

ITASCA*project*

**Regional Transit System**  
Return on Investment Assessment  
November 30, 2012



## EXECUTIVE SUMMARY

The Itasca Project has a key goal to advance a comprehensive and aligned transportation system. As a stakeholder in regional discussions around proposals for transit investment, Itasca's transportation task force sought to understand "what is the expected economic return on regional transit investments?"

Itasca commissioned Cambridge Systematics to assess the expected return from the region's proposed transit system. Working with a technical advisory committee of regional experts, the project team quantified and monetized how the regional transit build-out would impact travel times, travel time reliability, vehicle operating cost, safety, emissions, shippers and logistics costs, and road pavement condition.

Itasca's transportation task force posed three questions:

- 1) A built-out regional transit system would require substantial investment. *What would be the return on that investment?*

Answer: Between \$6.6 and \$10.1 billion in total direct benefits, on a \$4.4 billion investment (benefits accrued 2030 – 2045).

- 2) Investments can be made more or less quickly. *Would accelerating the build-out change the return on investment?*

Answer: The total direct benefits would increase to between \$10.8 – 16.5 billion, on a \$5.3 billion investment (benefits accrued 2023 – 2045).

- 3) Many communities with developing transit systems experience more growth near transit stations. *Would such expectations for regional growth change the return on investment?*

Answer: More community growth near transit stations would increase net benefits by another \$2 – 4 billion (2030 - 2045).

In addition to quantified and monetized impacts, the analysis quantified but did not monetize other regional impacts, such as regional accessibility to jobs. The analysis found that a regional transit system would enable local employers to access an additional 500,000 employees.

Finally, the project team sought the views of human resources and facilities executives at regional employers, with respect to the role of a built-out transit system in accessing and attracting employees.

Together, the results show that investment in a built-out regional transit system would create substantial value for the region.

## BACKGROUND

The Itasca Project is a CEO-led alliance drawn together by an interest in new and better ways to address regional issues that impact our economic competitiveness and quality of life. Its 50-plus participants are primarily private-sector business leaders, the heads of major Minneapolis/St. Paul-based foundations, and key public sector leaders.

Itasca's participants understand that our regional transportation system helps determine regional prosperity and quality of life. One of Itasca project's three priorities is to "Advance a Comprehensive and Aligned Transportation System". This vision includes roads and bridges, as well as a connected transit system.

As a stakeholder in regional discussions around proposals for transit investment, the Itasca Project sought its own understanding of current transportation visions, including that of a built-out regional transit system. Specifically, Itasca's transportation task force sought to understand "what is the expected return on such transit investments?"

The Itasca Project commissioned Cambridge Systematics to assess the proposed transit system.

## KEY QUESTIONS

The Itasca Project transportation task force posed three questions:

- 1) A built-out regional transit system would require substantial investment. *What would be the return on that investment?*
- 2) Investments can be made more or less quickly. *Would accelerating the build-out change the return on investment?*
- 3) Many communities with developing transit systems experience more growth near transit stations. *Would such expectations for regional growth change the return on investment?*

To answer these questions, Cambridge Systematics, with support from an advisory committee of regional experts, modeled the costs and benefits of three future regional transit scenarios and compared them with a base case scenario that incorporates only existing and committed transit investments (including Central Corridor):

- *Scenario 1: 2030 Regional Plan.* This scenario assumes the Metropolitan Council 2030 plan is executed and that the region-wide

transit investment includes the addition of three LRTs, two BRT extensions, two new BRTs, and nine arterial BRTs.

- *Scenario 2: Accelerated Regional Plan.* This scenario assumes the same build-out as Scenario 1, completed seven years earlier in 2023.
- *Scenario 3: 2030 Plan with Growth Near Stations.* This scenario assumes the same build-out and timing as in Scenario 1, but focuses more of the expected regional growth near stations. This scenario does not suppose accelerated or additional growth for the region but simply reallocates 25% of projected development and community growth in served communities to be nearer to station areas.

The analysis looked at the costs and benefits of a regional transit system from its completion date through 2045. Scenarios one and three assesses the costs and benefits from the system completion date of 2030 through 2045. Scenario two proposes the system is complete by 2023 and, hence, assesses costs and benefits from 2023 through 2045.

In addition to the technical analysis, the project also conducted qualitative research to understand the perspective of regional businesses and assessed impacts of transit build-outs in other regions.

## SUMMARY OF DIRECT IMPACTS

A built-out transit system brings enhanced mobility to the region, which has benefits for both highway and transit users. For this analysis, we considered six types of direct impacts:

- Vehicle operating costs
- Travel times and reliability
- Shippers and logistics costs
- Emissions
- Safety costs
- Road pavement conditions

Figure 1 compares the quantified direct impacts with the cost of the regional transit system build-out. Note that the analysis considered *net* benefits. To the extent any of these factors were negatively impacted by the transit

system build-out (e.g., increase in travel times), that was accounted for. Both capital costs and operating and maintenance costs are included.

The analysis reveals that expected direct benefits range from \$6.6 billion up to \$13.9 billion.

**Figure 1:** Benefits and costs of the regional transit system from completion of build-out to 2045, compared to base case (2010\$ Millions)

	Compared to Base Case Scenario			
	Investment cost	Total direct impacts		IRR
Scenario		Low	High	
<b>1: 2030 Regional Plan</b> <i>(Benefits/costs accrue 2030–2045)</i>	\$4,361	\$6,571	\$10,083	7.8-14.8%
<b>2: Accelerated Regional Plan</b> <i>(Benefits/costs accrue 2023–2045)</i>	\$5,289	\$10,762	\$16,516	11.2-18.0%
<b>3: 2030 plan with more growth near stations</b> <i>(Benefits/costs accrue 2030–2045)</i>	\$4,361	\$9,082	\$13,927	13.0-20.9%

Source: Cambridge Systematics analysis based on MetCouncil TDM output

As shown in Figure 1, the benefits and costs were also used to calculate an internal rate of return (IRR)<sup>1</sup>, which was estimated to be between 7.8% and 20.9% for the project.

The range of direct user impacts by category are as follows:

- Travel time savings: \$4.6 to \$11.4 billion
- Vehicle operating cost savings: \$1.5 to \$4.7 billion
- Shipper and logistics cost savings: \$185 to \$270 million
- Reduction in emissions: \$185 to \$395 million
- Safety benefits: \$53 to \$88 million
- Pavement maintenance savings: \$26 to \$54 million

Because the analysis period is relatively short (only 15 years for the base build-out and focused growth scenarios, when the system will likely provide

<sup>1</sup> Internal Rate of Return (IRR) is the discount rate often used in capital budgeting that makes the net present value of all cash flows from a particular project equal to zero.

benefits beyond) and because of the conservative assumptions regarding future land use changes and energy costs in the travel demand model, the resulting benefits represent a conservative estimate of the potential impact.

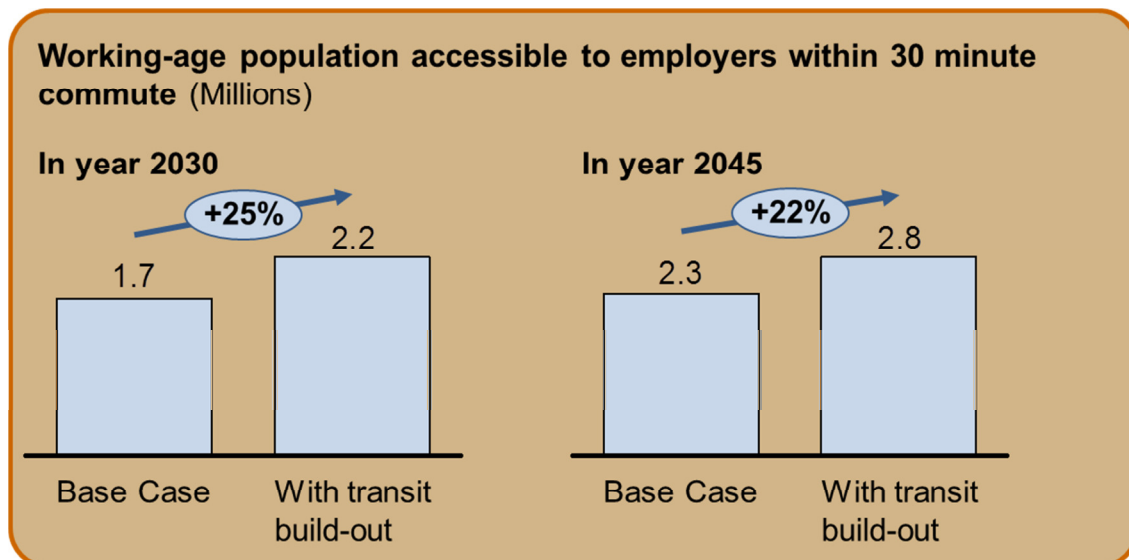
## SUMMARY OF WIDER ECONOMIC IMPACTS

In addition to the direct benefits assessed, the project considered a select number of wider economic impacts that research suggests will accrue as a result of transit investments.

### Impact on access to labor shed

The regional travel model shows that transit improvements are expected to decrease average travel times on the transportation network. This increases work opportunities available to residents and the labor shed available to employers. The analysis indicates that, compared to base no-build scenario, an additional 500,000 working-age residents will be accessible within a 30 minute trip time under the 2030 plan and up to 520,000 working age residents under the 2030 plan with more growth near stations. As shown in Figure 2, this represents a 22 – 25% increase.

**Figure 2:** Change in regional labor shed due to transit build-out (assumes build-out of 2030 regional plan)





## **Construction impacts**

In addition to the long-term economic benefits, the construction activity associated with the 2030 transit build-out scenario is projected to support more than 30,000 full-time equivalent jobs and \$4.3 billion in Gross Regional Product over the course of the construction period.

## **Induced economic development**

The direct user benefits associated with a regional transit build-out are expected to drive long-term economic impacts in terms of business attraction and retention, leading to economic and employment expansion. The analysis relied on an economic modeling tool called TREDIS to assess potential economic value creation. Transit investment is expected to support an additional 3,500 to 8,495 jobs by 2045. Transit investments and resulting transportation efficiencies will lead to an additional expansion of the regional economy up to \$1.4 billion.

## **BUSINESS PERSPECTIVE**

In addition to the quantitative analysis, qualitative research was conducted with leaders from several of the region's leading companies to assess their viewpoints on the benefits of a regional transit system. The project team spoke with Human Resources and Facilities leaders from companies including Target, UnitedHealth, US Bancorp, DLR Group, Xcel Energy, and Plymouth/Center National Bank.

Key themes and representative quotes from these discussions are highlighted below.

### **Transit helps access and attract employees.**

- "Improved transit provides greater efficiency to attract employees, enables them to connect with labor groups."
- "Transit comes up in every HR conversation with new employees."
- "60% of our downtown employees have a Metropass. We want to support that."
- "Our younger workers show a higher level of interest in transit."
- "Transit is important to attracting workers. Without it, working downtown would be very difficult."

- “We have a company priority to be green and socially-responsible. Supporting transit is important. We find that it gets a very positive reaction within our younger employees.”
- “We worry about future commuting costs, as gas could be significantly more expensive.”

**Transit enables higher density development and greater customer access.**

- “Improved transit would allow higher densities and greater customer access.”
- “Higher densities encourage entrepreneurial activities.”

**Transit must be connected to and aligned with destinations and other modes of transit.**

- “Pedestrian access is important to support transit, complete last mile connections.”
- “Want to see more suburb-to-suburb connections.”
- “I appreciate the LRT connection to the airport but there are limited door-to-door mass transit options”
- “Must be reliable.”

## CONCLUSION

This analysis provides the business community and partners information it requested to understand the benefits of a regional transit system. The study answered three key questions:

- 1) A built-out regional transit system would require substantial investment. *What would be the return on that investment?*

Answer: Between \$6.6 and \$10.1 billion in total direct benefits, on a \$4.4 billion investment (benefits accrued 2030 – 2045).

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Answer: The total direct benefits would increase to between \$10.8 – 16.5 billion, on a \$5.3 billion investment (benefits accrued 2023 – 2045).



- 3) Many communities with developing transit systems experience more growth near transit stations. *Would such expectations for regional growth change the return on investment?*

Answer: More community growth near transit stations would increase net benefits by another \$2 – 4 billion (2030 - 2045).

These results support advancing transit investments (including LRT, BRT, and arterial bus) in the Minneapolis Saint Paul Metro area. There are of course many other questions that will be considered as the region assesses how to advance its transit investment, including funding sources.

## **ABOUT THIS REPORT**

### **Methodology**

The Return on Investment (ROI) evaluation quantifies and monetizes the future impacts arising from building a regional transportation system.

To estimate the transportation benefits associated with the transit build-out, the study utilizes output from Metropolitan Council's regional travel demand model. The study team interpolates the 2030 and 2045 travel data provided by the Metropolitan Council to estimate annual travel data, which forms the basis for the 15-year impact analysis, from 2030 to 2045 (2023 – 2045 for accelerated scenario).

To estimate economic impact, the team used the TREDIS model which is an economic model developed specifically to evaluate the impact of multimodal transportation investments. The model is customized for the Twin Cities region and it evaluates the impact of investments across modes and users, including passengers and freight. More information on the TREDIS model is available at [www.tredis.com](http://www.tredis.com).

### **Key assumptions**

The Technical Advisory Group worked with Cambridge Systematics to define key input assumptions for the model, which are highlighted here.

All findings will be reported in 2010 dollars.

A discount rate of 2.8 percent is employed for this analysis as recommended by MnDOT.

For the regional assessment, all corridors are assumed to be operational in 2030 and the impacts from 2030-2045 are estimated and reported. For the accelerated assessment, all corridors are assumed to be operational in 2023 and the impacts from 2023-2045 are estimated and reported.

The focused growth scenario assumes that 25 percent of all projected development in the transitway-served communities occurs within a 1/3 of a mile of new and existing transit station areas. The reallocation of growth assumes that communities anticipating a transitway have focused growth in station areas to some degree as part of their regular long-range and land use planning processes. This assumption is made within the travel demand model, thus allowing the changing development patterns to impact ridership and travel behaviors. Induced development above and beyond baseline

projections arising from improved mobility is captured in the analysis of wider economic benefits.

The price of fuel used in the travel demand and mode choice models is \$3.41 per gallon (\$2.59 in 2000\$ based on the CPI) to reflect the average cost of fuel in the region on October 26, 2011. Gas prices are an important input to the model because they are a major driver of transit ridership, which impacts other benefits. When possible, sensitivity analysis was conducted.

Value of travel time varies by trip purpose and it is equivalent to the opportunity cost travelers' time for non-work trips and commute trips and to the out-of-pocket costs for work or business trips. Generally, value of travel time is a function of travel time, trip purpose and wage rate. For commute, the study team utilized 50 percent of travel time saved for analysis in accordance with U.S. Department of Transportation recommendation. Also, non-work related trips (including leisure) will be used to estimate efficiency benefits but not as input into the economic impact analysis since they do not represent out-of-pocket cost.

## ABOUT THE ITASCA PROJECT

The Itasca Project is an employer-led alliance drawn together by an interest in new and better ways to address regional issues that impact our future economic competitiveness and quality of life in the Twin Cities area. Its 50-plus participants are primarily private-sector CEOs, public-sector leaders, and the leaders of major Minneapolis/St. Paul-based foundations.

### Leadership

Chairperson	Mary Brainerd, President and CEO of HealthPartners
Vice-Chairperson	Richard Davis, Chairman, President, and CEO, US Bancorp
Director	Allison Barmann, McKinsey & Co.

### Transportation task force leadership

Co-chair	Jay Cowles, President of Unity Avenue Associates
Co-chair	Charlie Zelle, CEO of Jefferson Lines

## ABOUT CAMBRIDGE SYSTEMATICS

Cambridge Systematics (CS) is a national transportation planning consulting firm with 40 years of experience providing regional, state, and federal transportation planning and policy services. CS offers demonstrated expertise in regional transportation planning, transit planning, air quality analysis, travel demand forecasting, economic analysis, and state and Federal transportation policy. We develop innovative solutions to complex problems using quantitative tools and qualitative analysis.

## TECHNICAL ADVISORY GROUP

The Itasca Project would like to thank the Technical Advisory Committee who provided local expertise and guidance to the analysis.

Mary Richardson	CTIB
Mary Kay Baily	Corridors of Opportunity
Katie Walker	Hennepin County
David Lawless	Hennepin County
Arlene McCarthy	Metropolitan Council
Guy Peterson	Metropolitan Council
Mark Filipi	Metropolitan Council
John Kari	Metropolitan Council
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Eric Muschler	The McKnight Foundation
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Kate Johansen	Minnesota Chamber of Commerce
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Laurie McGinnis	University of Minnesota
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