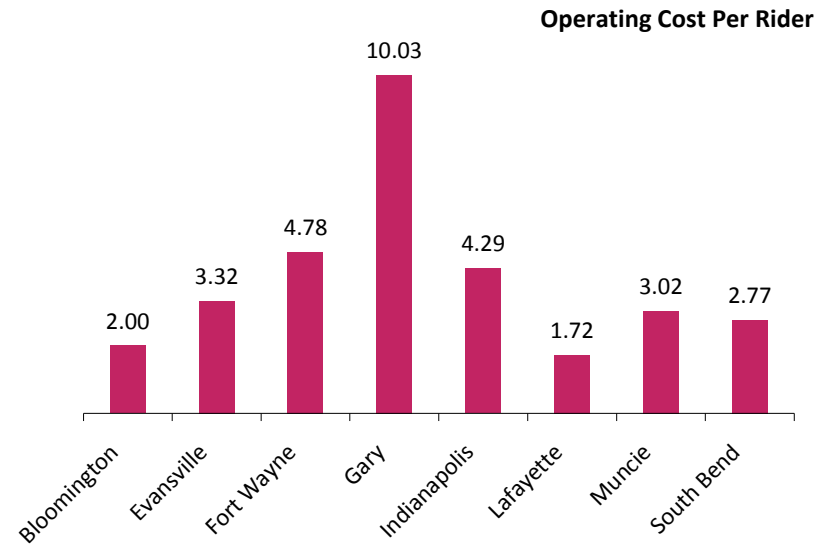


INDIANA TRANSIT AGENCY COMPARISON

Indiana public transit agencies are grouped into categories based on service population area and operating characteristics. CityBus is included in the large fixed route agency grouping. CityBus compares favorably to its peer agencies when evaluated on most operating and efficiency measures. The transit agencies in Lafayette and Bloomington have access to a large number of potential student riders and rate highly compared to agencies without access to a large student population. The charts on this page and following compare operating efficiency, cost and levy metrics from the major large fixed-route transit providers.

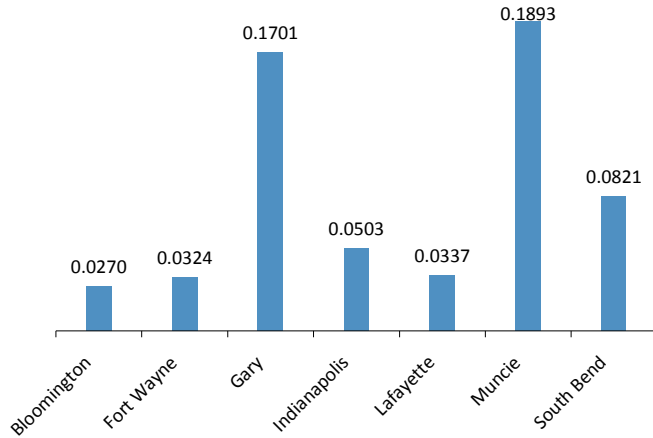
CityBus ranks best among the group in operating cost per rider at \$1.72 dollars per rider. This indicates that costs are controlled and that route offerings are well utilized. Larger urban areas such as Indianapolis, Fort Wayne, and Gary have higher operating costs per rider. CityBus also ranks highly compared to the other peer agencies on riders per operating mile.

The charts on the next page evaluate the transit agencies with respect to levy performance. A transit agencies operating budget is funded through a combination of federal, state and local revenue, fares and fees, and other contract agreements. The property tax levy often comprises a large percent of an agencies local revenue funding. In 2007, CityBus' tax rate was \$0.0337 per \$100 in assessed value, or \$33.70 per year on a \$100,000 property. CityBus' per capita levy was \$20.58, which ranks in the top half of the peer group. Compared to other similar transit agencies in the state, Lafayette taxpayers are getting an above average return on their transit levy.

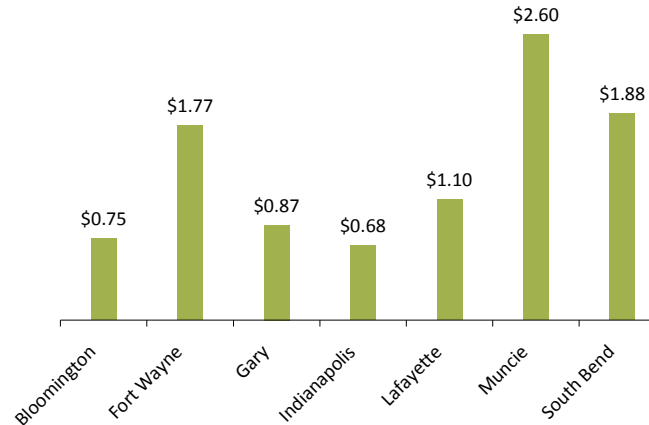


TRANSIT AGENCY ANALYSIS — LEVY COMPARISON

Indiana Public Transit Rates



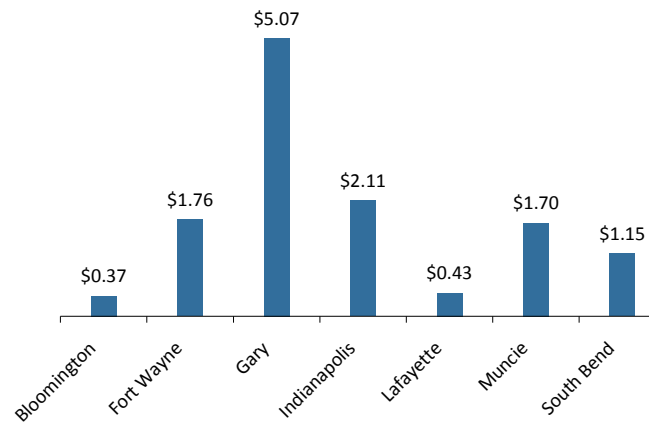
Levy per Operating Mile





Levy per Capita



Levy per Rider



- ◆ CityBus' property tax rate compares favorably to other Indiana transportation agencies. An owner of a \$100,000 property pays approximately \$34 per year in transit property taxes.
- ◆ CityBus ranks above the peer group average in levy per operating mile, levy per capita, and levy per rider.
- ◆ CityBus raises \$0.43 cents in property tax levy per rider, which is second lowest among large Indiana transportation agencies.



HEA 1001

House Enrolled Act 1001 (HEA 1001) is the property tax relief package passed by the Indiana General Assembly during its 2008 session. HEA 1001 uses property tax rate caps, or “circuit breakers” as a mechanism to control increasing property taxes and to make tax bills more predictable for taxpayers. While HEA should provide property tax relief for many taxpayers, it will have significant revenue repercussions for local taxing units.

Under HEA 1001, circuit breaker rate caps are set at 1% for homestead property, 2% for agricultural land and non-homestead residential property, and 3% for all other real and personal property. The rates are phased in over a two-year period, and will be fully applicable to taxes paid in 2010. Once the rate caps are implemented, an owner of a \$100,000 home will pay no more \$1,000 annually in property taxes. Because of this property tax control mechanism, many local taxing units may experience revenue shortfalls.

The magnitude of these budget shortfalls will be determined in large part by changes in levies and assessed values (a process known as “trending”). In short, if levies increase rapidly, and/or assessed values increased slowly, property tax rates will be pushed upward, increasing the severity of revenue shortfalls. Areas with already high tax rates are at risk for major revenue shortfalls, while areas with low tax rates will experience little or no effect from the circuit breaker.

According to recent estimates from the Legislative Services Agency, CityBus is projected to lose approximately \$1,500 in property tax revenue to the circuit breaker credit in 2010. Estimates developed for this report show that revenue loss may be higher, perhaps as high as \$29,000 depending on actual assessed value and levy growth rates.

While the actual impact of the circuit breaker will not be fully known until tax rates are certified, it is important to consider that the impact of HEA 1001 might have some effect on CityBus’ revenues.

FINDINGS AND CONCLUSION

Since its inception in 2003, the Wabash Trolley has become an important link in the Lafayette/West Lafayette community, connecting the Purdue campus with the Lafayette downtown area. The objective of this report is to identify and quantify the economic and community benefits for the Wabash Trolley. A variety of factors ranging from property values to environmental impacts were analyzed for this study. The findings of the research are summarized below.

Findings

1. Trolley ridership has increased from approximately 283,000 riders in 2004, to 340,000 riders in 2006, an increase of 20% over three years.
2. For its users, The trolley generates approximately \$188,000 in vehicle ownership and operating cost savings annually.
3. Between 2002 and 2006, properties within 0.5 miles of the downtown trolley route experienced significantly greater property value growth than the county average. This suggests, that downtown amenities, including the Wabash Trolley, contribute to increased property values.
4. Area rental data suggests that rental properties in close proximity to the Wabash Trolley can command a rent premium of greater than 20%.
5. If the Wabash Trolley was discontinued, downtown parking capacity would need to be expanded by 84 spaces at an estimated \$1.2 million in capital cost.
6. Every dollar of local excess levy funding generates approximately \$0.62 in state PMTF funding. If the \$360,000 excess levy were discontinued, CityBus would lose an additional \$221,769 in state PMTF funding.
7. CityBus compares well to other Indiana public transit agencies in terms of operational effectiveness. CityBus' per-capita levy is \$20.58, which is 30% less than the average for large Indiana fixed route agencies.

These findings demonstrate that the Wabash Trolley provides measurable benefits to the city. The Trolley leads to decreased vehicle operating costs and emissions, reduces downtown parking requirements, and helps to stimulate increased property values and concurrent economic activity. These factors should all be taken into account when considering future funding for the Wabash Trolley.



ENDNOTES

- ¹ “Up with Downtown: An Enhancement Strategy for Lafayette” City of Lafayette, Lafayette Community Development Corporation, 2001
- ² “2007 Public Transportation Factbook Historical Tables,” American Public Transportation Association, 2007
- ³ “Public Transportation: Benefits for the 21st Century,” American Public Transportation Association, 2007
- ⁴ Emissions impact derived using MOBILE 6 Vehicle Emission Modeling Software developed by the U.S. Environmental Protection Agency
- ⁵ Collision probability assumptions from U.S. Department of Transportation, Bureau of Transportation Statistics (http://www.bts.gov/publications/national_transportation_statistics/). Collision cost assumptions from U.S. Federal Highway Administration Surface Transportation Efficiency Analysis Model (STEAM). Fuel consumption assumptions from “Emission Facts: Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks,” U.S. Environmental Protection Agency. Vehicle operating cost assumptions from Transit Cooperative Research Program, Report 78
- ⁶ Rental rates acquired from <http://www.apartmentguide.com/>, <http://realestate.yahoo.com/>, <http://www.move.com>, and <http://www.rentalhouses.com>, and local realtors
- ⁷ Parking assumptions from “Economic Impact Analysis of Transit Investment,” Cambridge Systematics