



KANE COUNTY

DRAFT

Randall/Orchard BRT Feasibility Study  
Technical Memorandum 1  
Conceptual Station Areas

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**April 2011**

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## Acronyms

ADA	Americans with Disabilities Act
APC	Automatic Passenger Counter
APTA	American Public Transit Association
APTS	Advanced Public Transportation Systems
AoA	Administration on Aging
AT	Assistive Technology
ATP	Accessible Transportation Program
AVL	Automatic Vehicle Location
BRT	Bus Rapid Transit
CAD	Computer Aided Dispatch
CASD	Computer Aided Scheduling and Dispatch
CMAQ	Congestion Mitigation and Air Quality
DMU	Diesel Multiple-Unit Car
DOT	Department of Transportation
DR/DRT	Demand Response Transportation (paratransit)
E&D	Elderly and Disabled
EMS	Emergency Medical Services
FHWA	Federal Highway Administration (also FHA)
FR	Fixed Route
FTA	Federal Transit Administration
GIS	Geographic Information System
GP	General Public (related to FTA 5311 Funds)
GPS	Global Position Systems (typically satellites)
HCT	High Capacity Transit
HOV	High-Occupancy Vehicle
ITP	Individual Trip Planner
ITS	Intelligent Transportation Systems
JARC	Job Access Reverse Commute
LOS	Level of Service
MAAP	Mobility Awareness and Assistance Program
MDT/MDC	Mobile Data Terminal/Mobile Data Computer

NTD	National Transit Database
OCS	Overhead Contact System
O-D	Origin-Destination
PDA	Personal Data Assistant
POP	Proof-of-Payment
ROW	Right-of-Way
RTAP	Regional Transportation Assistance Program Rural Transportation Assistance Program (state and federal programs)
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SOV	Single Occupant Vehicle
SPD	Seniors and People with Disabilities (formerly SDSD)
STP	Surface Transportation Programs
STIP	Surface Transportation Improvement Projects
TAC	Technical Advisory Committee
TDD	Telecommunications Device for the Deaf
TDM	Transportation Demand Management
TMA	Transportation Management Association
TMC	Traffic Management Center
TMV	Transit Maintenance Vehicle
TOD	Transit-Oriented Development
TSM	Transportation System Management
TSP	Transit Signal Priority
TSP	Transportation System Plans
TTY	Text Telephone
TVM	Ticket Vending Machine
VMT	Vehicle Miles of Travel



## Introduction

This memorandum presents an initial set of conceptual Bus Rapid Transit (BRT) station locations and station area developments along the Randall/Orchard Corridor. The goal of this memorandum is to outline the station location and size/nature of development for each site for use in the analysis of overall BRT feasibility and project benefits. It should be emphasized that the purpose of identifying these conceptual station locations and station area development characteristics is to evaluate the long-term feasibility of BRT for the corridor rather than identifying particular stations for future development. Accordingly, if one or more station locations do not prove feasible or lack community support, they could be replaced with alternate locations, provided that the general requirements for BRT are met.

The conceptual station locations were informed by stakeholder input provided at a visioning workshop conducted for this project. Station locations and development potential were refined based on an analysis of developable/re-developable lands, population and employment growth targets and BRT station development principles. To evaluate to what degree these development sites realize the County's long range plan for accommodating growth, the project team developed population and employment targets for the BRT corridor based on the County's vision for growth as described in its 2030 Land Resource Management Plan and 2040 Conceptual Land Use Strategy Report. These plans envision accommodating 50% of growth in the county's Sustainable Urban Area in accordance with the Smart Growth and Livability Principles articulated in the 2040 Land Use Strategy and embrace an overarching theme of fostering "Healthy People, Healthy Living, Healthy Communities."

The results of this memorandum will be used as an input to transportation analysis (modeling) of BRT service, including the need for transit priority treatments along the corridor to allow BRT to provide travel times competitive with the automobile. Competitive travel times will be essential to realizing the potential benefits of BRT, including providing residents with travel time savings and additional mobility options that will reduce vehicle miles traveled (VMT) in the county. Reducing VMT translates into benefits from improvements in air quality and community health, reductions in transportation-related energy usage and emissions, land consumption, and economic development and job creation. The transportation modeling results will be one of the inputs into the quantitative and/or qualitative assessment of these potential benefits that will be performed in a subsequent part of the study.

This memorandum also provides initial estimates of operating costs and capital needs for a BRT alignment serving the conceptual station sites along both a Minimum Operable Segment (MOS)—that provides independent utility and benefit within the corridor—and optional extensions north and south of the MOS, to highlight the nature and costs of various service options. These estimates will be refined following the transportation analysis of BRT service.

## Visioning Workshop Summary

Twenty seven attendees representing study area municipalities, Kane County Board and staff, Pace, Metra, the RTA and CMAP participated in the workshop. Participants looked forward 30 years and discussed the potential roles Bus Rapid Transit (BRT) and transit supportive land uses could have in shaping the corridor while addressing issues ranging from traffic congestion to active/healthy lifestyle choices.

Working in small groups and focusing on one of three segments of the Randall/Orchard Road corridor, participants suggested locations for compact mixed-use development around BRT stations and types of development that could be realized at each.

Workshop participants identified 28 potential station locations, including various options for station area development and route termini, with 21 distinct station locations. These locations and the following characteristics are summarized in Figure 1:

- **Station Location:** primarily on Randall/Orchard and at major east-west connections or key activity centers.
- **Station Type:** including end-of-line termini, stations with station area development, and stop-only locations, i.e., where a stop may be merited due to a major attraction but significant redevelopment may not be possible due to lack of vacant land.
- **Development Area:** ranging from specific suggestions for station area development fitting in or around existing development to general station area development within a half-mile around the preferred station location (Figure 3 on page 8 provides a diagram). A half-mile is generally regarded as the distance most people are willing to walk to high-quality transit service.
- **Density of Development:** with a predominant preference for medium level densities.
- **Development Typology:** with a preference for mixed-use retail development along with some mixed use commercial/employment developments.
- **Connections:** including both nearby activity centers which may merit short-trip shuttles and key destinations which may merit traditional public transit connecting service.

These locations are also illustrated on a map in Figure 2.

**Figure 1 Visioning Workshop Identified Potential Station Locations**

Map ID	Location	Station/Stop <sup>1</sup>	Gross Area <sup>2</sup>	Development Typology	Density	Identified Connections	Notes	Identified by <sup>3</sup>
1	At IL 62	Terminus						N-2
2	I-90 @ Il-47	Terminus		Park-and-Ride				Various
3	At I-90	Station or Terminus	<i>500</i>	Commuter				N-2
4	In front of Sherman Hospital	Stop-only						N-1
5	At Big Timber	Station	<i>500</i>	Destination		Sherman		N-2
6	At Milwaukee District / West Line RR (Randall and Big Timber Road or diversion to station)	Stop-only						N-1
7	At US-20	Station	<i>500</i>	Mixed Use Residential		St. Joseph, ECC		N-2
8	South of US-20	Station	108	Mixed Use Employment (Office and possible Medical)	Medium	ECC		N-1

<sup>1</sup>Indicates if location was identified for a developed station, mid-corridor stop-only or an end-of-line terminus.

<sup>2</sup>Indicates total area of potential station area development in acres as identified by workshop participants. 500 in italics indicates that participants identified a generic half-mile radius station area around a station location. A half-mile is regarded as the distance most people are willing to walk to access high-quality transit service.

<sup>3</sup>Workshop table number that identified location

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Map ID	Location	Station/Stop <sup>1</sup>	Gross Area <sup>2</sup>	Development Typology	Density	Identified Connections	Notes	Identified by <sup>3</sup>
9	At Bowes	Station	<i>500</i>	Mixed Use Residential		ECC		N-2
10	Southwest of Randall & Bowes	Station	69	Mixed Use General	Medium		New Wal-Mart Site	N-1
11	At McDonald (east of Randall)	Station	127	Mixed Use Employment (Office/Retail)	Medium-High		medium-17 units/ac residential and medium to high office/commercial	N-1
12	At McDonald	Station	<i>500</i>	Mixed Use Employment(office)				N-2
13	At Silver Glen	Station	<i>500</i>					N-2
14	At IL-64	Station	<i>500</i>	Mixed Use Retail	Medium			C-1
15	At IL-38	Station	271	Mixed Use Retail	Medium to High	Judicial Center		C-1
16	At IL-38	Station	297	Mixed Use Retail	High			C-2
17	South of Williamsburg (at Delnor)	Station	20	Destination	Medium		Bridge Delnor & Geneva Commons on West side of Randall	C-1
18	0.2 mi north of Keslinger (at Delnor)	Station	166	Destination	Medium			C-2

<sup>1</sup>Indicates if location was identified for a developed station, mid-corridor stop-only or an end-of-line terminus.

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Map ID	Location	Station/Stop <sup>1</sup>	Gross Area <sup>2</sup>	Development Typology	Density	Identified Connections	Notes	Identified by <sup>3</sup>
19	At Fabyan	Station	119	Mixed Use Retail	Medium			S-1
20	At McKee	Station	156	Mixed Use Retail	Medium			C-2
21	At McKee	Station	125	Mixed Use Retail	Medium to High		Mill to Wilson E&W of Randall	C-1
22	At Orchard (northeast of intersection)	Station	105	Destination (Entertainment / Hospitality)	Medium			S-1
23	At Orchard (southwest of intersection)	Station	191	Mixed Use Employment (commercial)	Medium			S-1
24	At Orchard Gateway	Station	762	Mixed Use Employment (Office/Retail)	Medium			S-1
25	At Sullivan	Station	196	Mixed Use Employment (Office/Retail)				S-1
26	Sullivan at Randall	Station	181	Mixed Use Employment (Institutional Retail)			Mathematics & Science Academy	S-1
27	Sullivan at Provena	Station	133	Destination				S-1

<sup>1</sup>Indicates if location was identified for a developed station, mid-corridor stop-only or an end-of-line terminus.

<sup>2</sup>Indicates total area of potential station area development in acres as identified by workshop participants. 500 in italics indicates that participants identified a generic half-mile radius station area around a station location. A half-mile is regarded as the distance most people are willing to walk to access high-quality transit service.

<sup>3</sup>Workshop table number that identified location

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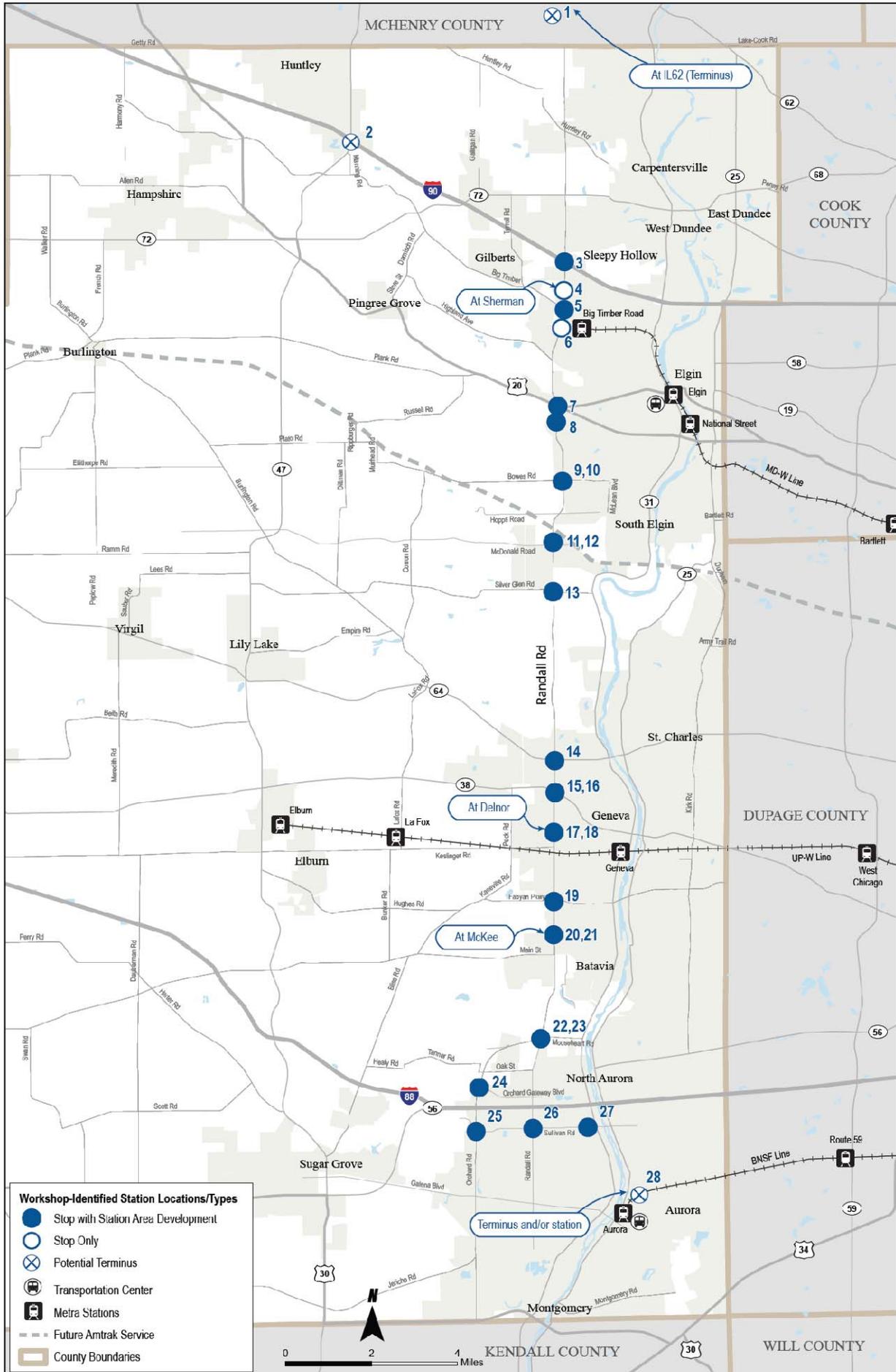
Map ID	Location	Station/Stop <sup>1</sup>	Gross Area <sup>2</sup>	Development Typology	Density	Identified Connections	Notes	Identified by <sup>3</sup>
28	Aurora Transportation Center	Station or Terminus	<i>500</i>	Commuter/P&R	High			S-1

<sup>1</sup>Indicates if location was identified for a developed station, mid-corridor stop-only or an end-of-line terminus.

<sup>2</sup>Indicates total area of potential station area development in acres as identified by workshop participants. 500 in italics indicates that participants identified a generic half-mile radius station area around a station location. A half-mile is regarded as the distance most people are willing to walk to access high-quality transit service.

<sup>3</sup>Workshop table number that identified location

**Figure 2 Workshop-Identified Station Locations and Types**



## Principles and Methodology

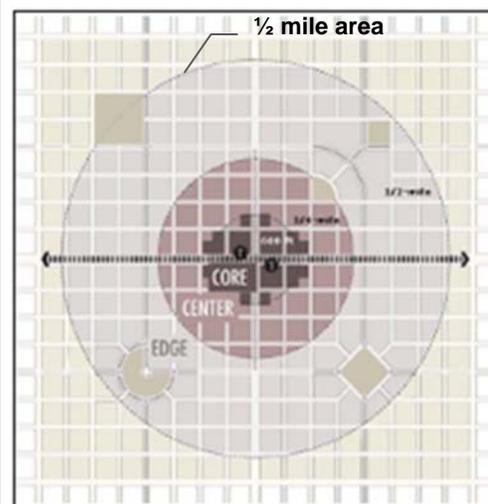
Participant inputs from the workshop were synthesized into a set of conceptual station locations. The station location and development characteristics were chosen to assure: enough capacity to accommodate the identified population and employment growth; and compliance with the BRT design principles and best practices for Transit-Oriented Development (TOD). The BRT design principles were articulated in the BRT Primer developed in the initial phase of this study as four conditions for successful BRT projects, summarized as follows:

1. **Transit-Land Use Connection:** There is a mutually supportive relationship between land use, transit service quality, and transit accessibility. Density is the primary factor in transit ridership. Increases in residential and employment density, with a diversity of land uses and housing types, expand BRT's ridership base and support the local retail market.
2. **Branding and Marketability:** Consumers should perceive BRT as a high-quality service. Vehicles should enhance the service's image and be clearly differentiated from traditional bus service. Station areas should create a distinct sense of place and create a livable community by integrating public space, active retail frontages, and pedestrian amenities.
3. **Multimodal Connectivity around Stations:** Safe and convenient multimodal connections from stations to major activity centers and destinations is a key to increasing ridership and attracting riders from other travel modes. Pedestrian and bicycle connections support internal circulation and access to transit. Efficient, convenient and intermodal connections and transfers to feeder services should be available.
4. **Competitiveness with Automobile Travel:** Travel time is the single most important factor in encouraging ridership among "choice" riders, who have access to an automobile for their trip. BRT stops/stations should be spaced a minimum of a half-mile apart, although stations are typically a mile or more apart. Service design should seek to balance speed to maintain competitive travel times (longer stop spacing) with the maximum distance customers are willing to walk, generally considered to be up to a half-mile for frequent, high-quality service (shorter stop spacing).

Using these conceptual station areas, population and employment potential was assessed. The methodology follows these general steps:

- Estimate potential population and employment that can be accommodated within each station area (illustrated in the diagram at right) including:
  - Estimate the quantity of land available (gross acres) for long-term

**Figure 3 Half-Mile Development Area**



Dallas Area Rapid Transit (DART) targets a 600-foot station core for the highest intensity of development, a 1/4-mile station center for intermediate intensity development, and the 1/2-mile station edge (area) for lower development intensity, but greater than the surrounding community average.

Source: DART TOD Guidelines Handbook, 2008.  
<http://www.dart.org/about/todpolicy.asp>

development/redevelopment within each station area

- Estimate net buildable acres, excluding site area used for transportation right-of-way and other non-building purposes.
- Develop assumptions for development scale and land use mix, for both residential and non-residential uses.
- Estimate the quantity of residential and non-residential development.
- Estimate the number of jobs supported by non-residential uses.
- Compare the estimated population and employment figures to projected growth in Kane County by 2040 and to the population and employment targets for the Randall/Orchard corridor. These figures will be utilized in the next phase of the study to model BRT operating characteristics and system benefits.

## Key Assumptions

Based on industry standards and TOD case studies, the following assumptions were used to determine the development potential at conceptual sites and to evaluate this potential against future population and employment growth projections.

### Net Buildable Area

For each site, the gross area available for development was determined by correlating workshop identified boundaries, natural boundaries, long-term existing developments and other constraining factors. It was assumed that existing residential development and major institutional buildings would not be redeveloped in this time frame and therefore these uses were excluded from the gross area available for development/redevelopment.

Based on an examination of socioeconomic projections for general land use plans and for typical TOD developments, 75% of the gross area was considered available for actual development, i.e., net buildable area. The 25% reduction in the gross area accounts for roads, right-of-way (e.g., on-street parking), utility easements, station platforms and other infrastructure, etc. Five percent of the net buildable area was assumed to be used for public uses and open space. The amount of space required for surface parking and additional public and open spaces is taken into account separately in the average residential densities and the floor area ratio (FAR) for non-residential development.

### Scale of Development

To determine the number of residents and/or jobs accommodated at each site, the net developable area was programmed for discrete uses. Residential development is characterized by the number of dwelling units per acre, as shown in Figure 4. The mid-level density of 14 dwelling units per acre represents the rough minimum average density needed to support BRT service along a corridor. At the low end, 7 dwelling units per acre is comparatively high for Kane County, but is a minimum level of density to support basic transit service and may be appropriate as a transition between new, higher-density development and existing residential development along the corridor. Some development at higher densities will be appropriate around some stations and will be necessary to achieve the average density needed to support BRT along the

corridor and accommodate the County's desired share of projected growth within the corridor. The images in Figure 4 provide examples of development at each of these density levels.

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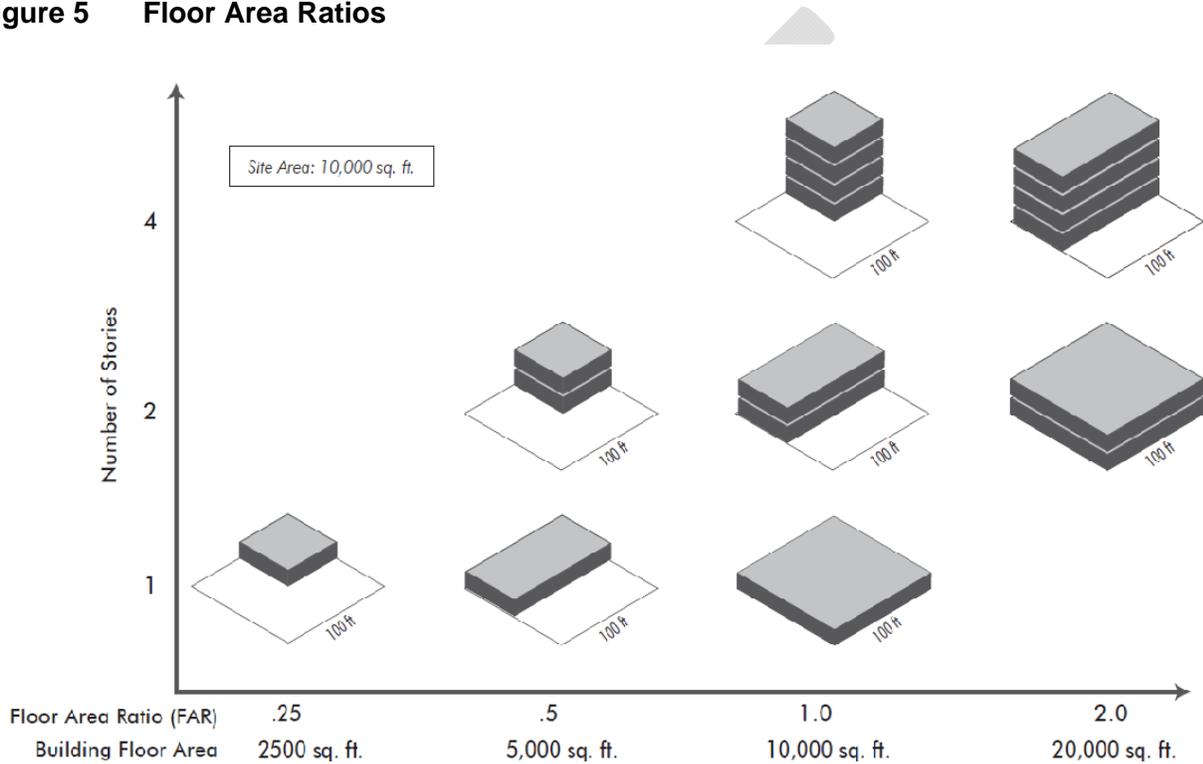
Figure 4 Transit Oriented Development Residential Density Examples

Intensity of Development	Dwelling Units per Acre	Out-of-County Examples		Kane County Examples
		Birds Eye View	Zoomed In View	
Medium-Low	6-10	 <p>Longmont, CO. 8.8 DU/Acre</p>		 <p>South Elgin, 8 DU / Acre</p>
Medium-High	12-16	 <p>Shaker Heights, OH. 15.2 DU/Acre (219 units, 14.4 acres)</p>		 <p>Batavia, 14 DU / Acre</p>
High	18-22	 <p>San Jose, CA. 21.0 DU/Acre (98 Units, 4.6 acres)</p>		 <p>Elgin, 19 DU / Acre</p>

Sources: Out-of-county examples from Lincoln Institute of Land Policy, Visualizing Density, <http://www.lincolnst.edu/subcenters/visualizing-density/gallery/index.aspx>. Kane County examples from Kane County, The Suburban Challenge: Making the Land Use/ Transportation Connection, Presentation to the Congress for New Urbanism Illinois State Conference, 9/28/2007.

The scale of non-residential development is represented using floor area ratios (FAR)—the ratio of total building floor area to the net buildable site area. Figure 5 provides examples of how a 10,000 square foot site could be developed with alternative building footprints at different FARs. The un-built portions of a site may be used for parking or public space. Figure 6 lists a range of floor area ratios for different land use categories, including both values typical of suburban developments and assumptions for higher FARs. The “low-medium” values are applied for most uses when assessing initial development potential. The employee capacity of a site is then determined based on the floor space needed per employee, listed in Figure 7.

**Figure 5 Floor Area Ratios**



**Figure 6 Non-Residential Floor Area Ratios (FAR)**

Use	Intensity of Development		
	Typical Suburban	Low-Medium	Medium-High
Office	0.5	0.75	1.5
Industrial	0.25	0.35	0.6
Medical or Education	0.5	0.75	1.5
Retail / Services	0.25	0.35	0.7

**Figure 7 Employment Land Use Requirements**

<b>Commercial Use</b>	<b>Square Feet per Worker</b>
Office	525
Health Care	540
Education	854
Service	1,160
Retail	1,250
Industrial	1,700

Source: Department of Energy, Energy Information Administration, Commercial Buildings Energy Consumption Survey (CBECS), 2003 (Released 2006), Table B1. Values are median, which is slightly more conservative than the mean value.

## Station Typology

Each conceptual station area was assigned one of the station types identified in Figure 8. Each station area was then assigned the specified mix of land use types and intensities of development detailed in Figure 9. Although not listed in the Station Typology summary table, a FAR from Figure 6 above was assigned for each non-residential use at each station to approximate intensity of development, measured in total building area. Most FARs were based on the “low-medium” category, however a “medium-high” FAR was applied for one or more uses at stations identified for “medium to high” density. For each station type, it is assumed that 5% of net buildable land would be used for public uses, e.g., plazas or open space. However some station types, such as “Destination,” would likely provide public spaces as part of site development. For example, where a higher FAR is applied and higher density development occurs, the expectation is that part of the buildable site area would be used for this purpose.

**Figure 8 Station Types and Characteristics**

<b>Station Type</b>	<b>Mixed Use Employment</b>	<b>Mixed Use Retail</b>	<b>Mixed Use Residential</b>	<b>Destination</b>
<b>Characteristics</b>	<ul style="list-style-type: none"> <li>• Able to sustain job growth</li> <li>• Provides a regional employment base or draw</li> <li>• High transit connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Able to sustain housing growth</li> <li>• Smaller centers without regional destinations</li> <li>• Moderate transit connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Able to sustain housing growth</li> <li>• Smaller centers without regional destinations</li> <li>• Moderate transit connectivity</li> </ul>	<ul style="list-style-type: none"> <li>• Anchored by major destination</li> <li>• Provides a regional employment base or draw</li> <li>• High transit connectivity</li> </ul>
<b>Commercial Uses</b>	Small and large scale office, light manufacturing	Some small scale office	Some small scale office	Some small scale office
<b>Residential Uses</b>	Compact development (condos and apartments) and townhomes	Compact development (condos and apartments), townhomes and single family	Compact development (condos and apartments), townhomes	Compact development (condos and apartments)
<b>Retail Uses</b>	Neighborhood markets, convenience	Neighborhood markets, convenience	Regional retailers, neighborhood markets, convenience	Regional retailers, neighborhood markets, convenience
<b>Employment Centers</b>	Job clusters and individual businesses	Individual businesses	Individual businesses	Job clusters and individual businesses
<b>Institutional Uses</b>	Neighborhood libraries, post offices and clinics	Elementary through high schools, neighborhood libraries, post offices and clinics	Neighborhood libraries, post offices and clinics	Government, hospitals, universities/colleges, libraries, post offices
<b>Entertainment Uses</b>	Small venues	Small venues	Small venues	Large and small venues

**Figure 9 Station Typology and Land Use Mix**

	Typology #	1	2	3	4	5	6	7
	Land Use	Mixed Use Employment (Office / Industrial)	Mixed Use Employment (Office / Institutional)	Mixed Use Employment (Office / Retail)	Mixed Use Employment (Institutional / Retail)	Mixed Use Retail	Mixed Use Residential	Destination (Entertainment / Hospitality)
Non-Residential	Office	20%	15%	25%		15%	10%	
	Industrial	20%						
	Medical or Education		20%		20%			
	Retail / Services	10%	15%	20%	25%	30%	15%	40%
	TOTAL	50%	50%	45%	45%	45%	25%	40%
Residential	High	15%	15%	15%	15%	20%	30%	25%
	Medium-High	25%	20%	25%	30%	25%	35%	30%
	Medium-Low	5%	10%	10%	5%	5%	5%	0%
	TOTAL	45%	45%	50%	50%	50%	70%	55%
Public Space		5%	5%	5%	5%	5%	5%	5%
OVERALL TOTAL		100%	100%	100%	100%	100%	100%	100%

Note: Values represent the percent of net buildable area dedicated to a particular land use.

## Population and Employment Targets

Figure 10 identifies a set of demographic targets for use in evaluating the aggregated population and employment capacities from the various station area developments. The targets are based on the Kane County 2040 growth projections and estimated allocations to Randall/Orchard Corridor. A key assumption for this analysis is that 40% of population and employment growth projected to occur within the “Sustainable Urban Area” is targeted for the Randall/Orchard corridor.

**Figure 10 BRT Corridor Population and Employment Targets**

Target Area	Population Growth	Households Growth	Employment Growth	Source/Factor
County wide	269,379	94,383	143,947	Kane County 2040 Conceptual Land Use Strategy, Chicago Metropolitan Agency for Planning, 2010
Sustainable Urban Area	134,700	47,200	72,000	50% of the county's forecasted population growth should occur in the Sustainable Urban Area.  2030 Kane County Land Resource Management Plan (2004)
Randall/Orchard Corridor	53,900	18,900	28,800	40% of Sustainable Urban Area growth

## Conceptual Station Areas

The project team evaluated the 28 different potential station locations/station areas as suggested by the Visioning Workshop attendees. Based upon this evaluation and consideration that stations are typically located at a minimum of 1 mile intervals along successful BRT corridors, the project team defined a set of 13 station locations and/or station area developments as the minimum operable segment (MOS). For transit projects, the MOS is considered to have independent utility and logical termini, meaning that it is able to provide substantial transportation benefit as a complete route. Potential future extensions could be added, providing additional benefits as appropriate. This MOS also identifies potential station locations along such extensions.

Figure 11 provides a description of the stations along the MOS as well as on potential extensions beyond it, including:

- Map identifier, corresponding to a map of the stations provided in Figure 12.
- Relative location of stop.
- Gross and developable area in acres. As described previously, gross area includes existing commercial buildings, parking, and undeveloped land, but excludes existing residential development and existing major institutional buildings.
- Development typology, corresponding to the types provided in Figure 9 with programmed uses.
- Density, describing the general intensity of development programmed at the station.
- Primary connections/links.

**Figure 11 Conceptual MOS Stations and Potential Stations Outside MOS**

Map ID	Station Spacing (Miles) <sup>1</sup>	Location	Gross Area (Acres) <sup>2</sup>	Net Buildable Area (Acres)	Station Development Typology	Density	Connections
A	-	IL 72 to I-90 west of Randall	500	375	1: Mixed Use Employment (Office/Industrial)	Medium to High	
B	2.4	Randall at Big Timber Road	150	113	2: Mixed Use Employment (Office/Medical)	Medium to High	Sherman Hospital, Big Timber Metra Station
C	2.7	Randall south of U.S. 20	150	113	6: Mixed Use Residential	Medium to High	Provena St. Joseph Hospital, Elgin C.C.
D	1.6	Randall at Bowes Road	110	83	5: Mixed Use Retail	Medium	
E	1.3	Randall north of McDonald Road	200	150	3: Mixed Use Employment (Office / Retail)	Medium	Future Amtrak Station
F	5.3	Randall at IL 64	140	105	3: Mixed Use Employment (Office / Retail)	Medium	
G	0.7	Randall at IL 38	300	225	5: Mixed Use Retail	Medium to High	Judicial Center
H	1.3	Randall at Keslinger Road	135	101	4: Mixed Use Employment (Institutional / Retail) (Destination)	Medium to High	Geneva Metra, Delnor Hospital
I	1.3	Randall at Fabyan Parkway	180	135	5: Mixed Use Retail	Medium	
J	1.3	Randall at Main Street (Batavia)	180	135	7: Destination (Entertainment/Hospitality)	Medium	
K	2.0	Orchard/Randall at Mooseheart Road	220	165	3/7: Mixed Use Employment / Destination (Entertainment/Hospitality)	Medium to High	
L	2.0	Orchard at I-88 (North) / Orchard Gateway Blvd.	470	353	3: Mixed Use Employment (Office / Retail)	Medium	
M	1.0	Orchard at I-88 (South) / Sullivan Road	175	131	3: Mixed Use Employment (Office / Retail)	Medium	
<b>Additional Stations and Potential Terminus Locations Outside MOS</b>							
N	1.4	Sullivan Road at Randall (Math & Science Academy)	181	131	4: Mixed Use Employment (Institutional / Retail)	Medium	
O	1.3	Sullivan Road at Provena Mercy Medical Center	133	75	2: Mixed Use Employment (Institutional)	Medium	
P	2.2	Aurora Transportation Center (ATC)			N/A	N/A	Aurora Metra and Pace
AA	6.7 (rel. to A)	Carpentersville (IL 25)			N/A	N/A	
AB	6.9 (rel. to A)	IL 47 and I-90			N/A	N/A	
AC	6.3 (rel. to A)	IL 62 and Randall Road			N/A	N/A	

Notes: (1) Station spacing is calculated between the listed station and the "upstream" station (to the north), with the exception of AA, AB, and AC off of the MOS, where station spacing is relative to station A. (2) Station area development is not assumed at the four potential locations most distant from the north and south endpoints of the MOS (i.e., P, AA, AB, and AC), however this is not intended to imply that population and employment growth would not occur at these potential locations. (3) Gross areas are based on identified vacant/redevelopable land, within a half-mile radius of the station. A half-mile is generally accepted as the distance most people will walk to high quality transit.

**Figure 11 Conceptual Stations**



## Minimum Operable Segment Stations

As discussed previously, nearly 40% of the total projected population and employment growth within the Sustainable Growth Area through 2040 is targeted for the Randall/Orchard corridor—nearly 19,000 households (about 55,000 people) and 29,000 jobs. Figure 13 lists the estimated total households and jobs that can be accommodated at stations on the MOS compared to the growth targeted for the corridor. Based on the assumed land uses, over 17,500 households (about 51,000 people) and over 41,000 jobs could be accommodated in the assumed station areas. This level of development accounts for 93% of targeted residential growth and 143% of targeted employment growth targeted for the corridor. The employment capacity estimated in this scenario exceeds targeted growth because jobs generated by existing land uses would be replaced by new land uses assumed under the BRT development scenario. As previously noted, no existing residential uses were included in the BRT development scenario, therefore all residential growth represents “new” households/population.

**Figure 13 Total Demographics at Stations on Minimum Operable Segment**

	Population	Households	Total Jobs	Jobs by Sector				
				Office	Industrial	Hospital	Retail	Services
<b>Targeted Growth</b>	55,261	18,880	28,790					
<b>Demographic Totals</b>	51,266	17,515	41,226	27,128	673	5,173	3,972	4,281
<b>Percent of Total Employment*</b>				66%	2%	13%	10%	10%
<b>Percent of Corridor Targeted Growth</b>	93%	93%	143%					

\* Total exceeds 100% due to rounding.

Figure 14 provides a station-by-station breakdown of demographics for the MOS.

**Figure 14 Demographics by Station on MOS**

				Residential								Non-Residential									
				Net Acres by Intensity per Acre Total Pop. & HH, Pop & HH Density, and % by Station								Retail / Services				Commercial / Institutional				Total Jobs and % by Station	
Map ID	Location	Typology	Net Acres	21 DU	14 DU	7 DU	Total Pop.	Pop / Acre	Total HH	HH / Acre	% of HH	Net Acres	Avg. FAR	Jobs	Jobs/ Acre	Net Acres	Avg. FAR	Jobs	Jobs/ Acre	Total Jobs	% of Jobs
A	IL 72 to I-90	1/Empl	375	56	94	19	7,683	46	2,625	15.6	15%	38	0.35	475	12.7	150	0.93	10,007	66.7	10,482	25%
B	Big Timber Road	2/Empl	113	17	28	11	2,420	43	827	14.7	5%	11	0.35	143	12.7	39	1.18	3,773	95.8	3,915	9%
C	South of U.S. 20	6/Res	113	34	39	6	3,803	48	1,299	16.5	7%	17	0.70	428	25.3	11	0.75	700	62.2	1,128	3%
D	Bowes Road	5/Ret	83	17	21	4	1,944	47	664	16.1	4%	25	0.70	627	25.3	12	0.75	770	62.2	1,397	3%
E	N. of McDonald Road	3/ Empl	150	30	53	8	4,149	46	1,418	15.8	8%	23	0.00	285	12.7	30	0.00	1,867	62.2	2,152	5%
F	IL 64	3/ Empl	105	11	37	16	2,474	39	845	13.4	5%	21	0.35	266	12.7	16	0.75	980	62.2	1,246	3%
G	IL 38	5/Ret	225	45	56	11	5,301	47	1,811	16.1	10%	68	0.70	1,710	25.3	34	0.75	2,100	62.2	3,811	9%
H	Keslinger Road	4/Dest	101	15	30	5	2,282	45	780	15.4	4%	25	0.70	641	25.3	20	1.50	2,450	121.0	3,092	7%
I	Fabyan Parkway	5/Ret	135	27	34	7	3,181	47	1,087	16.1	6%	41	0.35	513	12.7	20	0.75	1,260	62.2	1,773	4%
J	Main Street	7/Dest	135	34	41	0	3,734	50	1,276	17.2	7%	54	0.35	684	12.7	0	N/A	0		684	2%
K	Mooseheart Road	3/7 Empl/Dest	165	33	41	8	3,888	47	1,328	16.1	8%	50	0.70	1,254	25.3	25	0.75	1,540	62.2	2,794	7%
L	I-88 (North)	3/Empl	353	53	88	35	7,583	43	2,591	14.7	15%	71	0.35	893	12.7	88	0.75	5,484	62.2	6,377	15%
M	I-88 (South) / Sullivan	3/Empl	131	20	33	13	2,824	43	965	14.7	6%	26	0.35	333	12.7	33	0.75	2,042	62.2	2,374	6%
<b>TOTALS</b>			<b>2,183</b>	<b>390</b>	<b>594</b>	<b>143</b>	<b>51,266</b>	<b>45.5</b>	<b>17,515</b>	<b>15.5</b>	<b>100%</b>	<b>467</b>	<b>-</b>	<b>8,253</b>	<b>17.7</b>	<b>479</b>	<b>-</b>	<b>32,973</b>	<b>68.9</b>	<b>41,226</b>	<b>100%</b>

## Potential Extension Stations

Figure 15 lists the estimated total households and jobs that can be accommodated if potential stations are developed outside of the MOS. Overall, over 17,000 households, comprising more than 55,000 people, and over 41,000 jobs can be accommodated. This level of development accounts for 101% of household growth and 154% of employment growth targeted for the corridor.

**Figure 15 Total Demographics including Stations beyond Minimum Operable Segment**

	Population	Households	Total Jobs	Jobs by Sector					
				Office	Industrial	Hospital	School <sup>1</sup>	Retail	Services
<b>Targeted Growth</b>	55,261	18,880	28,790						
<b>Demographics at non-MOS Stations</b>	4,418	1,509	3,170	700	0	908	1,004	269	290
<b>Total Demographics (MOS and non-MOS)</b>	55,684	19,025	44,396	27,828	673	6,080	1,004	4,241	4,570
<b>Percent of Total Employment</b>				63%	2%	14%	2%	10%	10%
<b>Percent of Corridor Targeted Growth</b>	101%	101%	154%						

Notes: (1) School jobs are at the Math and Science Academy station location (N).

Figure 16 provides a breakdown of demographics for the stations outside the MOS and lists the total demographics for MOS and non-MOS stations.

**Figure 16 Demographic Breakdown for Potential Extension Stations outside MOS**

Map ID	Location	Typology	Net Acres	Residential								Non-Residential									
				Net Acres by Intensity per Acre			Total HH, HH Density, and % by Station					Retail / Services			Commercial / Institutional				Total Jobs and % by Station		
				21 DU	14 DU	7 DU	Total Pop.	Pop/ Acre	Total HH	HH / Acre	% of HH	Net Acres	Avg. FAR	Jobs	Jobs / Acre	Net Acres	Avg. FAR	Jobs	Jobs / Acre	Total Jobs	% of Jobs
N	Sullivan Road at Randall (Math & Science Academy)	4/Empl	131	20	39	7	2,958	45	1,011	15.4	5%	33	0.35	416	12.7	26	0.75	1,004	38.3	1,420	3%
O	Sullivan Road at Provena Mercy Medical Center	2/Empl	75	11	15	8	1,460	43	499	14.8	3%	11	0.35	143	12.7	26	0.75	1,608	61.2	1,750	4%
P	Aurora Transportation Center (ATC)	N/A																			
AA	Carpentersville (IL 25)	N/A																			
AB	IL 47 and I-90	N/A																			
AC	IL 62 and Randall (McHenry County)	N/A																			
<b>TOTAL FOR STATIONS OUTSIDE MOS</b>			206	31	54	14	4,418	44.5	1,509	15.2	8%	44	-	558	12.7	53	-	2,612	49.7	3,170	7%
<b>MOS + OUTSIDE MOS</b>			2,389	421	649	157	55,684	45.4	19,025	15.5		512	-	8,811	17.2	531	-	35,585	67.0	44,396	

**Note:** Station area development is not assumed at the four potential locations most distant from the north and south endpoints of the MOS (i.e., P, AA, AB, and AC), however this is not intended to imply that population and employment growth would not occur at these potential locations.

## Potential Extension Costs

To evaluate the BRT operations impact of extending beyond the MOS, this section provides some preliminary, order of magnitude operating cost estimates for operating BRT in the Randall/Orchard corridor and along some potential extensions. The operating cost estimates shown in Figure 17 are based on the number of vehicles required to operate the BRT service given the following assumptions<sup>1</sup>:

- 15-minute frequency of service (10-minute for weekday peak hours).
- 17-hour span of service (hours of operation), 7 days a week.
- Operating cost of \$100 per service hour (per Pace 2009 operations). As noted, these assumptions reflect only current conditions, and do not include future operating conditions, which will be determined in a subsequent phase of this study.
- Current travel speeds without any transit priority treatments. This is a preliminary assumption that will be refined after initial transportation modeling and analysis of the need for priority treatments at locations along the corridor.

The number of peak vehicles required to provide service for the MOS and other potential alignment alternatives is listed in the table, including spare vehicles. With a cost per vehicle of approximately \$750,000 to \$1 million, the number of vehicles is a major component of capital costs. Capital costs will be estimated in a later phase of this study, after modeling of traffic conditions and analysis of roadway improvements that would improve transit operating speed and corridor travel time. A revised estimate of operating costs will also be calculated.

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<sup>1</sup> This cost analysis shows the impact of serving stations outside of the MOS. These assumptions define a BRT system operating under current conditions, not the conditions that will be determined during subsequent phases of this study.

**Figure 17 Potential Extension Operating Costs**

Potential Alignment Alternative	Annual Operating Costs	Incremental Annual Operating Costs Relative to MOS	Peak Vehicle Requirements
MOS (North of I-90 to Sullivan)	\$6,415,000	N/A	20
North of I-90 to Sullivan and Provena Mercy	\$6,953,000	\$538,000	22
North of I-90 to ATC	\$8,012,000	\$1,697,000	24
Carpentersville to Sullivan	\$8,112,000	\$1,697,000	26
Carpentersville to Provena Mercy	\$8,733,000	\$2,756,000	27
Carpentersville to ATC	\$9,271,000	\$3,577,000	29
I-90 & IL 47 to Sullivan	\$7,574,000	\$1,159,000	23
I-90 & IL 47 to Provena Mercy	\$8,112,000	\$1,597,000	26
I-90 & IL 47 to ATC	\$9,171,000	\$2,756,000	28
IL 62 to Sullivan	\$8,012,000	\$1,597,000	24
IL 62 to Provena Mercy	\$8,733,000	\$2,318,000	27
IL 62 to ATC	\$9,892,000	\$3,477,000	30

# APPENDIX A

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## GLOSSARY



KANE COUNTY  
RANDALL/ORCHARD BRT FEASIBILITY STUDY

# APPENDIX A: GLOSSARY

<b>Accessibility</b>	The extent to which facilities, including transit vehicles, are barrier-free and can be used by people who have disabilities, including wheelchair users.
<b>Accessible Vehicle</b>	Public transportation revenue vehicles which do not restrict access, are usable, and provide allocated space and/or priority seating for individuals who use wheelchairs.
<b>Administrative assistance</b>	Funding that supports the administrative costs related to a program activity, such as office expenses, insurance, legal expenses, bookkeeping, and administrative staff expenses.
<b>ADA</b>	Americans with Disabilities Act: Passed by the Congress in 1990, this act mandates equal opportunities for persons with disabilities in the areas of employment, transportation, communications and public accommodations. Under this Act, most transportation providers are obliged to purchase lift-equipped vehicles for their fixed-route services and must assure system-wide accessibility of their demand-responsive services to persons with disabilities. Public transit providers also must supplement their fixed-route services with paratransit services for those persons unable to use fixed-route service because of their disability.
<b>ADA Eligible</b>	ADA Eligible refers to eligibility for complementary fixed route paratransit. Individuals who qualify must be unable to use fixed route due to a disability.
<b>AoA</b>	Administration on Aging. The agency within the U.S. Department of Health and Human Services that oversees the implementation of the Older Americans Act, including senior nutrition programs, senior centers and supportive services for elders.
<b>Ad-hoc Trips</b>	The total number of trip requests received by an organization that go beyond the organization's normal transportation program design and fulfilled by a different agency, company, or organization (i.e., by a private taxi service).
<b>Advanced Public Transportation Systems</b>	Collection of technologies to increase efficiency of public transportation systems and offer users greater access to information on system operation. This is a subset of Intelligent Transportation Systems.
<b>Advanced Traveler Information Systems</b>	Technologies that provide travelers and transportation professionals with the information they need to make decisions, from daily individual travel decisions to larger-scale decisions that affect the entire system, such as those concerning incident management.
<b>Alight</b>	To get off or out of a transportation vehicle.
<b>Alternative Fuel</b>	A non-petroleum fuel with lower pollution than traditional diesel; includes electricity, alcohol fuels, mineral fuels, biofuels, methanol, propane, hydrogen, compressed and liquefied natural gas.
<b>Annual Average Daily Traffic (AADT)</b>	Daily traffic that is averaged over a calendar or fiscal year.

<b>Articulated Bus</b>	An extra-long, high-capacity bus that has the rear body section or sections flexibly but permanently connected to the forward section. The arrangement allows the vehicle to bend in curves and yet have no interior barrier to movement between the two parts. The puller type features a powered center axle while the pusher type features a powered rear axle. Articulated buses with powered center and rear axles exist but are not common. Typically, an articulated bus is 54-60 ft (16-18 m) long with a passenger seating capacity of 60 to 80 and a total capacity of 100 to 140.
<b>Automatic Passenger Counter</b>	An automated system that counts the number of passengers boarding and alighting a transit vehicle. The information may be used for later data analysis, or for real-time activities, such as providing signal priority only to buses that are at least half full.
<b>Automatic Vehicle Location System</b>	A system that determines the location of vehicles carrying special electronic equipment that communicates a signal back to a central control facility. AVLs are used for detecting irregularity in service and are often combined with a computer-aided dispatch system.
<b>Average Daily Traffic (ADT)</b>	The average number of vehicles that pass a specified point during a 24-hour period.
<b>Average Fare</b>	The arithmetic average of all fares paid by all revenue passengers, including those who received special or reduced fares. It is usually derived by or generally equivalent to dividing total fare revenue by total origin-to-destination trips, although it may be based on unlinked trips.
<b>Average Trip Length</b>	The average distance ridden for an unlinked passenger trip by time period (weekday, Saturday, Sunday) computed as passenger miles divided by unlinked passenger trips.
<b>Base Fare</b>	The price charged to one adult for one transit ride; excludes transfer charges, zone charges, express service charges, peak period surcharges, and reduced fares
<b>Base Period</b>	In transit, the time of day during which vehicle requirements and schedules are not influenced by peak-period passenger volume demands (e.g., between morning and afternoon peak periods). At this time, transit riding is fairly constant and usually moderate in volume when compared with peak-period travel. Also known as off peak.
<b>Bicycle-Friendly</b>	Characterized by features and elements that makes bicycling safe and convenient. A bicycle-friendly environment at a transit stop might include bicycle parking that is well-lit, sheltered, secure, and easily accessed.
<b>Bicycle Locker</b>	A lockable, enclosed container used for storing a bicycle. Typically provided at major transit stops and stations and rented on a monthly basis.
<b>Bicycle Rack</b>	A fixed post or framework to which bicycles may be secured and locked, typically provided on a first-come, first-served basis. It is also a device mounted to a transit vehicle that allows bicycles to be transported outside the passenger compartment.
<b>Boarding Rides</b>	Boarding rides are counted each time a person enters a vehicle. Boardings and rides all refer to boarding rides.
<b>Boarding Rides per Vehicle Hour</b>	The number of boardings divided by the vehicle hours of service. Describes a route's productivity.

<b>Brokerage</b>	A method of providing transportation where riders are matched with appropriate transportation providers through a central trip-request and administrative facility. The transportation broker may centralize vehicle dispatch, record keeping, vehicle maintenance and other functions under contractual arrangements with agencies, municipalities and other organizations. Actual trips are provided by a number of different vendors.
<b>Bus Bay</b>	A specially designed or designated location at a transit stop, station, terminal, or transfer center at which a bus stops to allow passengers to board and alight
<b>Bus Bulb</b>	An extension of the sidewalk into the roadway for passenger loading without the bus pulling into the curb gives priority to buses and eases reentry into traffic, often landscaped and fitted with bus shelter and other passenger amenities. Also known as a bulb out or curb extension.
<b>Bus Lane</b>	Also known as a bus priority lane or transit only lane. A highway or street lane reserved primarily for buses, either all day or during specified periods. It may be used by other traffic under certain circumstances, such as making a right or left turn, or by taxis, motorcycles, or carpools that meet specific requirements described in the traffic laws of the specific jurisdiction.
<b>Bus Priority System</b>	An intelligent transportation system feature consisting of traffic controls in which buses are given special treatment over general vehicular traffic (e.g., bus priority lanes, preemption of traffic signals, or adjustment of green times for buses.)
<b>Bus Rapid Transit (BRT)</b>	An inexact term describing a bus operation providing service similar to rail transit, at a potentially lower cost depending on the level of investment in individual infrastructure elements. BRT systems are characterized by several of the following components: exclusive transitways or busways, enhanced stations, easily identified vehicles, high-frequency all-day service, simple route structures, simplified fare collection, and ITS technologies. Integrating these components is intended to improve bus speed, reliability, and identity.
<b>Bus Shelter</b>	A building or other structure constructed at a transit stop. A transit shelter provides protection from the weather and may provide seating or schedule information or both for the convenience of waiting passengers.
<b>Bus Stop</b>	An area where passengers wait for, board, alight, and transfer between transit units (vehicles or trains). It is usually indicated by distinctive signs and by curb or pavement markings and may provide service information, shelter, seating, or any combination of these. Stops are often designated by the mode offering service, for example, bus stop, car stop.
<b>Busway</b>	A special roadway designed for exclusive use by buses. It may be constructed at, above, or below grade and may be located in separate rights-of-way or within highway corridors. Variations include grade-separated, at-grade, and median busways. Sometimes called a transitway or bus rapid transit.
<b>Capital Cost</b>	Nonrecurring or infrequently recurring costs of long-term assets, such as land, guideways, stations, buildings, and vehicles. These costs often include related expenses: for example, depreciation and property taxes.
<b>Casual Carpool</b>	an informal carpool where commuters gather at a location to be picked up at random by motorists who do not have sufficient passengers to use an HOV facility or to share the cost of parking and/or tolls.

<b>Charter Service</b>	A vehicle hired for exclusive use that does not operate over a regular route, on a regular schedule, and is not available to the general public.
<b>Choice Rider</b>	A person who has at least two modes of travel available and selects one to use. Often used to describe a traveler who is not transit dependent or solely reliant on public transportation to meet their mobility needs.
<b>Circulator Bus</b>	A bus that makes frequent trips around a small geographic area with numerous stops along the route. It is typically operated in a downtown area or an area that attracts tourists or large crowds and has limited parking and congested roads. It may be operated all day or only at times of peak demand, such as rush hour or lunch time.
<b>Circulator Service</b>	Transit service confined to a specific locale, such as a downtown area or a suburban neighborhood, with connections to major traffic corridors.
<b>Community Transportation</b>	The family of transportation services in a community, including public and private sources, that are available to respond to the mobility needs of all community members.
<b>Commute</b>	Regular travel between home and a fixed location (e.g., work, school). The term is often applied only to travel in the direction of the main flow of traffic, to distinguish from reverse commute.
<b>Commuter Rail</b>	The portion of passenger railroad operations that carries passengers within urban areas, or between urban areas and their suburbs, but differs from rail rapid transit in that the passenger cars generally are heavier, the average trip lengths are usually longer, there are few standing passengers, and the operations are carried out over tracks that are part of the railroad system in the area. In some areas it is called regional rail.
<b>Complementary Paratransit</b>	Paratransit service that is required as part of the Americans with Disabilities Act (ADA) which complements, or is in addition to, already available fixed-route transit service. ADA complementary paratransit services must meet a series of criteria designed to ensure they are indeed complementary.
<b>Congestion Mitigation and Air Quality Project (CMAQ)</b>	A flexible funding program administered by the Federal Highway Administration that funds projects and programs to reduce harmful vehicle emissions and improve traffic conditions. CMAQ funds may be used for transit projects, rideshare projects, high-occupancy vehicle lanes or other similar purposes.
<b>Contraflow</b>	Movement in a direction opposite to the normal flow of traffic. The term usually refers to flow opposite to the heavier flow of traffic.
<b>Contraflow Lane</b>	A highway or street lane on which vehicles operate in a direction opposite to what would be the normal flow of traffic in that lane. Such lanes may be permanently designated contraflow lanes, or, more usually, they may be used as contraflow lanes only during certain hours of the day. Frequently, the use of a contraflow lane is restricted to public transit and (possibly) other specially designated vehicles.
<b>Coordinated Public Transit-Human Services Transportation Plan</b>	A locally developed plan for coordinating local public transportation and human service agency transportation services that aims to maximize the programs' collective coverage by minimizing duplication of services.

<b>Coordination</b>	A cooperative arrangement between transportation providers and organizations needing transportation services. Coordination models can range in scope from shared use of facilities, training or maintenance to integrated brokerages or consolidated transportation service providers.
<b>Cost Effectiveness</b>	Cost effectiveness is the cost per passenger trip. More precisely, it is the amount of money a transit agency spends to provide its service (either as a system or a particular mode of travel, such as bus or rail) divided by the total number of passenger trips. This only takes into account what it costs to provide the service, and does not deduct fare revenues from the cost of providing the service.
<b>Crosstown Service</b>	Non-radial transit service that does not enter the central business district.
<b>Crush Capacity</b>	Also known as crush load, it is the maximum feasible passenger capacity of a vehicle, that is, the capacity at which one more passenger cannot enter without causing serious discomfort to the others.
<b>Curb-to-Curb Service</b>	A common designation for paratransit services. The transit vehicle picks up and discharges passengers at the curb or driveway in front of their home or destination. In curb-to-curb service the driver does not assist the passenger along walks or steps to the door of the home or other destination.
<b>Deadhead</b>	Term to describe of a transit vehicle while not generating fare revenue or without passengers aboard, often to and from a garage, or from one route to another.
<b>Deficit</b>	A deficiency in funding where expenses exceed revenues.
<b>Demand-Response Service</b>	The type of transit service where individual passengers can request transportation from a specific location to another specific location at a certain time. Transit vehicles providing demand-response service do not follow a fixed route, but travel throughout the community transporting passengers according to their specific requests. Can also be called dial-a-ride. These services usually, but not always, require advance reservations.
<b>Deviated Fixed Route</b>	This type of transit is a hybrid of fixed-route and demand-response services. While a bus or van passes along fixed stops and keeps to a timetable, the bus or van can deviate its course between two stops to go to a specific location for a pre-scheduled request. Often used to provide accessibility to persons with disabilities.
<b>Dial-a-Ride Service</b>	Another term for demand-response service (see above) where the rider telephones (or “dials”) to request service.
<b>Diesel Multiple-Unit Car (DMU)</b>	A diesel powered rail car arranged either for independent operation or for simultaneous operation with other similar cars, when connected to form a train of such cars.
<b>Disability</b>	The limitation of normal physical, mental, social activity of an individual. There are varying types (functional, occupational, learning), degrees (partial, total) and durations (temporary, permanent) of disability.
<b>Door-to-Door Service</b>	A form of paratransit service which includes passenger assistance between the vehicle and the door of his or her home or other destination. A higher level of service than curb-to-curb, yet not as specialized as door-through-door service (where the driver actually provides assistance within the origin or destination).

<b>Dwell Time</b>	The time a transit unit (vehicle or train) spends at a station or stop, measured as the interval between its stopping and starting.
<b>Elasticity</b>	The percentage change in demand for service (demand) for each 1% change in another factor. Often used to characterize sensitivities to changes in fares or level of service (i.e. frequency, service span).
<b>Exclusive Right-of-Way</b>	Roadway or other right-of-way reserved at all times for transit use and/or other high occupancy vehicles.
<b>Express Bus Service</b>	Bus service with a limited number of stops, either from a collector area directly to a specific destination or in a particular corridor with stops en route at major transfer points or activity centers. Express bus service usually uses freeways or busways where they are available.
<b>Express Service</b>	Service that has fewer stops and a higher operating speed than regular service. Often used an alternative term for limited-stop service; when agencies provide both types of service, the express service tends to have much longer sections of non-stop running.
<b>Farebox</b>	A device that accepts coins, bills, tickets, tokens, or other fare media given by passengers as payment for rides.
<b>Farebox Recovery Ratio</b>	The ratio of fare revenue to direct operating expenses.
<b>Farebox Revenue</b>	A public transportation term for the monies or tickets collected as payments for rides. Can be cash, tickets, tokens, transfers and pass receipts. Fare box revenues rarely cover even half of a transit system's operating expenses.
<b>Far-side Stop</b>	A transit stop located beyond an intersection. It requires that transit units (vehicles or trains) cross the intersection before stopping to serve passengers.
<b>Federal Highway Administration (FHWA)</b>	A component of the U.S. Department of Transportation that is responsible for ensuring that America's roads and highways are safe and technologically up-to-date. Although State, local, and tribal governments own most of the Nation's highways, the FHWA provides financial and technical support to them for constructing, improving, and preserving America's highway system. The FHWA's annual budget of more than \$30 billion is funded by fuel and motor vehicle excise taxes. FWHA is the lead agency in federal intelligent transportation (ITS) activities and regulated interstate transportation. In addition to ITS, funds under FHWA's Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Surface Transportation Program (STP), and Federal Lands Highways Program can be used for a variety of transit activities.
<b>Federal Transit Administration</b>	A component of the U.S. Department of Transportation that administers federal funding to support a variety of locally planned, constructed, and operated public transportation systems throughout the U.S., including buses, subways, light rail, commuter rail, streetcars, monorail, passenger ferry boats, inclined railways, and people movers. FTA provides financial assistance for capital, operating and planning costs of these public transportation systems. It also sponsors research, training, technical assistance and demonstration programs. Up to 1991 the FTA was known as the Urban Mass Transportation Administration.

<b>Feeder Service</b>	Local transit service that provides passengers with connections to main-line arterial service; an express transit service station; a rail rapid transit, commuter rail, or intercity rail station; or an express bus stop or terminal.
<b>Fixed-Guideway Transit System</b>	A transportation system composed of vehicles that can operate only on their own guideways, which were constructed for that purpose. Examples are heavy rail, light rail, and monorail. Federal usage of the term in funding legislation also includes bus priority lanes, exclusive right-of-way bus operations, trolley coaches, and ferryboats as fixed guideway transit.
<b>Fixed-route</b>	Transit services where vehicles run on regular, pre-designated, pre-scheduled routes, with no deviation. Typically, fixed-route service is characterized by printed schedules or timetables, designated bus stops where passengers board and alight and the use of larger transit vehicles.
<b>Fixed Stop</b>	A posted stop on a fixed transit route.
<b>Flag Stop</b>	A stop where transit vehicles stop on an as-needed basis (i.e. flagged down by a waiting passenger).
<b>Flexible Routing</b>	Flexible route service follows a direction of travel but allows for deviation or rerouting along the way to accommodate specific trip requests. Examples of flexible route systems are route deviation and point deviation. The schedule may be fixed or flexible.
<b>Frequency of Service</b>	The number of transit units (vehicles or trains) on a given route or line, moving in the same direction, that pass a given point within a specified interval of time, usually 1 hour; also known as headway.
<b>Frequent Service</b>	Service that operates every fifteen minutes or better, every day.
<b>Guaranteed Ride Home</b>	Program that encourages employees to carpool, use transit, bike or walk to work by guaranteeing them a ride home in case they cannot take the same mode home (e.g., if they need to work late or if an emergency occurs).
<b>Headway</b>	The scheduled time interval between any two revenue vehicles (buses, LRVs, trolleys, etc.) operating in the same direction on a route. See also frequency of service.
<b>High Capacity Transit (HCT)</b>	High capacity transit includes any form of public transit that has an exclusive right of way, a non-exclusive right of way or a possible combination of both. High capacity transit vehicles make fewer stops, travel at higher speeds, have more frequent service and carry more people than local service transit such as typical bus lines. High capacity transit includes options such as light rail, commuter rail and bus rapid transit.
<b>High-Occupancy Vehicle (HOV)</b>	Any passenger vehicle that meets or exceeds a certain predetermined minimum number of passengers, for example, more than two or three people per automobile. Buses, carpools, and vanpools are HOV vehicles.
<b>HOV Lane</b>	A highway or street lane reserved for the use of high-occupancy vehicles (HOVs).
<b>Homebound</b>	Those unable to leave home without exceptional effort and support. One of the requirements to qualify for Medicare home health care.
<b>Hours of Service</b>	The number of hours during the day between the start and end of service on a transit route, also known as the service span.

<b>HOV Lane Management</b>	National ITS Architecture Market Package that manages HOV lanes by coordinating freeway ramp meters and connector signals with HOV lane usage signals. Preferential treatment is given to HOV lanes using special bypasses, reserved lanes, and exclusive rights-of-way that may vary by time of day.
<b>Hub-and Spoke System</b>	Type of route structure based on timed connections that increases connectivity and productivity. Usually consists of a central transfer node with routes that radiate from it. See also Timed Transfer System.
<b>Human Services Transportation</b>	Transportation for clients of a specific human or social service agency that is usually limited to a specific trip purpose. Human service agency trips are often provided under contract to a human service agency and may be provided exclusively or rideshared with other human service agencies or general public service.
<b>Independent Living Facility</b>	Rental units in which services are not included as part of the rent, although services may available on site and purchased by residents for a fee.
<b>Inspector</b>	See Route Supervisor.
<b>Intelligent Transportation Systems (ITS)</b>	Technology, information management and communications systems that improve the efficiency or safety of a surface transportation system.
<b>Intercity Bus</b>	A large bus with luggage space, used primarily for transportation between cities. It usually has reclining seats and restroom facilities.
<b>Intercity Transportation</b>	Long distance service provided between cities, often as part of a large network of intercity bus operators. Both express and local bus service may be provided.
<b>Interline</b>	Transfer of transit vehicles or trains between routes during a day to improve staff or vehicle assignment efficiency.
<b>Intermodal</b>	The ability to connect, and make connections between, modes of transportation.
<b>Intermodal Transfer Facility</b>	A transit stop or station at the meeting point of several routes or lines or of different modes of transportation. It is located on or off the street and is designed to handle the movement of transit units (vehicles or trains) and the boarding, alighting, and transferring of passengers between different modes (also known as a modal interchange center).
<b>JARC (Jobs Access Reverse Commute)</b>	Federal formula funds available to provide transportation to assist low income individuals get to work. See Section 5316.
<b>Jitney</b>	A transit mode comprising passenger cars or vans operating on fixed routes (sometimes with minor deviations) as demand warrants without fixed schedules or fixed stops.
<b>Jitney Service</b>	A route deviation service in which small or medium-sized vehicles, such as large automobiles, vans, or minibuses, are used. The vehicles are usually owned by the drivers and the service is often independently operated.
<b>Kiss-and-Ride</b>	An access mode to transit whereby passengers (usually commuters) are driven to a transit stop and left to board a transit unit and then met after their return trip. Transit stations, usually rail, often provide a designated area for dropping off and picking up such passengers.
<b>Layover</b>	Time built into a schedule between arrivals and departures, used for the recovery of delays and preparation for the return trip. The term may refer to transit units (also known as vehicle layover) or operators.

<b>Level of Assistance</b>	Level of assistance given to passengers who need help boarding or exiting transit or agency vehicles, especially paratransit vehicles. Assistance can be curb-to-curb, meaning the passenger is not given assistance to and from the door of their destination; door-to-door, meaning the passenger is assisted from the door of their residence to the door of their destination; or door-through-door, meaning the passenger is assisted out of their home to the vehicle, and from the vehicle into their destination.
<b>Level of Service (LOS)</b>	A designated range of values for a particular transit service measure (e.g., “A” through “F” or “1” through “8”), based on users’ perceptions of the quality and amount of service.
<b>Light Rail (LRT)</b>	A metropolitan electric railway system characterized by its ability to operate single cars or short trains along exclusive rights-of-way at ground level, on aerial structures, in subways, or occasionally, in streets, and to board and discharge passengers at track or car floor level.
<b>Linked Trip</b>	A trip from the point of origin to the final destination, regardless of the number of modes or vehicles (transfers) used.
<b>Load Factor</b>	The ratio of passengers actually carried versus the total passenger capacity of a vehicle; also known as a utilization coefficient.
<b>Loading Island</b>	A protected spot for the loading and unloading of passengers. It may be located within a rail transit or bus station.
<b>Local Bus Service</b>	Transit service that involves frequent stops and consequent low average speeds, the purpose of which is to deliver and pick up transit passengers close to their destinations or origins.
<b>Low-Floor Bus</b>	A bus without steps at entrances and exit. The low floor may extend throughout the bus or may use a ramp or steps to access the raised rear portion over a conventional axle and drive train. Wheelchair access is provided by a retracting ramp.
<b>Match</b>	State or local funds required by various federal or state programs to complement funds for a project. A match may also be required by states in funding projects, which are joint state/local efforts. Some funding sources allow services, such as the work of volunteers, to be counted as an in-kind funding match. Federal programs normally require that match funds come from other than federal sources.
<b>Medicaid</b>	Also known as Medical Assistance, this is a health care program for low-income and other medically needy persons. It is jointly funded by state and federal governments. The Medicaid program pays for transportation to non-emergency medical appointments if the recipient has no other means to travel to the appointment.
<b>Missed Trip</b>	A missed trip occurs when a paratransit driver fails to pick up a scheduled trip at the assigned pick-up location and time.
<b>Mode</b>	A transport category characterized by specific right-of-way, technological and operational features. A particular form of travel, for example, walking, traveling by automobile, traveling by bus, traveling by train.
<b>Mode Split</b>	The proportion of total person trips that uses each of various specified modes of transportation.
<b>Multi-modal</b>	The availability of transportation options using different modes within a system or corridor.

<b>Near-side Stop</b>	A transit stop located on the approach side of an intersection. The transit units (vehicles or trains) stop to serve passengers before crossing the intersection.
<b>New Freedom</b>	The federal formula program to fund new services for people with disabilities that are above and beyond what the ADA requires. See Section 5317.
<b>Non-home Based Trip</b>	A trip that has neither its origin nor its destination at a residence.
<b>On-time Performance</b>	For fixed-route service, the percentage of on-time arrivals at stops along the route. For demand response service, the percentage of scheduled trips that are picked-up within the assigned on-time window (typically 30 minutes).
<b>Operating Characteristics</b>	The type of service provided, the size and geographical location of the service area, the miles and hours of service provided, etc.
<b>Operating Cost</b>	The sum of all recurring costs (e.g., labor, fuel) that can be associated with the operation and maintenance of the system during the period under consideration. Operating costs usually exclude such fixed costs as depreciation on plant and equipment, interest paid for loans on capital equipment, and property taxes on capital items.
<b>Operating Expense</b>	The total of all expenses associated with operation of an individual mode by a given operator.
<b>Operator</b>	An employee of a transit system whose workday is spent in the operation of a transit unit (vehicle or train), such as a bus driver or train operator. Also refers to the organization that runs a transportation system on a day-to-day basis.
<b>Owl Service</b>	Transit service provided late at night, usually from midnight to between 3:00 AM and start of service the next day.
<b>Paratransit</b>	Types of passenger transportation that are more flexible than conventional fixed-route transit but more structured than the use of private automobiles. Paratransit includes demand-response transportation services, subscription bus services, shared-ride taxis, car pooling and vanpooling, jitney services and so on. Most often refers to wheelchair-accessible, demand-response van service.
<b>Park-and-Ride</b>	An access mode to transit in which patrons drive private automobiles or ride bicycles to a transit station, stop, or carpool/vanpool waiting area and park the vehicle in the area provided for that purpose (park-and-ride lot, park-and-pool lot, commuter parking lot, bicycle rack or locker). They then ride the transit system or take a car or vanpool to their destinations.
<b>Parking Facility</b>	An area, which may be enclosed or open, attended or unattended, in which automobiles may be left, with or without payment of a fee, while the occupants of the automobiles are using other facilities or services.
<b>Passenger Miles</b>	The total number of passengers carried by a transit system for a unit of time multiplied by the number of miles (kilometers) they travel. The ratio of passenger miles (kilometers) and seat or place miles (kilometers) provides a measure of efficiency.
<b>Passenger Platform</b>	That portion of a transit facility directly adjacent to the tracks or roadway at which transit units (vehicles or trains) stop to load and unload passengers. Within stations, it is often called a station platform.

<b>Peak/Base Ratio</b>	The ratio between the number of passengers carried or transit vehicles deployed during the peak hours and during the base period. Also known as peak/off-peak ratio.
<b>Peak Period</b>	The period during which demand for transportation service is heaviest. It may be specified as the morning (AM) or afternoon or evening (PM) peak.
<b>Pedestrian-Friendly</b>	Characterized by features and elements that make walking safe and convenient. A pedestrian-friendly environment near a transit stop might have pedestrian pushbuttons at street crossings and direct, paved access to adjacent development.
<b>Productivity</b>	The ratio of units of transportation output to units of input (consumed resource); for example, vehicle miles per operator hour, or passenger miles per unit cost of operation.
<b>Propulsion System</b>	The motors, driving mechanism, controls, and other devices that propel a vehicle; frequently assumes electric operation.
<b>Proof-of-Payment</b>	An open fare collection system that has no turnstiles or fare gates. It requires that the passenger display proof of payment (e.g., validated ticket, prepaid pass, valid transfer) while on board the transit vehicle or in other designated fare paid areas. Enforced through random checking by specific transit employees, security staff or police with the power to collect premium “on-board” fares (more common in Europe) or issue tickets or citations, typically resulting in revenue loss below 2-3%. Erroneously called an “honor” system, a name that applies only to systems without enforcement.
<b>Public Transit</b>	Passenger transportation service, usually local in scope, that is available to any person who pays a prescribed fare. It operates on established schedules along designated routes or lines with specific stops and is designed to move relatively large numbers of people at one time. Examples include bus, light rail, rapid transit.
<b>Public Transportation</b>	Transportation service to the public on a regular basis using vehicles that transport more than one person for compensation, usually but not exclusively over a set route or routes from one fixed point to another. Routes and schedules of this service may be predetermined by the operator or may be determined through a cooperative arrangement. Subcategories include public transit service and paratransit services that are available to the general public.
<b>Pulsed Hub</b>	A transit hub serving two or more services, where service is timed to allow efficient timed transfers. These are typically used for transit systems that have relatively low service frequency. See also timed transfer system.
<b>Quality of Service</b>	The overall measured or perceived quality of transportation service from the user’s or passenger’s point of view, rather than from the operating agency’s point of view. Defined for transit systems, route segments, and stops by level of service.
<b>Queue</b>	A line of vehicles or people waiting to be served by the system in which the rate of flow from the front of the line determines the average speed within the line. Slowly moving vehicles or people joining the rear of the queue are usually considered a part of the queue.

<b>Queue Jump</b>	A short section of exclusive or preferential lane that enables specified vehicles to bypass an automobile queue or a congested section of traffic. A queue jump is often used at signal-controlled freeway on-ramps in congested urban areas to allow high-occupancy vehicles preference. It is also known as a bypass lane or queue bypass.
<b>Rapid Transit System</b>	Transit service which is operated completely separate from all other modes of transportation.
<b>Reduced Fare</b>	A special fare for children, students, senior citizens, or others that is less than the regular fare.
<b>Reliability</b>	How often transit service is provided as promised; affects waiting time, consistency of passenger arrivals from day to day, total trip time, and loading levels. See also schedule adherence.
<b>Replica Streetcar</b>	A rubber-tired bus with an exterior (and usually an interior) designed to look like a vintage streetcar. Also known as a trolley replica.
<b>Revenue Miles</b>	Miles operated by vehicles available for passenger service.
<b>Revenue Service</b>	Transit service excluding deadheading or layovers or any service scheduled for passenger trips. Also known as service hours.
<b>Revenue Vehicle</b>	A vehicle used to provide passenger transit service for which remuneration is normally required. It is distinct from non-revenue equipment, which is used to build or maintain facilities, provide supervision, and so on.
<b>Reverse Commute</b>	A commute in the direction opposite to the main flow of traffic, for example, from the central city to a suburb during the morning peak. Increasingly common with growth in suburban employment. Valuable to operator as provides additional passengers and revenue at little or no marginal cost.
<b>Rider</b>	A passenger on any revenue service vehicle or making an unlinked trip; also known as a patron.
<b>Rideshare/ Ridematch Program</b>	A program that facilitates the formation of carpools and vanpools, usually for work trips. A database is maintained for the ride times, origins, destinations and driver/rider preferences of users and potential users. Those requesting to join an existing pool or looking for riders are matched by program staff with other appropriate people.
<b>Ridesharing</b>	A form of transportation, other than public transit, in which more than one person shares in the use of the vehicle, such as a bus, van, or automobile, to make a trip.
<b>Right-of-Way (ROW)</b>	A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes. For transit, rights-of-way may be categorized by degree of their separation: fully controlled without grade crossings, also known as grade-separated, exclusive, or private ROW; longitudinally physically separated from other traffic (by curbs, barriers, grade separation, etc.) but with grade crossings; or surface streets with mixed traffic, although transit may have preferential treatment.

<b>Route Deviation</b>	A type of transit service that operates as conventional fixed route bus service along a fixed alignment or path with scheduled time, points at each terminal point, and key intermediate locations. Route deviation service is different from conventional fixed route bus service in that the bus may deviate from the route alignment to service destinations within a prescribed distance of the route. Following an off-route deviation, the bus must return to the point on the route it left.
<b>Round Trip</b>	The movement of a person or a vehicle from a point of origin to a destination and then back to the same point of origin.
<b>Route Structure</b>	A network or pattern of transit routes, such as grid or radial networks.
<b>Route Supervisor</b>	A transit employee who evaluates performance, enforces safety and work rules, and attempts to solve problems; an inspector may be mobile (covering several districts in a radio-equipped vehicle) or fixed (assigned to a post at a designated intersection).
<b>Run</b>	The movement of a transit unit (vehicle or train) in one direction from the beginning of a route to the end of it; also known as a trip.
<b>Run Cutting</b>	The process of organizing all scheduled trips operated by the transit system into runs for the assignment of operating personnel and vehicles.
<b>Run Number</b>	A two- or three-digit number displayed on a hand set or flip-dot display in the lower windshield displaying the run or schedule slot the vehicle is in; primarily used as information to inspectors, street supervisors, or checkers.
<b>Running Hot</b>	Running ahead of schedule. Unacceptable practice on most systems. Also known as running sharp.
<b>Running Time</b>	The actual, expected, or scheduled time required for a transit unit (vehicle or train) to move from one point to another, excluding time for stops.
<b>Safe, Accountable, Flexible, Efficient, Transportation Act—A Legacy for Users (SAFETEA-LU)</b>	An Act passed by Congress in 2005 that authorizes federal surface transportation programs, including highways, highway safety, and transit for the years 2005–2009. SAFETEA-LU provided \$286.4 billion for transportation, including \$52.6 billion for transit, through fiscal year 2009.
<b>Section 5307</b>	The section of the Federal Transit Act that authorizes grants to public transit systems in all urban areas. Funds authorized through Section 5307 are awarded to states to provide capital and operating assistance to transit systems in urban areas with populations between 50,000 and 200,000. Transit systems in urban areas with populations greater than 200,000 receive their funds directly from the Federal Transit Administration.
<b>Section 5309</b>	The section of the Federal Transit Act that authorizes discretionary grants to public transit agencies for capital projects such as buses, bus facilities and rail projects.
<b>Section 5310</b>	A formula program that provides capital assistance to states for transportation programs that serve the elderly and people with disabilities. States distribute Section 5310 funds to local operators in rural and urban settings who are either nonprofit organizations or the lead agencies in coordinated transportation programs. Allocation of funding to states is made on the basis of the number of elderly and persons with disabilities in that state.

<b>Section 5311</b>	The formula program that provides capital and operating assistance grants to public transit systems in rural and small urban areas with populations of less than 50,000. Funding is apportioned by a statutory formula that is based on the latest U.S. Census figures of areas with a population less than 50,000.
<b>Section 5916</b>	Federal formula funds available to provide transportation to assist low income individuals get to work. Also known as JARC (Jobs Access Reverse Commute).
<b>Section 5917</b>	The federal formula program to fund new services for people with disabilities that are above and beyond what the ADA requires. See New Freedom.
<b>Segregated Right-of-Way (ROW)</b>	Roadway or right-of-way reserved for transit use, but which permits other modes to cross the right-of-way at defined locations such as grade crossings.
<b>Service Route</b>	Another hybrid between fixed-route and demand-response service. Service routes are established between targeted neighborhoods and service areas riders want to reach. Similar to deviated fixed routes, service routes are characterized by flexibility and deviation from fixed-route intervals. However, while deviated fixed routes require advanced reservations, service routes do not. A service route can include both regular, predetermined bus stops and/or allow riders to hail the vehicle and request a drop-off anywhere along the route.
<b>Service Span</b>	See Hours of Service.
<b>Shared Right-of-Way (ROW)</b>	Roadway or right-of-way which permits other traffic to mix with transit vehicles, as is the case with most streetcar and bus lines.
<b>Schedule</b>	A listing or diagrammatic presentation in time sequence of every trip and every time point of each trip, from start to finish of service, on a transit line or route.
<b>Schedule Adherence</b>	The ability of a route or transit vehicle to maintain its schedule. See Reliability.
<b>Scheduling</b>	In transit operations, the process of preparing the operating plan (schedule) for a transit line or network on the basis of passenger demand, policy or level of service, and operating elements (travel times, etc.).
<b>Scratch Ticket</b>	A ticket on which the user can scratch overprinting off to indicate, zone, and/or month, day (and time) of validity. Commonly used on day passes.
<b>Seating Capacity</b>	The number of passenger seats in a vehicle.
<b>Service Area</b>	A measure of access to transit service in terms of population served and area coverage (square miles). For fixed-route service, service areas are typically arranged in corridors. Complementary ADA paratransit services are required by ADA law to extend $\frac{3}{4}$ mile beyond the fixed-route corridors. As demand response serves a broad area and does not operate over a fixed route, the “service area” encompasses the origin to destination points wherever people can be picked up and dropped off.
<b>Shared Ride</b>	A trip, other than by conventional public transit, on which the passengers enter at one or more points of origin and disembark at one or more destinations and for which each passenger is charged an individual fare. Shared ride taxi service is a way of using taxicabs for paratransit.

<b>Signal Preemption</b>	In highway operations, an automatic or manual device for altering the normal signal phasing or the sequence of a traffic signal to provide preferential treatment for specific types of vehicles, such as buses or trains. This is a type of Advanced Public Transportation System.
<b>Single-Occupant Vehicle (SOV)</b>	A vehicle occupied by the driver only.
<b>Slack</b>	The amount of time that a train can run behind schedule without interfering with following trains. Also known as operating margin.
<b>Smart Card</b>	A stored-value ticket with built-in semiconductor chip, often used to improve boarding efficiency. The card can be loaded with a monetary value which is decremented for each ride or can be valid for unlimited rides during over a specified period. Early variants required insertion or contact with farebox or fare gate and were time consuming. Most versions in transit are proximity cards and require only to be held close to the farebox or fare gate inductive detector plate.
<b>Standard Urban Bus</b>	A bus for use in frequent-stop service with front and (usually) center doors, normally with a rear-mounted engine and low-back seating. Typically 35-40 ft (10-12 m) long. Buses that are less than 20 ft long are typically considered small buses.
<b>Standing Capacity</b>	The number of standing passengers that can be accommodated in a vehicle under specified comfort standards, expressed in area per standee.
<b>Station</b>	An off-street facility (typically) where passengers wait for, board, alight, or transfer between transit units (vehicles or trains). A station usually provides information and a waiting area and may have boarding and alighting platforms, ticket or farecard sales, fare collection, and other related facilities; also known as a passenger station.
<b>Streetcar</b>	An electrically powered rail car that is operated singly or in short trains in mixed traffic on track in city streets. In some areas, it is also known as a trolley car.
<b>Subscription Bus Service</b>	A bus service in which routes and schedules are prearranged to meet the travel needs of riders who sign up for the service in advance. The level of service is generally higher than that of regular passenger service (fewer stops, shorter travel time, and greater comfort), and the buses are usually obtained through charter or contractual arrangements.
<b>Subscription Van Service</b>	Service similar to that provided by a subscription bus, except that the van may be privately owned, leased from a public or private company, or provided by the employer. The driver is usually a member of the group.
<b>Subsidized Taxi Service</b>	A taxicab service in which the fares are lower than actual taxi fares and the taxi company is reimbursed the difference. The service may be provided to the general public or to special groups, such as elderly people. Funds for the subsidy can come from a variety of sources, including local taxes or social service agency program funds. Often an economical way to provide better off-peak service in low-density areas that cannot support fixed routes.
<b>Telecommuting</b>	A transportation demand management strategy that substitutes, either partially or completely, transportation to a conventional office through the use of computer and telecommunications technologies (e.g., telephones, personal computers, modems, facsimile machines, electronic mail).

<b>Termini</b>	The “terminating” or end nodes of a line, link, or route.
<b>Through Routing</b>	The efficient practice of joining the ends of radial transit routes, with similar demand, to travel through downtown instead of having each route turn back in the downtown and return to its origin.
<b>Ticket Vending Machine</b>	A fare collection device that dispenses tickets for entry onto transit vehicles. Often used to increase boarding efficiency.
<b>Time-of-Day Fare</b>	A fare that varies by time of day. It is usually higher during peak travel periods (peak fare) and lower during non-peak travel periods (off-peak fare).
<b>Timed Transfer</b>	The scheduling of intersecting transit routes so that they are due to arrive at a transfer point simultaneously, eliminating waiting time for transfer passengers.
<b>Timed Transfer System</b>	A transit network consisting of one or more nodes (transit centers) and routes or lines radiating from them. The system is designed so that transit vehicles on all or most of the routes or lines are scheduled to arrive at a transit center simultaneously and “pulse” a few minutes later; thus transfers among all the routes and lines involve virtually no waiting. Typically used in suburban areas and for night service where headways are long. See also hub-and-spoke system and pulsed hub.
<b>Transfer</b>	A passenger’s change from one transit unit (vehicle or train) or mode to another transit unit or mode.
<b>Transfer Cluster</b>	A group of stoppoints within an agency-designated area that are used for transfers. A simple example would be a group of stoppoints at an intersection where two routes cross. A more complex example would be a transit center of bus terminal.
<b>Transit Accessibility</b>	In common usage, often used to mean the ability of persons with disabilities to use transit. It also is a measure of the ability of all people to get to and from the nearest transit stop or station and their actual origin or destination.
<b>Transit Bus</b>	A self-propelled, rubber-tired road vehicle designed to carry a substantial number of passengers (at least 16, various legal definitions may differ slightly as to minimum capacity), commonly operated on streets and highways. A bus has enough headroom to allow passengers to stand upright after entering. Propulsion may be by internal combustion engine, electric motors or hybrid.
<b>Transit Center</b>	A transit stop or station at the meeting point of several routes or lines or of different modes of transportation. It is located on or off the street and is designed to handle the movement of transit units (vehicles or trains) and the boarding, alighting, and transferring of passengers between routes or lines (in which case it is also known as a transfer center).
<b>Transit Corridor</b>	Corridors located along or supportive of good quality transit lines. They include higher population and employment densities and feature a high quality pedestrian environment and convenient access to transit.
<b>Transit Dependent</b>	Those having to rely on transit services instead of the private automobile to meet one’s travel needs; also known as a captive rider.

<b>Transit District</b>	A geographical or political division created specifically for the single purpose of providing transportation services. It is a separate legal entity and usually possesses the authority to impose a property tax. Transit agencies can directly operate transit service or contract out for all or part of the total transit service provided.
<b>Transit Maintenance Vehicle</b>	A vehicle that is part of a transit fleet, but whose primary function is to support maintenance, and/or supervisory functions rather than to transport transit customers.
<b>Transit Mode</b>	A category of transit systems characterized by common characteristics of technology, right-of-way, and type of operation. Examples of different transit modes are regular bus service, express bus service, light rail transit, rail rapid transit, and commuter rail.
<b>Transit Orientation</b>	An umbrella term used to define variables that make transit use more attractive. Variables that characterize transit orientation include density, mixed land uses, pedestrian design and accessibility.
<b>Transit-Oriented Development</b>	Transit-Oriented Development (TOD) refers to residential and commercial development designed to maximize access by transit and non-motorized transportation, and with other features to encourage transit ridership. A typical TOD has a rail or bus station at its center, surrounded by relatively high-density development, with progressively lower-density spreading outwards one-quarter to one-half mile, representing pedestrian scale distances.
<b>Transit Shelter</b>	A building or other structure constructed at a transit stop. It may be designated by the mode offering service, for example, bus shelter. A transit shelter provides protection from the weather and may provide seating or schedule information or both for the convenience of waiting passengers.
<b>Transit Signal Priority</b>	The preferential treatment of transit vehicles at signalized intersections.
<b>Transit Supportive Land Use</b>	A land use environment that encourages transit use. Typically involves some level of land use mixing and higher intensity uses.
<b>Transit System</b>	The facilities, equipment, personnel, and procedures needed to provide and maintain public transit service.
<b>Transitway</b>	A dedicated right-of-way or roadway used by transit vehicles (buses or trains).
<b>Transportation Demand Management (TDM)</b>	The concept of managing or reducing travel demand rather than increasing the supply of transportation facilities. It may include programs to shift demand from single-occupant vehicles to other modes such as transit and ridesharing, to shift demand to off-peak periods, or to eliminate demand for some trips.
<b>Transportation Disadvantaged</b>	A term used to describe those people who have little or no access to meaningful jobs, services, and recreation because a transportation system does not meet their needs. Often refers to those individuals who cannot drive a private automobile because of age, disability, or lack of resources.
<b>Transportation Management Association (TMA)</b>	A voluntary association of public and private agencies and firms joined to cooperatively develop transportation-enhancing programs in a given area. TMAs are appropriate organizations to better manage transportation demand in congested suburban communities.

<b>Transportation System</b>	A coordinated system made up of one or several modes serving a common purpose, the movement of people, goods, or both.
<b>Transportation System Management (TSM)</b>	That part of the urban transportation planning process undertaken to improve the efficiency of the existing transportation system. The intent is to make better use of the existing transportation system by using short-term, low-capital transportation improvements that generally cost less and can be implemented more quickly than other system development actions.
<b>Trip</b>	A one-way movement of a person or vehicle between two points. Many transit statistics are based on unlinked passenger trips, which refer to individual one-way trips made by individual riders in individual vehicles. A person who leaves home on one vehicle, transfers to a second vehicle to arrive at a destination, leaves the destination on a third vehicle and has to transfer to yet another vehicle to complete the journey home has made four unlinked passenger trips.
<b>Trip Distribution</b>	In planning, the process of estimating movement of trips between zones by using surveys or models
<b>Trip End</b>	A trip origin or a trip destination.
<b>Trip Generator</b>	A land use from which trips are produced, such as a dwelling unit, a store, a factory, or an office.
<b>Trip Purpose</b>	The primary reason for making a trip, for example, work, shopping, medical appointment, recreation.
<b>Trip Request</b>	Any request for transportation made to a paratransit service or organization providing transportation, whether taken through a centralized call center or on an ad hoc basis by staff.
<b>Trolley</b>	An apparatus, such as a grooved wheel or shoe, at the end of a pole, used for collecting electric current from an overhead wire and transmitting it to a motor of a streetcar, trolleybus, or similar vehicle, where it is used for traction and other purposes.
<b>Trolleybus</b>	An electrically propelled bus that obtains power via two trolley poles from a dual (positive and negative) overhead wire system along routes. It may be able to travel a limited distance using battery power or an auxiliary internal combustion engine. The power-collecting apparatus is designed to allow the bus to maneuver in mixed traffic over several lanes.
<b>Trolley Replica Bus</b>	A bus with an exterior (and usually an interior) designed to look like a vintage streetcar.
<b>Unlinked Trip</b>	The boarding of one transit vehicle in revenue service; also known as an unlinked passenger trip, or any segment of a linked trip.
<b>Vanpool</b>	A prearranged ridesharing service in which a number of people travel together on a regular basis in a van. Vanpools may be publicly operated, employer operated, individually owned or leased.
<b>Vehicle Capacity</b>	The maximum number of passengers that the vehicle is designed to accommodate comfortably, seated and standing.
<b>Vehicle Hours</b>	Vehicle hours include revenue hours plus the time it takes a vehicle to travel from the garage to the end of the line. Also see platform hours.
<b>Vehicle Occupancy</b>	The number of people aboard a vehicle at a given time.

**Vintage Streetcar**

An old streetcar or streetcar built to resemble an older vehicle, electrically operated on rail tracks, generally in downtown areas, for local distribution and tourists. Not to be confused with rubber-tired replica streetcars (also known as trolley replicas). Also known as a vintage trolley.

**Volunteer Network**

A volunteer network matches requests for transportation with a volunteer driver who is typically reimbursed on a per-mile basis for providing the trip. Persons requesting service call the network; the network calls the driver and schedules the trip. Volunteer networks are frequently used in rural areas where resources are scarce, persons needing transportation may live in remote areas, and a sense of community is not uncommon.

**Zoned Fare**

A method of transit pricing that is based on the geographical partitioning of the service area. The price is determined by the location and number of zones traversed. Zone fares are frequently used as a method of charging graduated or distance-based fares but may also be used to provide for differential fares for certain markets.