

# NICTI Alternatives Analysis

Briefing Paper

**DRAFT**

**Rockford Bus Service to Chicago Area**

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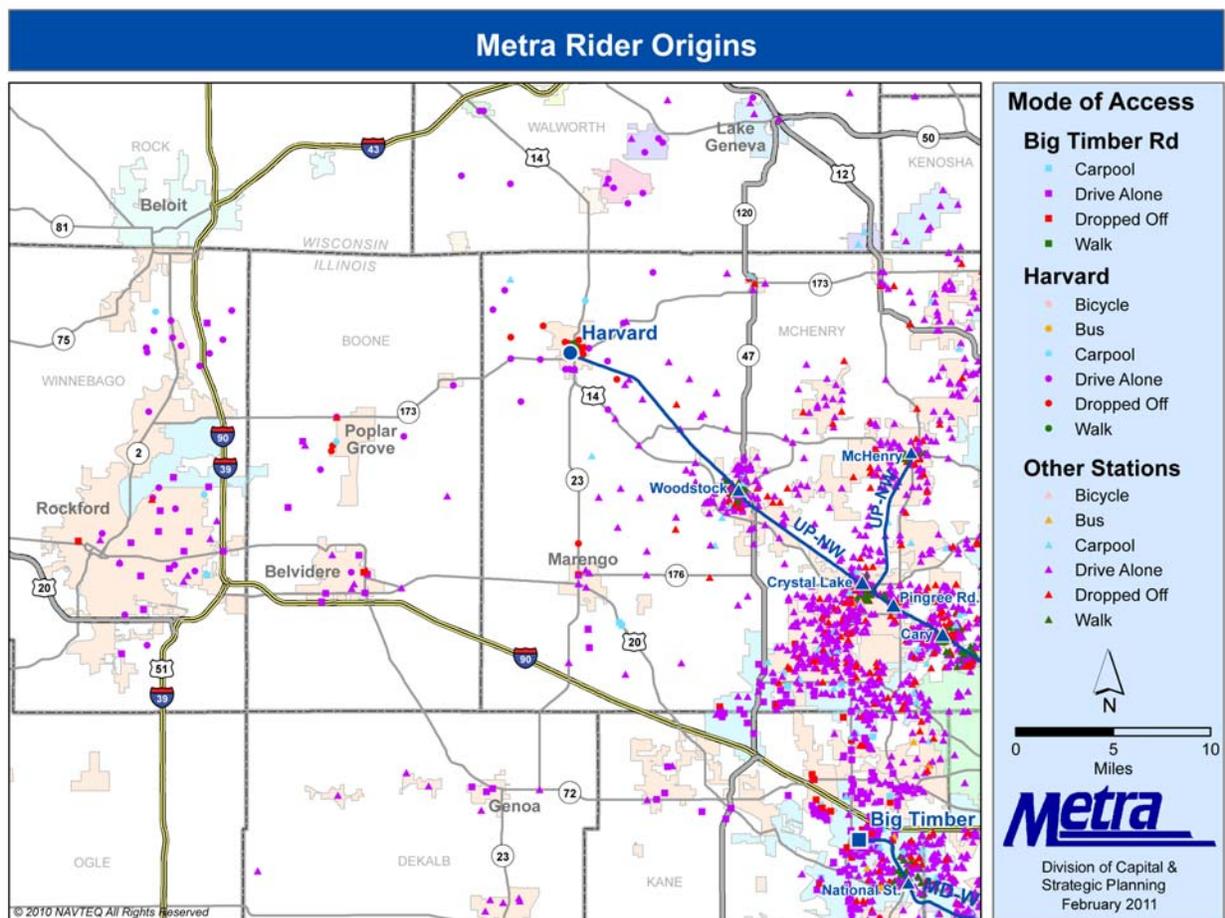
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TranSystems has been asked to investigate concepts for implementation of bus service in the Rockford-Chicago corridor, focused primarily on service for Rockford and Belvidere (the portion outside the RTA service area). In its earlier work for this project (2007-2008) TranSystems investigated a variety of concepts for service in the I-90 Tollway corridor. All involved operation of service exiting at Randall Road to access the Big Timber terminal of the Metra Milwaukee District service, with buses returning to I-90 to continue east to Schaumburg. **Figure 1** shows relative distribution of residences of Metra riders from Big Timber and Harvard stations. Several alternative operating plans were developed, with varying outer terminals, intermediate routings, stops, frequencies, and days, and hours of service. This work has been reviewed to establish a basis for the current effort. A factor that has changed in the meantime is that Coach USA (Van Galder) has substantially increased the level of service on its Madison-Chicago route, now having 9 eastbound and 8 westbound trips operating nonstop between Rockford and Chicago Union Station, 7 days/week.

This effort is focused on a startup service directed at the biggest single market, peak period work trips. The Coach USA service is not timed to serve this market in the AM peak; it does, however, provide service in the PM peak.

**Figure 1: Map of Metra Rider Origins, based on Ticket-by-Mail Customer address**



## Rockford-Belvidere-Big Timber-Schaumburg

Under this proposal, peak period only service would be provided in the I-90 Tollway corridor, initiating in Rockford and terminating in Schaumburg, with stops in Belvidere and Elgin at the Elgin Metra Big Timber Station. Mileage between Rockford and Elgin Metra Big Timber Station is 46 miles and Rockford to Schaumburg is 65 miles. Schedules would be built around connections to/from Metra trains at the Elgin Big Timber station, focused on meeting Metra's four primary express trains in each peak period, providing approximately 30 minute headways.

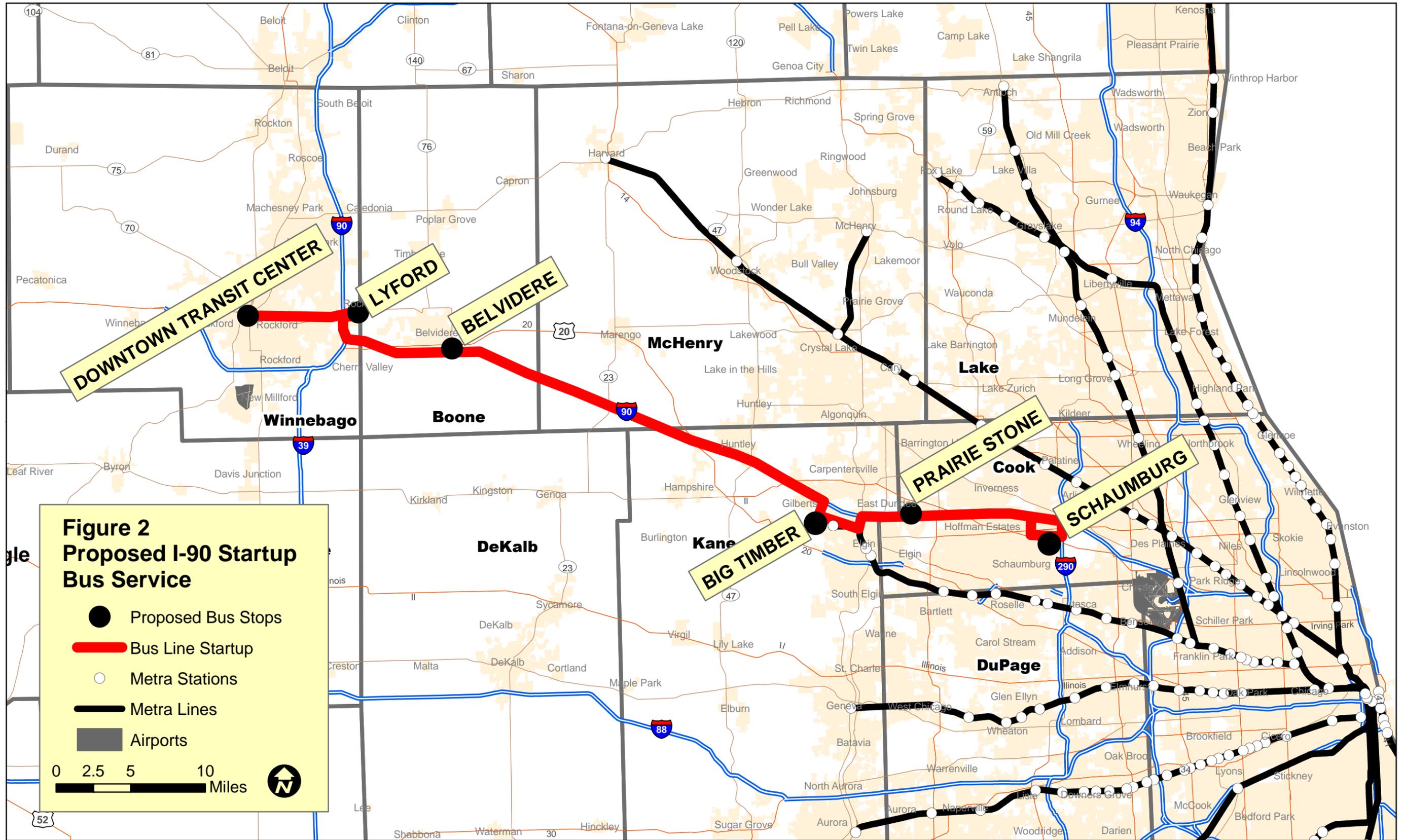
As shown in **Figure 2** it is proposed that:

- Buses originate in Rockford at the RMTD downtown terminal
- Operate east along State Street, making limited stops
- Stop at the RMTD Eastside Terminal/Park & Ride at Lyford Road. (now under construction)
- Travel on the Tollway to another stop at a park & ride lot proposed to be constructed at the Belvidere (Genoa Road) exit (note: use of the Tollway Oasis employee parking lot or Walmart parking lot might be an option as a short term solution if accepted by the owners)
- Continue nonstop to Big Timber Station (with a possible courtesy stop at the new McLean Hospital on Randall Road)
- Continue to Schaumburg, with an intermediate stop at Prairie Stone (this would probably be dependent on the ability to establish a shuttle service to link passengers between a stop at the Tollway exit to Sears and other employment sites within the development)
- After arrival at the Northwest Transportation Center in Schaumburg (readily accessible from the Tollway exit) buses could operate their own distribution/collection loop covering at least part of the Woodfield area.

Exhibits of maps of each proposed station stop are presented in the **Appendix**.

It should be noted that stops are not proposed to serve Marengo or Huntley, major communities along the corridor, for two reasons:

- These communities are in the RTA service area.
- There are concerns regarding the delay of several minutes to through passengers that would be incurred at each location by the circuitous routing required to access stops/park & ride lots off the Tollway.



**Figure 2  
Proposed I-90 Startup  
Bus Service**

- Proposed Bus Stops
- Bus Line Startup
- Metra Stations
- Metra Lines
- Airports

0 2.5 5 10 Miles

▲ North

Buses for the relatively long trips to Big Timber and Schaumburg would need to be suitable for Interstate highway speeds. Buses used in such service elsewhere are typically equipped with such features as reclining seats, reading lights, power outlets at seats and WiFi service. Buses come in various sizes. The bus service could either be operated by Rockford MTD or a private contractor. In either case, the buses themselves could be purchased under Federal and State capital funding programs. Photos of “full size” and smaller “cutaway” (body on chassis) are shown in **Figures 3 and 4**.



**Figure 3: 55 Seat Bus Used in ChicaGo Dash Commuter Service, Operated for City of Valparaiso by a Contractor**



**Figure 4: “Cutaway” Body on Chassis Bus with 24 Seats Used by Danville Mass Transit for Service on Freeway to Champaign**

See **Figure 5** for a proposed schedule of this service.

**Figure 5:**

**Proposed Startup Service: Rockford – Belvidere – Big Timber – Prairie Stone – Schaumburg**

AM Period

Rockford MTD Dtn Term	Lyford Transfer Facility	Belvidere	Big Timber Metra	Prairie Stone	Schaumburg	
					NWTC	Convention Ctr
4:28 AM	4:48	5:02	5:37 (meets 5:45 AM Metra)	5:48	6:01	6:07 AM
4:55 AM	5:15	5:29	6:04 (meets 6:12 AM Metra)	6:15	6:28	6:34 AM
5:34 AM	5:54	6:08	6:43 (meets 6:51 AM Metra)	6:54	7:07	7:13 AM
6:07 AM	6:27	6:41	7:16 (meets 7:24 AM Metra)	7:27	7:40	7:46 AM

20 min      14 min      35 min      11 min      13 min      6 min      Total = 1 hr 39 m

PM Period

Schaumburg		Prairie Stone	Big Timber Metra	Belvidere	Lyford Transfer Facility	Rockford MTD Dtn Term
Convention Ctr	NWTC					
5:16 PM	5:22	5:35	5:46 (meets 5:43 PM Metra)	6:21	6:35	6:55 PM
5:34 PM	5:40	5:53	6:04 (meets 6:01 PM Metra)	6:39	6:53	7:13 PM
6:02 PM	6:08	6:21	6:32 (meets 6:29 PM Metra)	7:07	7:21	7:41 PM
6:40 PM	6:46	6:59	7:10 (meets 7:07 PM Metra)	7:45	7:59	8:19 PM

6 min      13 min      11 min      35 min      14 min      20 min      Total = 1 hr 39 m

As stated at the beginning of the report, Coach USA (Van Galder) has substantially increased the level of service on its Madison-Rockford-Chicago route. It now has 9 eastbound and 8 westbound trips operating nonstop between Rockford and Chicago Union Station, 7 days/week. The principal service that is “missing” is eastbound AM peak period service. A table which shows how the proposed Rockford-Belvidere-Big Timber-Schaumburg service would relate to the Coach USA service has been prepared and is shown in **Figure 6**. The new service being proposed in this report is shown in red.

**Figure 6: Rockford – Chicago: Schedule Combining Existing Coach USA Service and Proposed Bus/Train Service (shown in red)**

Rockford	Chicago
Clock Tower or Lyford	Union Sta.
4:20 AM	5:50 AM
4:48 AM	7:03 AM
5:15 AM	7:36 AM
5:54 AM	8:00 AM
6:27 AM	8:33 AM
7:00 AM	9:30 AM
9:00 AM	11:00 AM
10:30 AM	12:30 PM
12:00 Nn	2:00 PM
1:30 PM	3:30 PM
3:00 PM	5:15 PM
4:30 PM	6:45 PM
6:30 PM	8:30 PM

Chicago	Rockford
Union Sta.	Clock Tower or Lyford
10:30 AM	12:00 Nn
12:35 PM	2:00 PM
2:00 PM	3:30 PM
4:20 PM	6:35 PM
4:50 PM	6:53 PM
5:00 PM	6:45 PM
5:17 PM	7:21 PM
5:46 PM	7:59 PM
6:00 PM	7:45 PM
7:00 PM	8:45 PM
8:30 PM	10:10 PM
10:15 PM	12:10 AM

Morning bus service to Rockford operates hourly from O'Hare  
 Bus service operates same schedule 365 days/year  
 Bus/Train service would only operate Monday-Friday

Off-peak trips on this route are not recommended for this startup phase. Reasonable off-peak Rockford-Chicago service is now provided by Coach USA, with trips during most of the day. This service is significantly faster than the bus/rail combination would be because train travel times are substantially longer in off-peak periods since trains operate as locals (typically making 17 stops between Chicago and Big Timber) and bus travel times are shorter (because the Kennedy Expressway/I-90 is not typically seriously congested during these periods).

There are essentially three options for handling of the buses during the midday period:

- The buses could return to Rockford, without carrying passengers.
- The buses could operate in revenue service in the reverse peak direction, bringing people into Rockford in the AM peak and taking them out in the PM peak. These trips would originate at the Northwest Transportation Center in Schaumburg and travel to Rockford with a stop in Belvidere. However, there would be no reason for most of these trips to detour via Big Timber as Metra has very few reverse peak trips (one AM train and hourly service in the PM).
- The buses could be parked in the Schaumburg area. One bus might need to return to Rockford to return the drivers to their starting point.

Over time, it is anticipated that, if the startup service that has been described is successful in attracting significant ridership, service will become more frequent, be extended to other times of day, and branches might be established to serve offline points. In the long run it would seem logical for a single service network, serving communities along the entire I-90 corridor between Rockford and Chicago. Ideally, these would be served by online stations. This should be coordinated with Pace and Coach USA (which already operate extensive service on the Tollway).

## Rockford-Belvidere-Harvard

The other route that TranSystems was asked to study is feeder service from Rockford and Belvidere to the Harvard station on Metra's UP – Northwest line. There are four peak period Metra express trains that serve that station. However, the heaviest train only leaves Harvard with 68 riders, and based on Metra origin data (ticket-by-mail subscribers), relatively few commuters from Rockford/Belvidere use this station, far fewer than at Big Timber. There is also limited concentration of employment along the corridor served by the UP-Northwest line as compared to the I-90 corridor. It is not recommended at this time to serve this station with express bus service from Rockford. Perhaps the potential for this market should be tested with vanpool service which would travel between employment centers and the Metra Station. Ideally, some form of flexibility could be established which would permit riders to utilize different vanpools to access different train times during the AM and PM peak.

## Coordination with Tollway Operations Plans

The I-90 Northwest Tollway is a very busy highway. Today, relatively little bus service is operated along it. However, there have been proposals, most notably from Pace for significantly increased bus service in the region, and from the ISTHA for supporting infrastructure.

It is anticipated that buses will soon be allowed to operate on the shoulders when there is significant congestion on the Tollway. This practice has been successfully adopted in other metropolitan areas around the country and has recently been approved for use in the Chicago area by IDOT, the ISTHA, and the Regional Transportation Authority. It is understood that the Northwest Tollway repaving project, scheduled for this year, incorporates the work to upgrade the shoulders required to make implementing this practice possible.

In its study of alternatives for adding capacity to the Northwest Tollway, the ISTHA has indicated a desire to add a lane (probably an HOV - High Occupancy Vehicle or HOT - High Occupancy Toll lane) that would most economically be located in the median. HOV vehicle occupancy requirements and/or HOT toll premiums would, presumably, be set high enough that free flow conditions would always prevail in them. The HOV/HOT lanes would be added from the connection of I-90 with the Kennedy Expressway (in Rosemont) to Rockford; this would add a fourth lane east of Elgin and a third lane west of Elgin. The alternatives have also included "online" median bus stations (see **Figures 7 and 8**). If median bus stations were implemented, the Tollway would only need to be widened at station locations, where the HOV/HOT lanes would need to shift out of the median, requiring all lanes to shift outward. Since buses to/from Rockford could always operate with free flow conditions in the HOV/HOT lanes, travel times would effectively be the same at all times, as far east as O'Hare. Buses could be scheduled to serve intermediate online stations (such as Marengo, Huntley, Prairie Stone, or Schaumburg) with negligible lost time, greatly increasing travel options and the competitiveness of bus service. Feeder buses would need to be added to provide local distribution at the intermediate stations.



**Figure 7: Online Expressway Bus Station Rendering**

The best example of an online expressway bus station is one opened recently in Minneapolis on I-35W at 46<sup>th</sup> Street, as shown in this rendering. It introduces the use of bus-activated traffic signals to control the crossover movements required to allow buses to stop with their doors on the station's center island platform.

Creation of a route that combines service between Boone and Winnebago Counties with service in the RTA service area will need to be coordinated with Pace (see **Figure 9**). They already operate substantial service along portions of the Tollway and have plans to expand it. Logically, "online" bus stations in McHenry, Kane, and Cook Counties would be provided by the RTA or Pace. Thus, it is likely that the only location that an online bus station would need to be constructed in the NICTI area would be for Belvidere.



**Figure 8: Online Expressway Bus Station**

Aerial photo of online freeway bus station on I-35W at 46<sup>th</sup> Street Minneapolis, just prior to opening. Vertical circulation (stairs and elevators) are provided to bring passengers to/from connecting buses on the intersecting local street.

The drawing in the **Appendix** shows an online station at a park & ride lot at the Genoa Road Tollway exit. However, the location of an online station does not necessarily need to be at an exit. It could be located at other points where local streets could serve a park & ride lot, with passenger access to the station via a pedestrian bridge over the Tollway. The drawing shows how the same concept as used in Minneapolis<sup>1</sup> could be applied at this location. It appears that at this location it should be possible to add lanes to the Tollway and construct an online station without acquiring additional right-of-way. Further coordination with the Tollway on this issue is recommended.

<sup>1</sup> Appreciation is expressed to Metro Transit for sharing reports, renderings, photographs, a video simulation, and engineering design drawings.



## Capital and Operating Cost Estimates

### Startup Service

It is assumed that startup service would consist of four morning trips from Rockford and Belvidere to Big Timber and Schaumburg with four trips returning in the afternoon. Order of magnitude costs (including contingency) are estimated as follows.

#### Capital costs

Buses:

5 “cutaway” (body on chassis) 24 seat buses @ \$100,000 = \$500,000

Alternate using 53+ seat intercity buses @ \$540,000 = \$2,700,000

Belvidere Park & Ride lot

New construction (50 spaces) = \$200,000

(Note: use of Tollway Oasis employee parking or Walmart parking might be accepted by owners for a limited period of time).

#### Operating costs

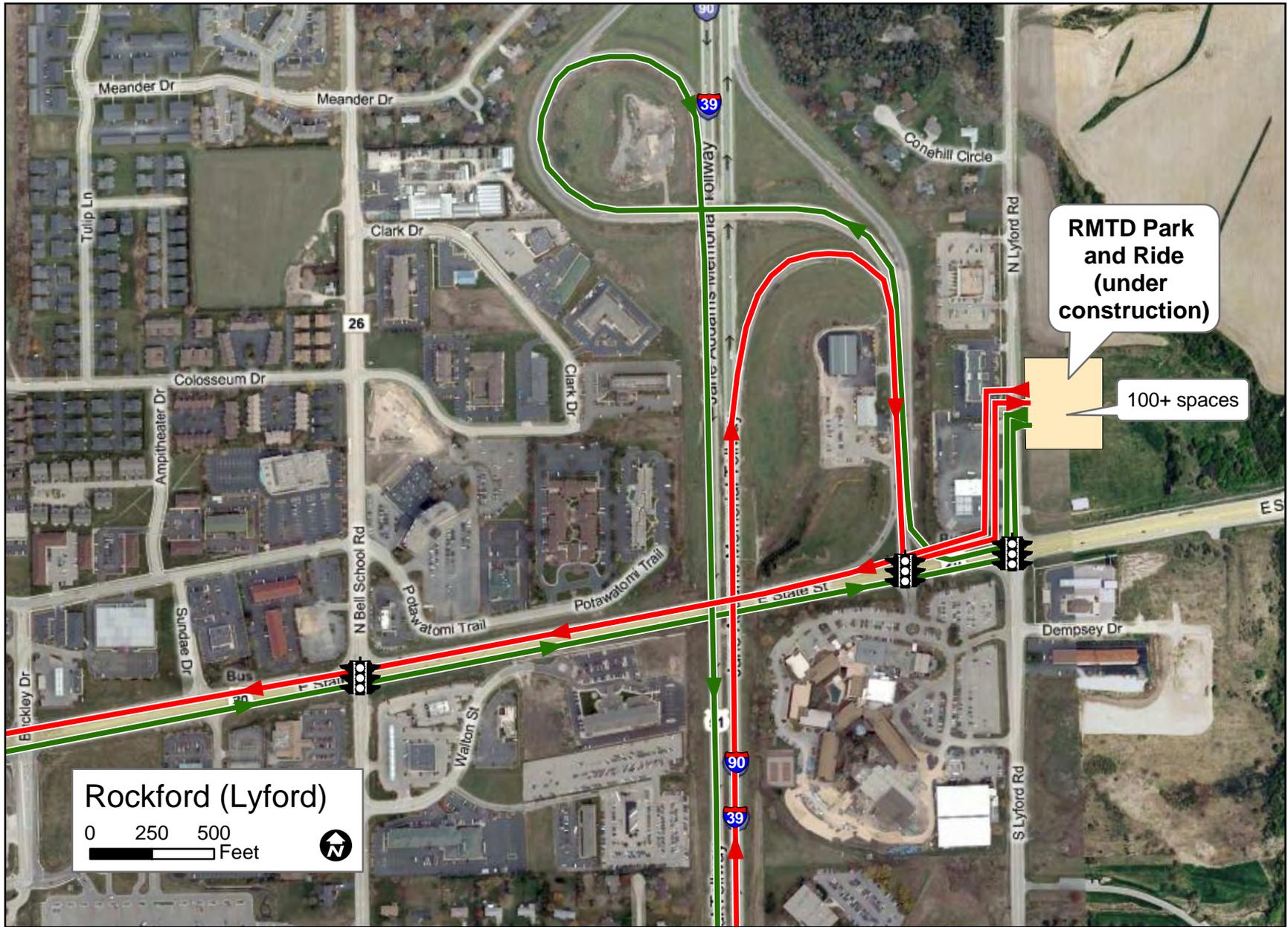
Based on current prices for long distance commuter bus service in the Chicago area, it is estimated that the annual operating costs for the startup service would be on the order of \$800-900,000 per year using a private contractor (\$200,000+ per year per daily round trip, based on a rate of about \$250 per bus hour). Although a ridership study has not been conducted, fares might reasonably be expected offset up to half of that. Costs will be toward the lower end if buses are purchased through a capital grant and provided to the contractor.

### Future Belvidere Online Station

Capital cost is estimated at approximately \$28.6M, including widening of Tollway (sitework \$3.6M, Roadway \$10M, associated reconstruction of two bridges \$7.2M, and station with pedestrian bridges and elevators and pedestrian bridge over Tollway \$7.8M).

### Exhibits

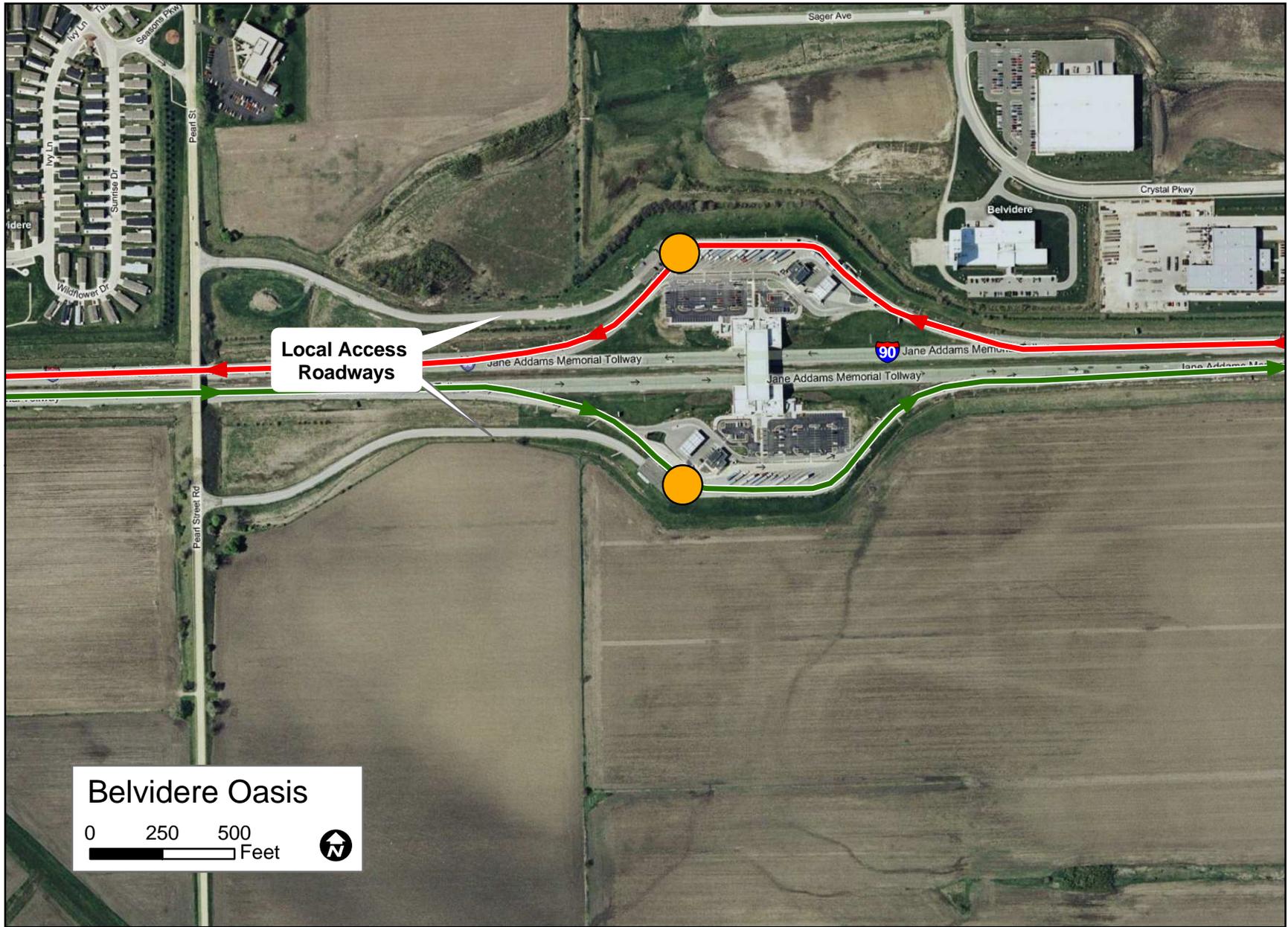
The exhibits on the following pages show proposed bus routings and park & ride locations associated with stops at Rockford Lyford Road, Belvidere (Oasis or Genoa Road), Elgin Big Timber Metra, Prairie Stone, and Schaumburg. A drawing of a proposed online station follows, based on design concepts applied at the I-35W station at 46<sup>th</sup> Street, Minneapolis.



Rockford (Lyford)  
0 250 500  
Feet

RMTD Park and Ride  
(under construction)

100+ spaces



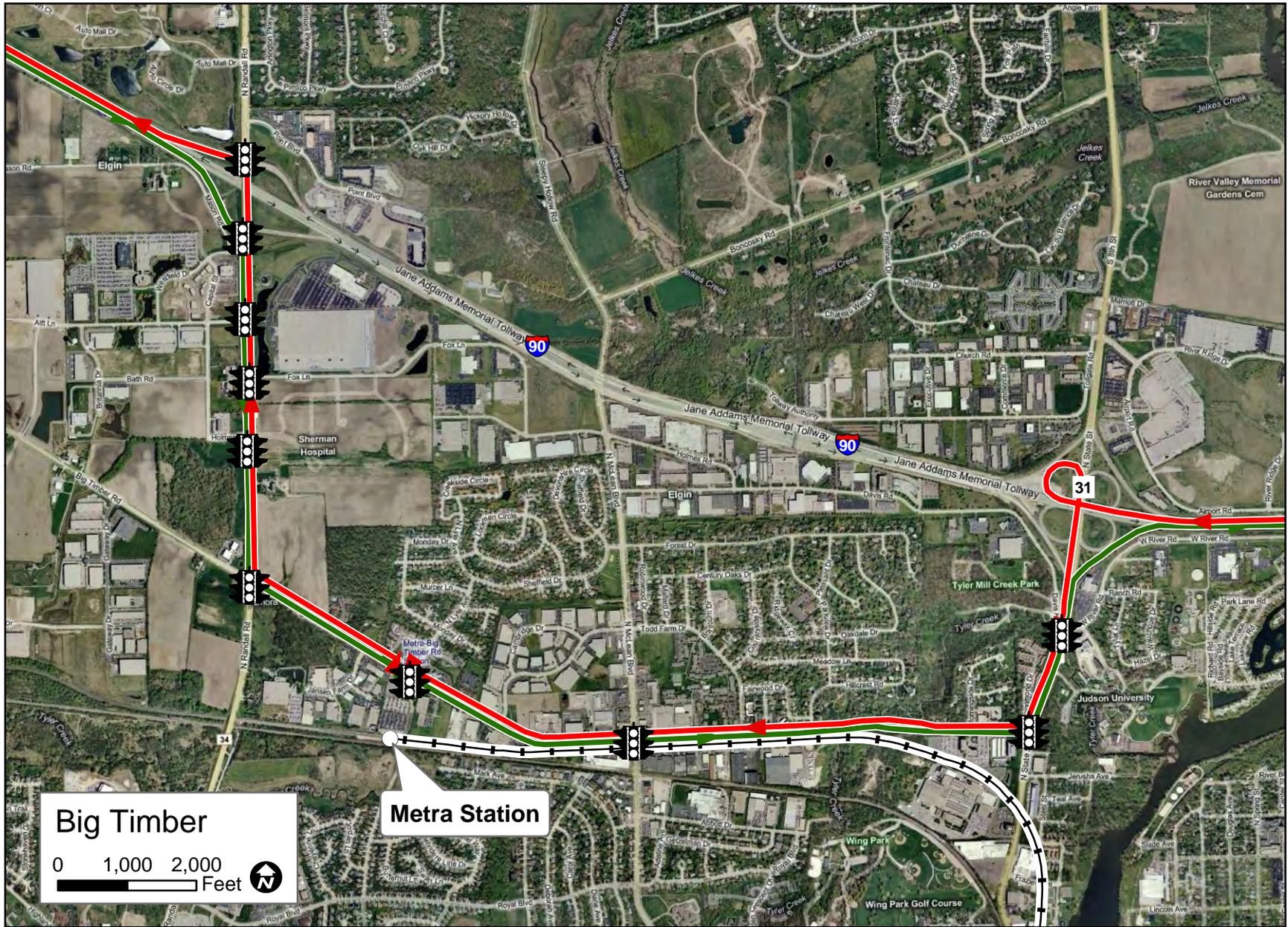
**Local Access Roadways**

**Belvidere Oasis**

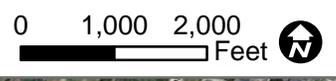
0 250 500  
Feet







# Big Timber



Metra Station



Sears

Future Online Station

Connecting Point for Shuttle Vans

Minor reconstruction required

Connecting Point for Shuttle Vans

Prairie Stone

0 500 1,000 Feet

