

Indy Connect: Visioning and Planning for a Major Expansion of Regional Transit Service in Central Indiana

Philip Roth, AICP
Assistant Director, Indianapolis Metropolitan Planning Organization

Chris Kopp, AICP
Transportation Planning Manager, HNTB Chicago

John W. Myers, P.E., AICP
Transportation Planning Manager, HNTB Indianapolis

Abstract:

As the “Crossroads of America,” the Central Indiana region has enjoyed the high quality of life provided by one of the most well-developed hub-and-spoke interstate highway systems in North America. During the 20th century, the region transitioned from a strong urban core at the center of America’s largest interurban rail network into one of its least dense metropolitan areas. Meanwhile, the transit system became one of the smallest among the nation’s top 100 metropolitan areas.

Through Indy Connect, a coalition of private business leaders and public agencies has taken an unprecedented step in the development of a transportation and land use strategy that better balances investment across highway, transit, and non-motorized modes in the Indianapolis region. For its 2035 Long-Range Transportation Plan update, the Indianapolis MPO, in partnership with the Central Indiana Regional Transportation Authority (CIRTA), and the Indianapolis Public Transportation Corporation (IndyGo), developed a detailed plan for a regional transit investment program that triples the level of transit service and improves the region’s competitive position. The plan builds on a vision developed through an economic analysis of regional transportation investment scenarios led by business leaders.

This paper describes the philosophy and process by which the Indianapolis MPO and its public and private partners defined the vision and evaluated transit investment program alternatives. The paper describes how a transit-intensive investment program proposed by an association of business leaders formed to explore an economically optimal mix of transportation strategies was refined through a process of public input, market analysis, financial analysis, and economic cost-benefit analysis to create a plan that has attracted the support of a broad range of stakeholders.

Indy Connect: Visioning and Planning for a Major Expansion of Regional Transit Service in Central Indiana

1. CONTEXT

1.1 Crossroads of America

The Central Indiana region enjoys one of the most well-developed hub-and-spoke interstate highway systems in North America. Four interstate highways (I-65, I-69, I-70, and I-74) converge at Indianapolis, providing radial access to major cities within Indiana and beyond. An interstate highway loop around three sides of downtown is complemented by the I-465 beltway around the city.

Before the interstate highway system, the region's transportation system was dominated by one of the most well-developed hub-and-spoke railroad systems in North America. In the late 1800s, the Indianapolis region boasted the largest interurban railway system in the country, and its rail lines continue to reflect a classical radial system centered on Union Station in the heart of downtown Indianapolis.

As was experienced throughout the United States, Central Indiana began to focus increased attention and investment on its roadway system, evolving from a "railroad crossroads" to an "interstate highway crossroads." Figure 1 shows the network of railroads and highways in Central Indiana.

1.2 Automobility and Sprawl

With the increased mobility provided by this radial transportation system and the lack of physical barriers to outward growth, the region expanded dramatically through the late 20th century. During that same period, investment in public transportation languished. The Indianapolis Public Transportation Corporation (IndyGo) provides a basic level of bus service in Marion County with peak service every 30 minutes on a system of mainly radial routes connecting on a one-way downtown loop. There is very little service to suburban communities in surrounding counties. Infrequent service, limited off-peak service, the need for downtown transfers, and an older fleet confine usage mainly to those without access to an automobile.

Figure 2 shows the total spending per capita on transit operations and maintenance in more than sixty mid-sized metropolitan areas across the United States. Indianapolis spends approximately one-half of the peer average and one-third of the peer median.

Figure 1 Central Indiana Transportation Network

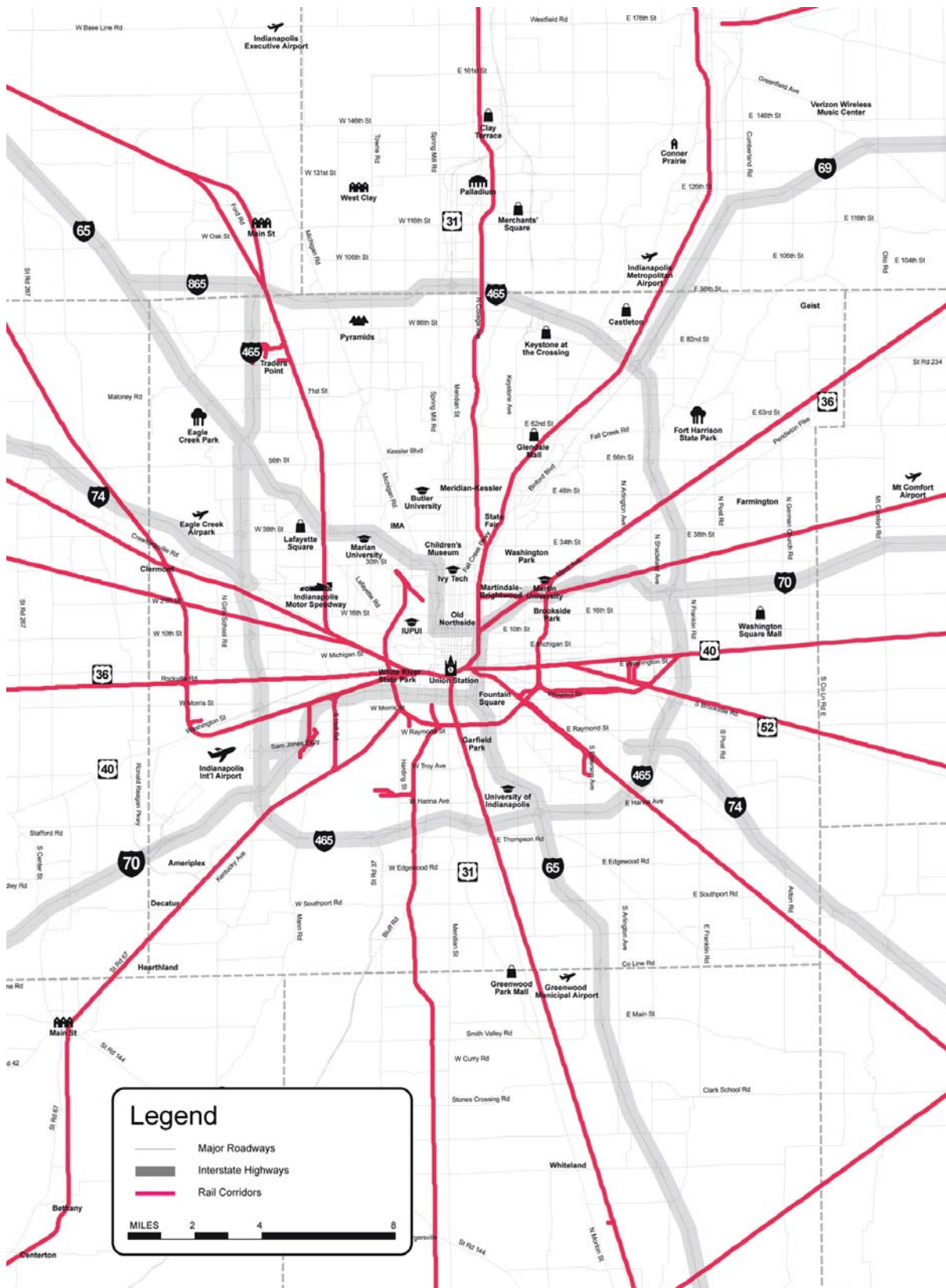
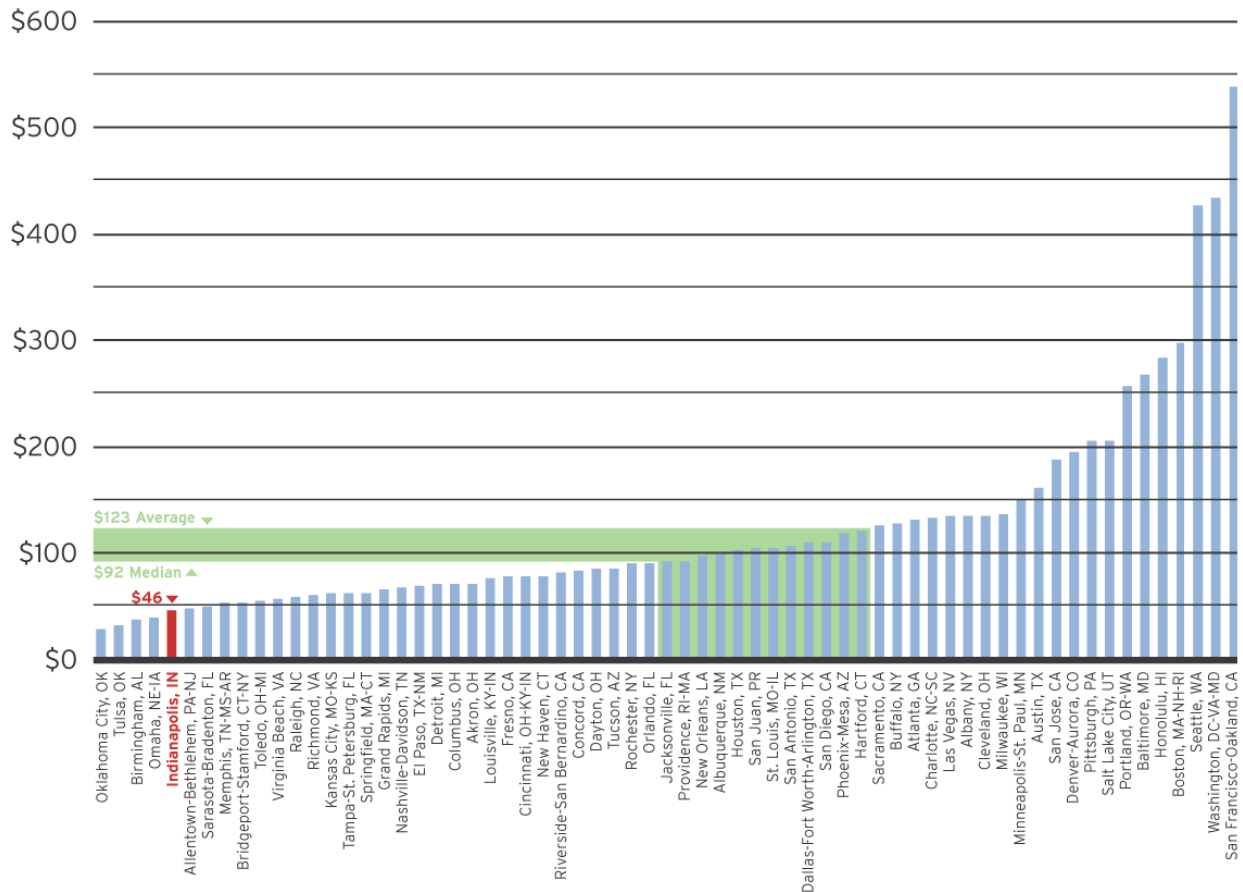


Figure 2 Transit Spending Per Capita



Source: National Transit Database, 2009

1.3 Strong Downtown

While the suburbs were growing, the region’s business leaders and public agencies pulled together decades ago to develop a long-term strategy for maintaining the primacy of the downtown core among regional activity centers. The area of downtown Indianapolis inside the inner freeway loop and east of the White River includes the central business district with two Fortune 500 corporations, government centers, sports venues, the Indiana University - Purdue University Indianapolis (IUPUI) campus, a regional medical center, shopping centers, museums, and other cultural attractions. This area has the highest concentration of employment in the Central Indiana region, with about 10 million square feet of commercial office space (one-third of all office space in the nine-county Central Indiana region). As of 2010, this area was home to approximately 20,000 residents.

Updated approximately every ten years, the Regional Center Plan consists of recommendations that are designed to enhance life in the downtown area, while acting as a guide for future growth and development. The most recent plan identified the following priorities:

- Develop mixed-use life sciences research community;
- Double the population to 40,000 by 2020, with emphasis on mixed-use development;

- Promote a strategic system of mass transportation and pedestrian/bicycle walkways;
- Expand convention and sports capacities, and cultural development;
- Evaluate the design review process for the downtown area; and
- Facilitate and coordinate the implementation of plan recommendations.

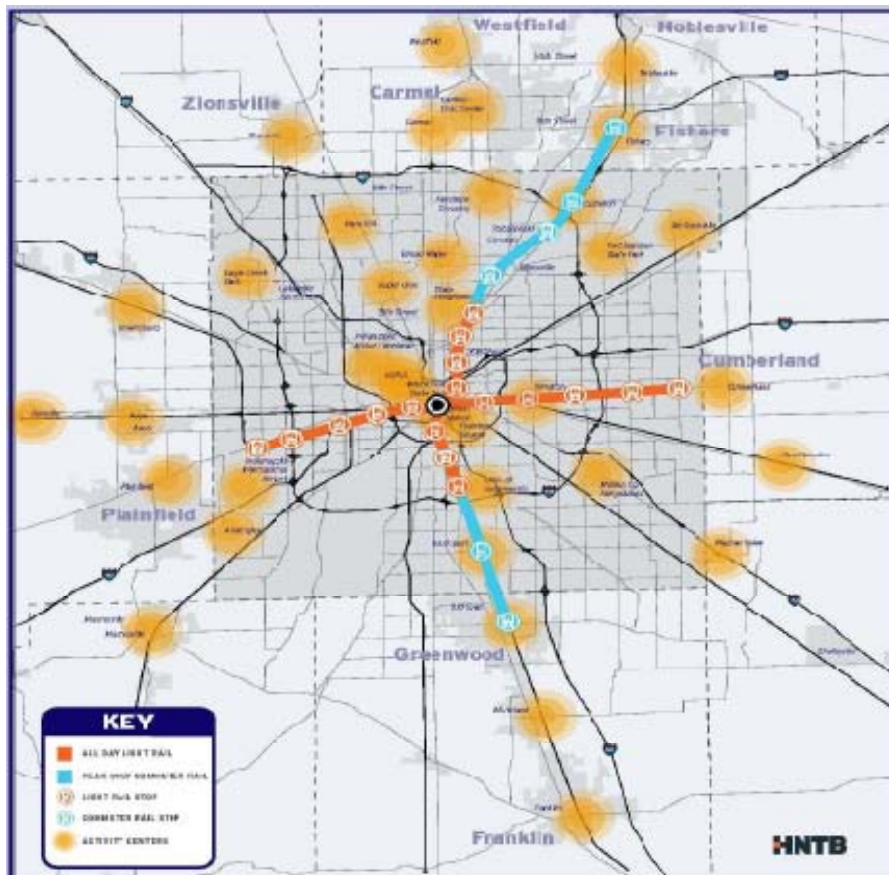
Through specialization in biotechnology and amateur and professional sports, combined with a commitment by state government agencies, financial institutions, and major employers to keep their workforces downtown, Indianapolis enjoys one of the more vibrant city centers among its peers.

2. PLANNING FOR THE 21ST CENTURY

By 2000, public interest was growing for a more balanced transportation and land use strategy. Through the next decade, the Indianapolis Metropolitan Planning Organization (MPO) led a series of corridor and system-wide planning studies to establish how an improved transit system could serve the region and what land use changes would be needed to support the transit system.

In order to advance the dialogue, newly elected Mayor Greg Ballard asked a group of business leaders to partner again with public agencies to take a serious look at the transportation system through the lens of private industry. The Central Indiana Corporate Partnership (CICP), the Greater Indianapolis Chamber of Commerce (GICC), and the Central Indiana Community Foundation (CICF) established the Central Indiana Transit Task Force (CITTF), a group of 15 thought leaders from business and industry throughout Central Indiana to evaluate long-term transportation investment strategies using an economic benefit-cost analysis framework. Their mission was to prepare a thorough analysis, form a collective opinion, and provide recommendations for appropriate action to the public. The Task Force believed it was extremely important to tap into the experience and expertise of those in the public sector and included representatives from the Indianapolis MPO, the Central Indiana Regional Transportation Authority (CIRTA), the Indianapolis Public Transportation Corporation (IndyGo), and the Indiana Department of Transportation (INDOT) in an ex-officio capacity.

The *Summary Report on Transportation Alternatives in Central Indiana*, published in February 2010, concluded that a significant investment in public transportation would benefit the region and outlined a vision for public transit in Central Indiana based on an economic cost-benefit analysis. The report addressed five key issues in Central Indiana: mobility, regional core vitality, congestion, the environment, and overall competitiveness. Key recommendations included: 1) an extension of the existing roadway network, but at a slower rate than previously anticipated; 2) tolled express lanes on selected segments of I-69 and I-65; 3) a significantly enhanced and expanded bus system; 4) the addition of an east-west light rail line; and 5) a north-south rail service on existing freight rail lines. Figure 3 shows the transit element of the CITTF recommendation.

Figure 3 Central Indiana Transit Task Force Transit System Recommendation

The public release of the CITTF recommendation coincided with the initiation of a regular update of the Indianapolis MPO's Long-Range Transportation Plan. The MPO used the recommendation as a basis for soliciting public and stakeholder feedback during the "Indy Connect" initiative, a branded public outreach effort of unprecedented scale in the region. Two rounds of input were conducted: the first to collect comments on the CITTF recommendation, and the second, following an interval of six months in which feedback was processed and technical processes completed (such as the one described below), to collect feedback on the MPO's "draft plan". The Indy Connect initiative included over 100 public meetings and received nearly 10,000 comments received via the project website. Indy Connect had numerous followers on both Facebook and Twitter. Public meetings throughout the region were supplemented by more targeted focus group meetings.

Because of growing interest in enhanced public transportation among the citizens, the transit element of the plan received particular emphasis. Suggestions fell into several broad categories:

- Maintaining a strong focus on the core bus system, with more frequent service and extended hours;
- In the current IndyGo service area, improving cross-town service and north-south mobility;
- Increasing accessibility via public transit to and between employment and other activity centers outside the downtown;

- Extending the service area beyond Marion County, and beyond what was proposed by the CITTF;
- Establishing a rail connection to Indianapolis International Airport; and
- Providing a more efficient, clean and safe public transit system.

3. TRANSIT FRAMEWORK PLAN

Following the first round of public meetings and stakeholder outreach, the MPO developed a Transit Framework Plan that carefully considered comments and input from the community-at-large with regard to public transit needs and priorities. The input resulted in adjustments to the recommendations developed by the CITTF with regard to system coverage and overall priorities.

The Transit Framework Plan provides an overall system context in which individual project development processes and investment decisions can be made over time. The Transit Framework Plan was guided by a vision statement for transit in Central Indiana that was based on public input:

Mobility and accessibility in Central Indiana will be enhanced through the development of a comprehensive network of public transit. Building on a strong transportation legacy, attractive alternatives to private automobile use will again be offered to all Central Indiana residents. Rather than continuing to lag behind comparable Midwestern cities in providing sustainable mobility options, Central Indiana will become a model of a comprehensive and efficient provision of public transit. The region as a whole will reap the environmental and economic rewards of a thoughtful and proactive strategy to incrementally create a complete public transit network, and round out the region's transportation system.

3.1 Principles

The Transit Framework Plan was developed using a set of principles that derived from the vision statement. The principles included:

- Create a comprehensive public transit system incrementally, managing risk by expanding the system in phases that build effectively upon one another and by considering the logistics of providing uninterrupted service during upgrades.
- Provide initial service upgrades to and between origin-destination markets in which public transit can be competitive with private automobile use, while maintaining and improving essential services in existing transit-dependent areas.
- Support the primacy of downtown by maintaining and reinforcing its long-standing position as the hub of the regional transportation system by building on the existing network of underutilized rail rights-of-way and the arterial street network.
- Build on the existing IndyGo bus service network to provide more direct, more frequent and faster travel options through an appropriate hierarchy of service types and schedules to meet the needs of different types of transit users.
- Leverage public investment in transit by providing improved service to established pedestrian-friendly activity centers and areas with economic development potential, in support of broader community goals.

- Encourage the development of a hierarchy of activity centers outside the downtown including transit-supportive land use development over time, thereby reducing automobile dependence in places other than the downtown core.

3.2 Elements

An effective future public transit framework for Central Indiana was developed as an inter-connected system of transit modes, each of which has unique characteristics and serves a specific purpose within an overall hierarchical system. At the outset of the planning process, the potential “building blocks” of this system were defined to include:

- Intercity Rail – The plan considered the high speed rail (HSR) service being planned as part of the Midwest Regional Rail Initiative (MWRRI) which would link Indianapolis to Chicago, Cincinnati and Louisville.
- Urban Rail – Commuter rail, light rail, or streetcar service was considered on existing freight rail lines with low freight volume or exclusive right-of-way in arterial streets, such as in the median or curb lanes. Specific rail technology decisions were considered to be an outcome of future studies.
- Bus Rapid Transit (BRT) – Enhanced bus service in mixed traffic with transit priority features was considered as an incremental step between existing bus service and rail service in key arterial corridors. BRT provides faster service by limiting stops to enhanced passenger stations located near major activity centers. The service was envisioned to include reserved lanes during peak periods, traffic signal priority to improve service reliability, frequent service throughout the day, coordinated shelter and vehicle design to establish a strong visual identity, low-floor boarding to improve convenience and reduce dwell times, and “next bus” information and semi-enclosed waiting areas with enhanced lighting to improve the experience for passengers.
- Express Bus Routes – Express service between outlying park-and-ride facilities and the downtown area using “over the road” motorcoaches was considered for the largest commuter markets.
- Key Bus Routes – Conventional bus service was considered to remain the workhorse of the regional transit system. The plan considered enhanced service frequency in key radial and crosstown corridors.
- Local Bus Routes – Neighborhood routes, suburban circulators, and employer shuttles were considered to be essential components of increased mobility and access throughout the region. Convenient transfers to key bus routes and fixed guideway transit modes were carefully considered.
- Paratransit – Door-to-door “demand responsive” service for customers who are elderly or disabled was expanded with the other service types.

3.3 Candidate Projects

A comprehensive list of candidate transit projects was developed based on concepts identified in previous studies, the CITTF recommendations, and Indy Connect public input. Although final decisions on transit technology would be subject to future alternatives analyses in corridors where major investments were identified, preliminary transit technology options were selected for analysis based on the right-of-way characteristics of each corridor, corridor length and land use setting, and corridor demand level. For example, commuter rail or light rail services were considered in existing railroad corridors and BRT, light rail, or streetcar services were considered in arterial street corridors. As shown in Figure 4, projects included:

- Rail in Existing Railroad Corridors – Three potential alignments were identified, including the Northeast Corridor from Union Station in downtown Indianapolis along the Hoosier Heritage Port Authority (HHPA) railroad (formerly the Nickel Plate Railroad) to as far north as Noblesville, the South Corridor from Union Station along the Louisville Indiana Railroad (LIRR) to as far south as Franklin, and the Northwest Corridor from Union Station along the CSX Railroad to as far north as Zionsville.
- BRT or Rail Transit in Arterial Street Corridors – Two potential alignments were identified and evaluated for both technologies (with BRT considered a potential precursor to rail service), including the East-West Corridor from Indianapolis International Airport on the west to Cumberland on the east, primarily along Washington Street, and the North-South Corridor from 62nd Street/Allisonville Road on the north to the University of Indianapolis on the south, via 62nd Street, College Avenue, Capital/Illinois Streets, and Madison Avenue. In addition, two downtown alignments were identified for potential circulator service using either mode. Crossing at Union Station, the alignments serve diagonally opposite activity centers on the edge of downtown, including IUPUI and the Lilly corporate campus.
- BRT in Arterial Street Corridors – Two potential crosstown alignments with lower demand levels were identified and evaluated as BRT services only, including the 38th Street Crosstown from Eagle Creek on the west to Lawrence on the east and the Keystone Crosstown from Carmel on the north to the University of Indianapolis on the south.
- Express Bus in Freeway Corridors – More than a dozen express bus routes between suburban activity centers and downtown were identified and evaluated.
- Conventional Bus – Recognizing the need for improvement of the existing transit system before it could effectively feed fixed guideway transit services, significant expansion of local bus service, including radial arterial routes, crosstown routes, neighborhood circulators, suburban circulators, employer shuttles, and paratransit, was included as a package of projects with the highest priority. The bus network, route structure, and service levels were based on a long-term service planning study conducted by IndyGo concurrently with the Indy Connect process.

3.4 Project Prioritization

For the purposes of assessing performance characteristics, each project was assigned a typical service level. In some instances, projects were split into geographic segments or assigned different service levels to evaluate phased implementation options. For example, the projects were split by county as appropriate (into “inner” segments in Marion County and “outer” segments in the surrounding counties) to facilitate analysis of different county participation options in a future regional funding scenario. Some projects were also split into “initial” and “upgrade” phases to reflect an increasing investment level as corridors develop into stronger transit markets over time.

At this stage in the planning process, candidate projects were assessed for their ability to expand transit coverage and facilitate multi-modal access, without specific regard to financial constraints. In essence, the projects were evaluated for their capacity to achieve the Vision Statement and Guiding Principles described above.

The following characteristics were defined for each of the candidate transit projects for ranking purposes. Note that these characteristics are generally cumulative in that service levels, operating costs and benefits reflect the build-out scenario for the entire system.

- Project Service Characteristics, which include mode (vehicle technology), service frequency (in peak, mid-peak and off-peak periods for weekdays, Saturdays and Sundays), hours of service (by period and by day), and average speed.
- Project Geography, which includes terminals, corridor length, major streets or railroads along the alignment, and number of stations.
- Operating Statistics, which include round trip running time, vehicles required for peak service, revenue vehicle hours, and revenue vehicle miles.
- Potential Trips Served, based upon MPO model data on the number of origin-destination trips with both endpoints in walking distance (within ½ mile) of the project. Trips are then adjusted using a factor which reflects differences in service frequency across projects or phases, computed using a simplified logit mode choice formula. The adjustment is applied to weekday service frequency to reflect the greater attractiveness of more frequent service.
- Capital Costs were estimated using typical unit costs for major items based on similar projects in the U.S. Cost items were grouped into the Standard Cost Categories defined by the Federal Transit Administration (FTA). Annualized capital costs were also computed, reflecting the useful life of project components, computed using a 7% discount rate per the FTA New Starts program methodology.
- Operating & Maintenance Costs were estimated based on an analysis of cost driver operating statistics and total operating expenses for the transit systems serving the metropolitan areas shown in Figure 2 for each mode (commuter rail, light rail and bus) from the National Transit Database (NTD). O&M costs are computed separately for each of four expense categories defined by NTD, including Vehicle Operations, Vehicle Maintenance, Non-Vehicle Maintenance, and General Administration.

Project rankings were determined using a benefit-cost index that combines the origin-destination Potential Trips Served measure with incremental capital and operating costs. This index is conceptually

similar to the “transit-competitive trips” measure of Weyrich and Lind,¹ and utilizes the utility calculations of the Indianapolis MPO’s travel demand model to assess the number of trips for which transit service along the defined corridor could be most competitive with the automobile. Capital costs were annualized to reflect life cycle considerations and combined with annualized capital costs and annual O&M costs. The prioritization process also included considerations of project “precedence” (inner segments must occur before outer segments, basic service levels must be implemented before upgrades), which further adjusted the rankings to reflect appropriate phasing considerations within each corridor; this correction for precedence also rectifies any problems from omitting (due to practical limitations) network economies from the benefit-cost index methodology. Figure 5 presents the prioritized list of projects resulting from this analysis.

Figure 5 Project Priorities

Project	Priority Index	Priority Ranking
IUPUI-Lilly Circulator - BRT	4,530	1
Keystone Crosstown - BRT	4,129	2
10th-LoDo Circulator - BRT	3,804	3
North-South Corridor - BRT	3,664	4
38th St. Crosstown - BRT	2,685	5
East-West Corridor - BRT	2,506	6
South Corridor - Rail	1,450	7
IUPUI-Lilly Circulator - Streetcar Upgrade	1,159	8
10th-LoDo Circulator - Streetcar Upgrade	828	9
Northeast Corridor - Rail	706	10
North-South Corridor - LRT Upgrade	630	11
East-West Corridor - LRT Upgrade	417	12
Northwest Corridor - Rail	413	13

3.5 “Readiness” Considerations

While project priorities were established using the general considerations described above, the MPO was careful to stipulate that many factors would influence the actual timing of implementation. The timing of implementation will be substantially determined by the “readiness” of stakeholder communities. Supportive actions that can be undertaken by stakeholder communities to enhance their readiness to implement public transit improvements include (but are not limited to) the following:

¹ Weyrich, Paul M. and William S. Lind (1999). “Does Transit Work? A Conservative Reappraisal”, Free Congress Research and Education Foundation.

- Participation in a regional transportation authority (RTA), which will finance public transit improvements that span across municipal and county boundaries.
- Development of land use plans that address the integration of transit facilities with surrounding land uses, in order to leverage transit investments to support local development or redevelopment objectives.
- Enacting transit-supportive zoning regulations that provide the potential for a transit-oriented development (TOD) pattern to emerge or be strengthened over time.
- Willingness to engage in “value capture” strategies, potentially including tax-increment financing (TIF) or developer impact fees, to financially support the development of local elements of the regional transit system such as stations, park-and-ride facilities, streetscape improvements, and bicycle and pedestrian access.
- Establishing the appropriate regulatory and administrative policies to support the development approval process, and an open and ongoing dialogue with nearby property owners and institutions that may benefit from transit investments.

Furthermore, it was understood that additional work will be needed in each corridor to more fully define the projects, including alternatives analyses (AA), environmental impact statements (EIS) and station area planning studies.

4. FISCALLY CONSTRAINED PLAN SCENARIO

A financial cash flow model was developed to support development of a fiscally constrained transit element of the plan. The spreadsheet-based model projects the revenues and expenditures of a future regional transportation authority (RTA) charged with building and implementing the regional transit program in Central Indiana. Because the local funding source has not been identified, the financial model was used to evaluate how quickly the priority projects could be build within a general annual funding level established in the CITTF study.

The fiscally constrained plan scenario identifies a representative group of projects that could be implemented by 2035 at a cost of approximately \$15 per household per month in the six counties of Central Indiana in which the scenario provides transit projects. The projects, including fixed guideway projects, BRT corridors, and selected express and local bus routes, are depicted in a system map in Figure 6.

The overall capital cost of the plan is \$2.5 billion (2010 dollars). By 2035, O&M costs would reach \$180 million (2010 dollars), or more than three times IndyGo’s current operating budget. Figure 7 shows how operations are projected to increase as the system is implemented over time. At \$132 per capita, transit operations spending in Indianapolis would reach approximately the level of Salt Lake City or Charlotte today.

The Fiscally Constrained Plan Scenario was endorsed by the MPO policy committee in late 2010. Many factors can change how projects are implemented and phased. This scenario will serve as a guide for future planning activities. The MPO will prepare additional scenarios and incorporate refinements as projects are developed in more detail and specific financial resources are identified.

Figure 6 Fiscally Constrained System Map (through 2035)

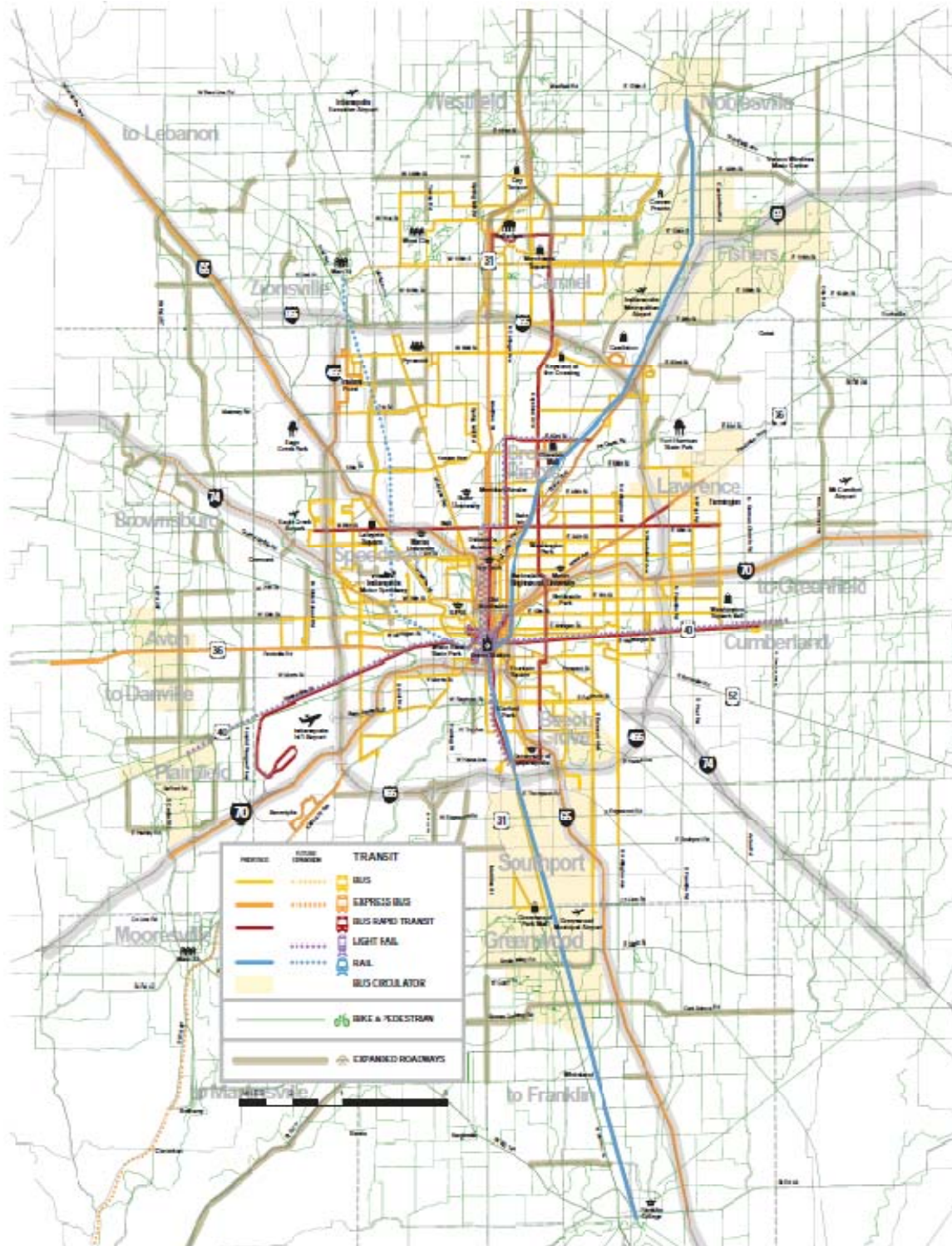
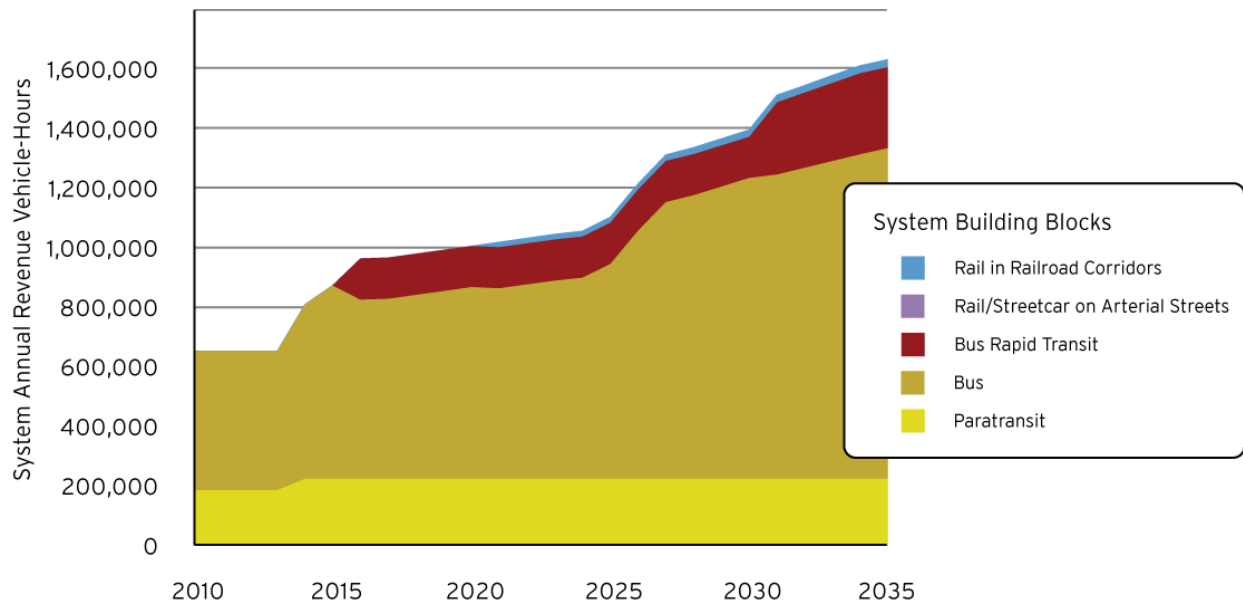


Figure 7 Projected Annual Service Level by Mode



5. IMPLEMENTATION

5.1 Supporting Policy

The vision reflected in the Indy Connect Transit Framework Plan is intended to guide project development and service changes in the context of funding constraints and priority of need. It provides a general roadmap for system investment and project implementation. These changes will need to be accompanied by a range of supporting policies to optimize the return on investment and to fully achieve the vision.

The first policy action in support of the plan was the formal adoption of the framework as a component of the Long Range Transportation Plan by the Policy Committee of the Indianapolis Regional Transportation Council in February 2011. This group is comprised of elected officials and representatives from major transportation agencies and units of government throughout the metropolitan planning area.²

Other supporting policies will be more locally focused. Section 3.5 identified a range of supporting actions that constitute “readiness” with respect to RTA participation, land use, zoning, value capture, and other actions to both support and benefit from regional transit investments. Policy adjustments will be needed to support desirable land use patterns, concentrate growth in infill locations accessible

² It should be noted that this policy action did not include the transit framework as part of the “cost-constrained” plan, due to its reliance on a proposed sales or income tax increase subject to a planned referendum in the Fall of 2012. Following a successful conclusion to the referendum, the MPO intends to formally adopt the fiscally-constrained transit projects into its “cost-constrained” plan, including concomitant air quality conformity processes.

by transit, support economic development and job growth, enhance mobility for the transit-dependent, support ridesharing initiatives, and provide an environment conducive to transit.

The Long Range Transportation Plan provides the essential regional vision. Additional studies will be needed to identify the best opportunities and supporting policies at a corridor and project level.

5.2 Regional Authority

The Central Indiana Regional Transportation Authority (CIRTA) has conducted a study to provide a high-level description of how CIRTA or a successor organization could deliver regional transit services. The study explored a range of issues related to agency mission, membership, and governance. The study resulted in recommendations to sponsors in the Indiana General Assembly of a “CIRTA Restructuring Act” that would create a regional organization focused on the implementation and operation of transit. Key recommended elements of the legislation include:

- Enable funding source – Establish the tax type and rate of a permanent, dedicated transit funding source.
- Restructure board to align contributions, benefits, and representation – Define the size, structure, appointment responsibilities, and terms of the agency governing board.
- Merge IndyGo with CIRTA – Integrate the Indianapolis Public Transportation Corporation (dba IndyGo) with the regional agency.
- Define timeline and process for initial opt-in – The agency is envisioned to be composed of at least two contiguous counties, including Marion, that choose to participate financially.

5.3 On-going Refinement

While the Indy Connect process provided Central Indiana with a realistic vision of what transit could become at an unprecedented level of detail, the Transit Framework Plan is not a fixed image of what transit will be, but rather is a snapshot of the future based on current conditions and expectations. As these change, so should the plan. It should and will be continuously refined as time goes on.